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* * The Editor can only be seen by appointment.

* * We do not undertake to answer letters by post.

EX CATHEDRA.

Stand Development. An article by W. Heinicke in "Photographische Mitteilungen" suggests to us that the advantages of "stand development" have been rather over-rated by German photographers. They have recommended it almost indiscriminately, if we except the case of plates which have been decidedly under-exposed. In this country stand development has not found much favour. We ourselves have met with certain disadvantages in its use, which would make us hesitate to adopt it for a series of negatives to which we attached importance. Not only have we found the objectionable halo dividing a strong high-light from a deep shadow, but have also met with markings of a very peculiar character upon plates developed in this way. These markings partake of the nature of irregular lines, on one side of which the density differs from the other side. They may be due, perhaps, to defects in the plates, but we are inclined to think a fall in temperature at the surface of the solution may initiate them. It is remarkable that these defects do not appear in plates from the same batch developed in the ordinary way. From this we infer that the slow reduction of the silver bromide by an alternated developer is attended by risks which the quicker methods of development are free from. The recommendation of W. Heinicke, however, to use stand development for a series of negatives of definite correct exposure is not without advantage.

He suggests that one plate should be developed first with a solution of definite strength, and the time ascertained for producing a negative of the desired strength of gradation. If the other plates of the series are then developed for the same length of time under similar conditions, a series of negatives resembling each other throughout will be obtainable. The writer of the article to which we have referred concedes that it is impossible to eliminate the effects of widely different exposures by means of stand development, and in this we agree with him.

* * *

Photographic Goods for Tropical Countries. An interesting letter, published in "Photographische Industrie," draws the attention of manufacturers of photographic materials in Germany to the precautions which must be observed in exporting goods to Java. After drawing attention to the fact that Dutch is the dominant language, and that German is more generally understood than English, the necessity for observing the decimal system of measures and weights is emphasised. This also implies the use of the standard Continental sizes for cameras and plates. We give prominence to this more particularly because we have recently seen a similar recommendation regarding apparatus and material exported to Roumania. After the frequent warnings which have been given, we doubt, however, if English manufacturers persist in disregarding such essentials for supplying countries using the decimal system. If they send English sizes, it must be rather with a view to supplying the ubiquitous British traveller. For Java, like other tropical countries, all apparatus and material should be of the finest quality. The wood should be well seasoned. The use of iron should be avoided, if possible, but if otherwise the parts should be plated. The high character of English cameras of best make and the excellent quality of English plates, combined with their stability under adverse conditions, should give our manufacturers the leading position in countries like Java.

* * *

An Improved Glass. It is generally recognised that many kinds of glass are easily attacked by chemical solutions. Some kinds of optical glass will not even resist atmospheric influences. The analytical chemist frequently has to take the instability of glass into account as affecting the results he obtains. For some years past quartz has received attention in the manufacture of glass, and we now read in "Photographische Kunst" that Dr. Heraeus, of Hanau, is using rock crystal for the manufacture on a commercial scale of small flasks and other vessels for chemical purposes. Rock crystal becomes plastic at a temperature of 1,350 deg. C. and at 1,700 deg. C. it

melts. The cost of manufacture is necessarily high, and a small crucible of the size of a wine-glass costs from 15s. to 20s. The work is very fatiguing for the glass-blower, and he cannot remain at it longer than five hours a day. The advantage of these vessels is that they are uninfluenced by any solutions save alkalies and phosphoric acid. They are also very little affected by differences of temperature on account of their low co-efficient of expansion. The crucibles may be made white hot, and then plunged into cold water without risk of breaking. At present the manufacture is confined to small utensils, such as flasks, retorts, tubes, and crucibles.

* * *

Platinum If report is to be believed, there is some prospect of this metal becoming much cheaper, not because any new source of it has recently been found, but because the demand is likely soon to receive a check. Many of us can remember when platinum was about one-fifth of the price it now fetches, and at that time its principal use was for certain laboratory utensils. Platinum dishes of considerable size were used by chemists who had to deal at times with considerable quantities of concentrated acids, for it was the only available metal which would resist their action. And when the price of it suddenly went up with a bound, the hearts of many must have rejoiced in the knowledge that their platinum vessels had become almost as valuable as vessels of pure gold. This sudden rise was due to the demands made by the electricians, platinum being the only metal with the same co-efficient of expansion as that of glass, platinum wires being requisite for sealing into the little glow lamps to make connection with the carbon filament within. And the number of glow lamps now in use in this country alone must be reckoned by millions. It is now reported that a French company is about to exploit a new metallic alloy, which is found to effectually replace platinum for the wires of these electric lamps, while its cost as a raw material is infinitesimal in comparison. The platinum adheres to the glass as if cemented to it, and no metal has yet been found that would behave in exactly the same way. Nor will this new alloy. But used in conjunction with it is a special cement which makes quite as tight a joint, and which is not affected by heat or moisture. If the price of platinum comes down, as it seems bound to do if these anticipations are well founded, photographers will benefit more than others.

* * *

Old types of Lenses. A few years ago the Royal Photographic Society manifested some interest in the

preservation of specimens of old types of lenses, and we believe the nucleus of a collection exists at 66, Russell Square. The rapid disappearance of these interesting instruments prompts us to draw attention once again to the subject. We know what difficulty Dr. Moritz von Rohr has had in endeavouring to find specimens of certain types. The death of old photographers and the dispersal of their apparatus make it increasingly difficult as years pass by to form a complete collection. Unless a serious attempt is soon made to secure these relics, specimens of some kinds will be lost for ever. In the earlier days of photography, English opticians exhibited great fertility of resource in optical construction. Their methods, however, were largely empirical, and we have few, if any, data upon which to work, if we desired to reproduce the lenses. We should be glad to see a small committee formed by the Royal Photographic Society to take this matter in hand. The work might even be extended by providing

means for the preservation of specimens of new types as they appear. Opticians, no doubt, would be quite willing to assist in the formation of such a collection, if it were known that the specimens would be preserved as records of their work.

* * *

Railway Pictures.

No one can reasonably complain that our railway companies are not good patrons of art generally and of photography in particular. At the various stations are displayed by the different companies gorgeous cartoons in colours showing representations of the splendid steamers which they own, together with well-executed drawings of the principal places on their lines of route. All these pictures exhibit evidence of everlasting good weather and smooth seas. The skies are blue, and are flecked with clouds, or are portrayed under the warm influence of sunset effects. The plainest of plain seaside resorts, under this seductive colouring, look as if leaden clouds were unknown there, and as if bathing was a practicable luxury all the year round. As to rain, surely there is no such thing in a country where the sun, like radium, is pouring forth incessant heat. The glare of the desert of Sahara sinks into insignificance beside the wealth of genial sunshine lavished upon the glorious prospect of Felixstowe, Cromer, and Walton-on-the-Naze. It is the same with regard to the works of art which have transformed our railway carriages into picture galleries. But these last are photographs, most of them owing their origin to the Photocrom Company, and real works of art many of them are. Skilful colourists have turned these pictures into a most attractive cross betwixt a photograph proper and the chromo-lithograph; but the beholder knows all the time that the initial work is done by the camera. We feel convinced that these pictures must exert a potent influence in attracting holiday seekers to the places so invitingly depicted. "Where shall I spend my holiday?" asks many a weary toiler as he is daily dragged to town by the suburban line upon which he is a season ticket holder. And then he looks at the photographs and inwardly remarks to himself, "What a lovely place Blankton-on-Sea must be." The bluest of blue skies is spread like a canopy over the place. The cliffs are crowned with a green mantle, and many hued rocks stand out in contrast to a sea shimmering in the sunlight. There is just enough wind to carry along on the bosom of the sea one or two white-winged yachts, and crowds of children are paddling in the shallows. Here is peace, quiet, scenery—all the conditions of an ideal holiday. How different to the water-logged fields and the frowsy brickwork which border the railway on the edge of the modern Babylon! A few weeks later the weary one takes a ticket to Blankton, and arrives there on a wet day. It has been wet for weeks. Perhaps this is the reason that all the colour is washed out of it. It goes on raining and the cliffs, which looked so pretty in the picture, are dull, grey, uninteresting things without a trace of beauty about them. From the lodging house window he looks upon a troubled sea, which is also grey. Everything is grey, and he feels as if Blankton has been destined not only to sow a crop of grey hairs on his unfortunate head, but to bring them with sorrow to the grave. But the beautiful pictures have done their insidious work, and the railway company have pocketed several fares to Blankton.

* * *

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(To be continued weekly.)

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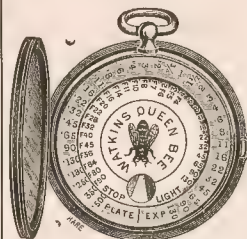
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troubles of boyhood is found in the effort to understand the intricacies involved in the differences between troy weight and avoirdupois weight, and in the assimilation of perches, rods or poles, and all the rest of it. The time taken up in mastering this jargon—and we believe that it is very seldom mastered—might be far more usefully employed in other branches of education. The photographer who has to deal sometimes with an ounce which contains 480 grains, and at other times with one which has only 437½, is only one out of a large number of workers who are perplexed with the chaotic condition into which our methods of measuring have sunk. Our French neighbours more than a hundred years ago made a clean sweep of their own weights and measures, and formulated a most excellent system which has since been adopted by nearly every country in Europe except our own. And by comparison with this metric system, as it is called, our own happy-go-lucky methods are worse than ever. More than this, they represent a distinct loss to our traders, whose price-lists are often thrown aside by Continental buyers for the sole reason that they are not understood. A serious effort is now to be made to make the metric system compulsory in Britain, and it is said that our Colonies are anxious and ready to make the reform directly it has been accomplished at home. A bill is to be introduced early next Session in the House of Lords to forward this end, the first reading to be moved by Lord Belhaven, and seconded by Lord Kelvin. The Upper House is chosen for its introduction because it is thought that the Commons will have their hands pretty full with the Fiscal Question. But it is hoped that sufficient pressure will be put upon the Government to make it their own Bill in the House of Commons. So far as photographers and photographic dealers are concerned in this question, it will be but a slight effort to them to substitute the gramme for the grain. Many works on photography already attach both the English and metric weights to their formulæ, and all laboratory workers use the latter in preference to the former. In certain businesses the introduction of the metric system may lead to much initial expense; but the photographers' wants in the way of measuring vessels and weights are so modest that a few shillings will do all that is needful. We wish all success to the proposed change.

* * *

Surgical Possibilities. We think that we can see a new opening for the pushful photographer in the possibilities which arise from the recent ear-grafting case in New York. Put briefly, the history of the case was this: A rich man lost his ear, how it is not stated, nor does it matter. Perhaps some one boxed it—at any rate it was boxed and buried. He offered the sum of £1,000 to the man who would give him a new ear—or, to be strictly correct, a second-hand ear. The man was found, and also the surgeon who undertook to perform the operation. And so the ear was transferred from one head to the other. The surgeon is naturally elated at his success, and has expressed his belief that if the same system be followed which he adopted in the grafting of this ear, there should be no difficulty in grafting other members such as hands and feet, and possibly legs and arms. If this be the case, of course, the thing will be placed on a systematic basis, and there will be an "exchange"—just like a telephone exchange, when the business can be effected. Any one with a superfluous nose, or other member, will be able at once to turn it into hard cash. On the other hand, anyone minus that, or any other distinctive feature will be able to obtain what he wants according to a fixed tariff.

Of course, a register of plus and minus members will be a necessity, and that register, to be of real use, must be illustrated. It is here that photography will come in. No one would think of buying a nose unless he had some idea as to its size and shape, and in this delicate matter mere verbal description would be of little or no use to him. But if he could see an actual photograph of the member, life-size, while at the same time he received a written guarantee of its performance as a sniffer, he would be comparatively safe. If we could obtain a list of unfortunates whom war and accidents by flood and field have deprived of their birthright in the matter of legs, arms, and minor members, we should see how wide a field of operation there is for such an institution as we suggest. It may be thought that the number of persons who are willing to part with anatomical details must be very limited. But this is not so. We are told on good authority that at many of the Continental hospitals there are crowds of men always in waiting who are willing to be experimented upon by the surgeons for a consideration. Many of these would consent to part with a limb or two if paid properly for the sacrifice. As to the ethics of the business, there would be no difficulty. If they were rats, or guinea-pigs, or frogs, there would go up a howl of indignation, but as they are mere human beings it does not matter.

* * *

More Radium.

"Familiar in our mouths" is fast becoming this word radium, and it seems to be permeating every stratum of human society. Only the other day we were accosted by an aristocratic beggar in Oxford-street, who said, "Excuse me, but can you oblige me with a penny to purchase a morsel of radium." Of course, the poor fellow meant bread, but he had been reading about radium, and his tongue played him false. There are two out of many good reasons why people should have allowed the new element to take such a hold upon them. Firstly, it is the most costly thing ever known, and we are all worshippers of mammon; and, secondly, it is the nearest approach to the philosopher's stone which has yet been discovered. Being worshippers of mammon, that stone, which would have the property of turning copper into gold, would be a most convenient acquisition. But the wonders of radium as recorded in the British newspapers and magazines pale into insignificance when we read some of the marvels recorded of it by trans-Atlantic journalists. Some of these yarns are possibly true, but we have a notion that others of them are due to the exuberant imagination of the perspicuous scribe. One of these gentlemen tells of certain experiments which have been made with radium at the Pasteur Institute in Paris, from which it would seem that even a few milligrams of it will exercise a baleful effect upon animal life. A bag containing five centigrammes of radium chloride was suspended over a cage of eight white mice, father and mother and six little ones, for three days. Nothing happened then, but some time after the radium was removed the mice lost all their hair, except that on their heads; they then became blind, and subsequently they all died. Rabbits and guinea-pigs also died when the fatal bag of radium was placed near them, and even the unhatched chicken in the egg was cut off in embryonic youth. But this is as nothing to what happened when certain larvae, which live on flour, were submitted to the action of the rays. The little worms were placed in a flask exposed to the rays, whilst another family was placed in a similar flask not so exposed, each having a little flour with which to sustain itself. After some weeks it was found that several of the radium-exposed worms had gone to a better world, but

some which had hidden in corners, away from the direct action of the radiations, had survived; but they had "got no forader." They were still larvæ, while the untreated family in the other flask had long ago turned into moths and hatched their eggs into other larvæ. It was as if the growth of a man had been arrested at the age of twenty, while his brothers and sisters went on living for two hundred years or more. This remarkable result opens up wondrous possibilities for experiments upon the domestic baby when radium becomes cheaper. But this is not all. Tadpoles, exposed to the rays for four days, were turned into monsters, which took on "a new form, with an increasing atrophy of the tail, and a curious wrinkling of the tissues at the back of the head; in fact, they may be said to develop a new breathing apparatus, quite different from that of ordinary tadpoles." It is confidently asserted that by the help of radium it will be possible "to produce new species of moths, butterflies, perhaps birds and fishes, by simply treating the eggs with radium rays, the result being that interesting changes will be affected in the colouring and adornment." All this is very interesting, but it must be remembered that the fortunate holder of stock in radium can say what he likes about it without fear of contradiction. Scoffers are powerless if they have no radium with which to parry the conclusions arrived at by their opponent. Unfortunately there seems to be no probability of radium being cheaper, unless some other source of it than pitchblende is discovered. Perhaps now that the "Times" has finished with its "Encyclopædia Britannica" spec—for which relief much thanks—it may see its way to offer prizes for a cheaper source of radium. Until that discovery is made, we must all be at the mercy of the fortunate few who possess any

PHOTOGRAPHIC ADVERTISING.

THE last few years have worked a wonderful change in the methods adopted by traders who advertise their wares in popular magazines or other periodicals. What has long been known as the "displayed" advertisement, consisting of large, small, and grotesque type cunningly interwoven, no longer holds the premier position. The advertisement must be so associated with a pictorial embellishment that it will immediately attract the eye of the casual reader. Skilfully-arranged lettering is no longer sufficient for the purpose, there must be a picture, and the picture must command attention either by its subject, its artistic excellence, or by its comicality. But the comical advertisement is hardly to be commended, for however good it may be, it palls upon one by frequent repetition, and when insisted upon week after week and month after month, it has a positively irritating effect upon the nerves, which is apt to prejudice many people against the article advertised. In fact, it becomes a chestnut, and we all resent chestnuts as stale and flat.

As we glanced lately through the advertisement pages of a popular American magazine we could not help admiring the pitch of perfection to which these trade advertisements are carried by our transatlantic cousins. Nor could we help remarking how largely photography is employed in the work. Some of the advertisements, too, although not actual photographs, are reproduced by the half-tone process from wash-drawings of such artistic excellence that they would not be out of place in the inner pages of any high-class publication.

As examples of these last, let us refer to the advertisements of one or two firms of tailors. We all know what the

usual clothiers' advertisement is like; a row of wooden figures, very like the terrible tailors' dummies which we see in East-end shop windows: lifeless dolls, with clothes fitted upon them without a single crease. But in these pages we find a very different kind of picture. Here is one which is intended to set forth the merits of a certain make of overcoat, and very well does it do so. We see a group of men standing, apparently on the slope of a grand stand at some racecourse, all eagerly watching the progress of something in front of them. The figures are easy and natural in pose, and they look like gentlemen. As a picture we might find fault with the circumstance that each man is arranged in an overcoat of much the same pattern, but of course this is the very object of the composition. We feel convinced that anyone requiring such a garment would be much sooner induced to purchase one after seeing this picture, than he would from dwelling on the beauties of the tailors' dummy. In another advertisement, also advocating seasonable wearing apparel, two men are seen walking up a street, the attitudes being natural, and showing off their coats to perfection. At the same time one would never guess that this was a tailoring advertisement except for the context.

A boot does not seem a promising thing from a pictorial point of view, but one shown here immediately attracts the eye simply because the picture is so beautifully executed as a half-tone block, and so well printed that one can note every stitch as well as the name of the maker sewn upon the tape which projects from the interior of the boot. Here is an advertisement of a cabinet intended for the filing of documents, an elaborate piece of furniture with innumerable drawers of different shapes and sizes, some shut in and others drawn out. We can at once appreciate the construction and working of this piece of apparatus, for the picture before us is a veritable photograph, so well reproduced that the figuring of the grain of the wood is plainly apparent. Another page is devoted to an advertisement of Christmas and New Year's gifts, principally articles of jewellery. These again are photographs from the objects themselves, and we can at once see every detail of the design, while reference letters attached guide us to description and price.

Photography is also used in these advertisement pages in a slightly different way. For instance, a certain compound for cleaning kitchen utensils has for its illustration a photograph of a neat housemaid in the act of polishing up the articles which come under her care. Other advertisements are well illustrated in much the same effective manner.

These photographic advertisements not only form an interesting study to those, who like ourselves are critical in such matters, but they really add to the general interest of the publication in which they appear. This is a distinct gain not only to the proprietors of the magazine but also to readers, who are too apt to resent anything in the shape of an aggressive advertisement thrust upon their notice whether they will or no.

A perusal of these advertisement pages has prompted us to ask the question, "Might not photographers in this country of ours add to their incomes by undertaking to make pictures for this especial purpose?" Of course, it is done by the few, but an examination of the pages of any of our own popular magazines will soon show that the ground is not covered to any great extent. Beyond an occasional photograph of a pretty face, which generally has nothing at all to do with the announcement to which it is affixed, and is merely put in to attract attention, we see little in the way of half-tone blocks—and we are convinced that if advertisers realised the advantages which

accrue from their use, their employment would be as general as they are in the American publication to which we have adverted. The fact is that our American friends understand the art of advertising, and it is an art, much better than we do. They make a study of it, and therefore they succeed where we often fail. A ready example of their skill in this respect is supplied by the familiar word "Kodak." An English firm would never have taken the trouble to invent such a word, but would have been content to use the term "camera" to the end of time. Look at the result of this happy inspiration upon the part of one who had a genius for advertising. Kodak not only stares one in the face from the advertisement pages of every prominent journal, but it assails one on omnibuses, trams, and every other kind of public vehicle. More than this it has grafted itself upon our language, not only as a substantive, but as a verb. Kodak has in fact now such a wide application that its originators have constantly to remind people that it is not a generic term for a hand camera, but should be applied to one manufacture only.

The importance of effective advertising has so impressed itself upon the American mind that schools of advertising are now in the course of formation, and the British Consul at Chicago thought the scheme of sufficient interest and importance to report officially upon it a few months ago. He states in this report that the enormous sums spent upon advertising in all branches of trade in the United States has actually created a new profession, and that the study of advertising as a science is now being taught in special schools.

That something of the kind is urgently required on this side of the Atlantic can be quickly seen if we glance at the advertisement pages of many of our newspapers and magazines. Many advertisers seem to be under the mistaken belief that because they have a certain space to fill, they must positively crowd it with type. In order to get all the matter into the space, the compositor is forced to use small type, and people will not read small type unless it is something of overpowering interest. Instruction in a school of advertising would prevent any trader falling into this error, and he would probably content himself with a word or two in large letters, with his name and business address.

If anyone could possess himself of the money which has been spent in unremunerative advertising he would be the richest man on earth. It will be the aim of the new schools in America to stop this waste of substance and of effort by educating men into the science of advertising. Such a man ought to be able to secure a very large salary as manager to the advertising department of a railway or steamboat company, or of any large house of business. He would be able to so check the results of different systems of advertising, and the medium through which advertisements were brought before the public, that his help in any large business firm would be of incalculable value.

It is not alone the concise wording of the advertisement that has to be considered, but also its effective illustration, and this will depend as much upon the way in which the artist is instructed, as upon the artists' pencil. As we have seen, in the instances given, the illustration is the thing to catch the public eye. And there is another advantage to be considered in the launching of a good pictorial advertisement. If it takes a firm hold of public attention, jokes will be made about it, and as likely as not it will be parodied. In these ways its circulation will be increased perhaps twenty fold, without one penny more to pay by the fortunate advertiser.

But the main point of interest to our own readers will be found in the extensive use that is being made of photo-

graphy in modern advertising, a use which owing to the general employment of the half-tone process block is likely to increase rather than diminish. We feel confident that the photographer who depends for his bread and butter solely upon portraiture, and is often perplexed to solve the problem of making two ends meet, would gain by giving serious thought to this system of advertising. If he can show people that he is able to draw up an effective advertisement and illustrate it in a taking manner he will soon find customers ready to patronise him. It is only reasonable to suggest that when a new application of photography is started photographers should benefit by it. Those who care to take the hint which we have given in this article will be better able than their fellows to laugh at the free portrait and enlargement swindles which are now so rampant in our midst.

STALE DRY PLATES.

I.

Most photographers have experienced the disadvantages of working with plates that have become more or less stale, and with the ultra-rapid isochromatic plates and films that are now being generally used, the proportions of negatives spoilt, or, at least, marred by the use of stale emulsions is considerably greater than was the case a few years ago, although the skill and care exercised by the manufacturers have brought dry-plates to a really marvellous degree of efficiency.

In the larger towns where plates can be obtained from reliable dealers whose sales are large enough to enable them to keep a supply of fresh plates always on hand, the evil of stale emulsions is not experienced to any appreciable extent, but in small towns and villages where the demand for plates and films is limited, the local dealer's stock of plates is often considerably the worse for keeping. One of the chief difficulties a small dealer has to contend with, is the number of brands of plates that are at present on the market, and as each amateur has his own ideas regarding the best kind of plate, the local dealer has to stock the wares of at least a dozen different makers. This aggravates the stale-plate difficulty considerably, as the dealer does not get a fair chance of disposing of his plates while still fresh. The writer has recently been experimenting with numerous brands of plates in the various stages of deterioration caused by stale emulsion. The experiments for determining the effects of staleness were conducted on a batch of several hundred plates of various sorts and sizes, and were already showing symptoms of staleness when purchased by the writer four years ago, and which consequently gave typical but exaggerated evidence of the effects produced by age on gelatine emulsions. If a very stale plate is examined in daylight before development it will be noticed that the edges of the plate are darker than the central portion, and are generally slightly iridescent in appearance. The depth and intensity of this outer band increases with the age of the plate.

All stale plates, however, even when obtained from the same maker, do not present the same appearance before development. In the case of a particularly stale box of plates examined by the writer, the emulsion had changed to a light brown colour without iridescence; this change of colour was visible from the edges almost to the centre of the plate. Another box of the same brand showed strongly iridescent edges of a quarter of an inch in width, the remainder of the plate being practically unaffected.

The foregoing remarks do not apply to orthochromatic plates, as the deterioration in isochromatic emulsion proceeds equally over all parts of the plate, and is not confined to the edges. In this case the staleness is caused by the effects on the emul-

sion, of the dye used in orthochromatising the plate, and is of an altogether different character to that which is now being considered.

Most photographers will have noticed that as a rule the keeping qualities of a plate decrease as the rapidity of the emulsion is increased.

The kind of plates known as process or photo-mechanical, which are much slower than ordinary plates, keep almost indefinitely when stored in a fairly dry place. Next in order come the "ordinary" plates, which will usually produce good negatives several years after manufacture. The most rapid emulsions become stale much sooner than the slower kinds, and last of all come the isochromatic plates, the keeping properties of which are, of course, handicapped by the presence of the isochromatising agent. The writer's experience has shown that an orthochromatic plate begins to deteriorate in a year or even less; a rapid unorthochromatic plate will keep in good



FIG. 1.

Stale undeveloped plate fixed in hypo.

condition for about a year and a half, and an ordinary plate will generally last two or three years without showing signs of fog or flat images. It must be remembered that in the case of orthochromatic emulsions the whole film deteriorates; in the unorthochromatised film only the edges will show evidences of staleness.

The foregoing remarks do not apply to emulsions coated on a film instead of a glass support, as the keeping properties of films are considerably below dry-plate standard.

The effects of staleness on the film of an undeveloped dry-plate, which had been fixed in hypo, is shown in Fig. 1, the edges of which show very plainly the results of age. In this plate the stale edges of the plate resemble a lantern-mask, and the distinction between the stale portions and the rest of the film is very sharply defined. In this box of plates the silver was actually reduced, and, after fixing, the undeveloped plate showed the silver deposit very plainly under the microscope. As a rule, the silver in a stale plate is almost entirely removed by hypo, if the plate is fixed before development. In Fig. 2 the effects of the stale emulsion have given a different result. Instead of affecting only the margins, as in Fig. 1, the plate had a slightly brown tint that extended from the edges of the plate to the

middle, the centre of the film being, of course, less marked than the edges. The illustration shows the appearance of the unexposed plate after being developed for four minutes in pyro soda and fixed. Although no light had reached the film a very considerable quantity of silver was reduced by the developer. A plate from the same box was fixed before development, and all traces of silver disappeared.



FIG. 2.

Stale unexposed plate developed and fixed.

All unexposed stale plates that were tested by development showed granules of silver in the film when the plate was examined by a high-power objective, though in most cases there was not a sufficient quantity of silver to affect the printing value of the negative except at the extreme edges. Figs. 3 and 4 are reproductions of photo-micrographs, showing the appearance of an exceptionally stale plate (probably manufactured about ten years ago). These photographs show the

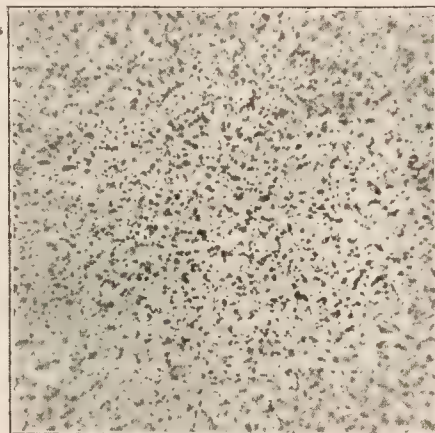


FIG. 3.

$\frac{1}{8}$ obj.

Photo-micrograph of silver granules from the edge of a stale, unexposed plate, developed and fixed.

relative proportion of silver reduced by development in the edges and centre of the plate. The edges of the plate show a very large number of reduced silver granules, but the deposit in the centre is much less pronounced.

A curious feature of the effect of staleness on the silver in the emulsion is that the silver can generally be removed by

hypo, if the plate has not been developed, though to all appearance the film has a considerable quantity of reduced silver at the edges when examined before fixing. As previously mentioned, however, the undeveloped plate will not always give up all its silver when placed in hypo; but, as in Fig. 1, the edges may show a strong deposit after fixation.

From the appearance of the different portions of the plate, when examined under the microscope, it would seem as if a negative taken on a stale plate would be thinner at the centre of the plate, and would increase in density towards the edges, as the microscope reveals a considerable diminution of silver granules from the edges to the middle of the plate. In practice this is not the case. In the stale portions of the negative the image does not develop so strongly as in the centre of the plate, and this counteracts to a considerable degree the extra deposit of silver caused by stale emulsion. Plates which have become stale will generally give very fair negatives if the exposure has been accurately timed, but both under and over-exposure are fatal to good results if the plates have been kept too long. Over-exposure produces a flat, foggy image, and under-

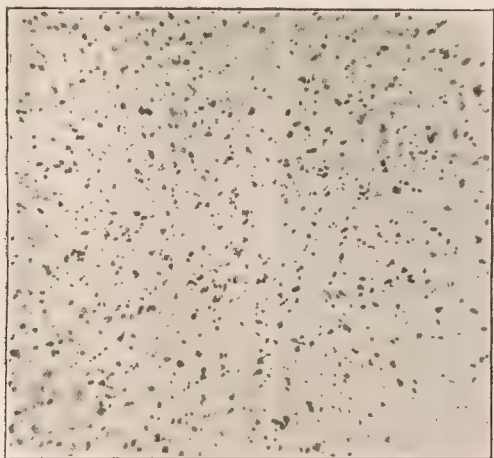


FIG. 4.

Photo-micrograph of silver granules from the centre of same plate.

exposure necessitates prolonged development, which the condition of the emulsion will not allow.

The chief enemy of emulsions, and the one that is the principal cause of stale films, is a damp atmosphere.

Heat without moisture seems to have little effect on plates, and the writer has kept plates stored in a cupboard near a furnace where the temperature was almost constantly at 80 deg. Fahrenheit, for two years with very little loss of freshness at the end of that period.

The greatest deterioration in emulsion takes place in hot, damp days, and the least in cold, dry weather. Amateur photographers, who only work occasionally at their hobby, should take the precaution of storing their plates or films in the driest available cupboard, and this will prolong the life of the sensitive films to a very considerable degree.

The writer had a remarkable experience of the time a plate will keep under suitable conditions. A packet of plates, which had been kept unopened for twenty-two years (dated and signed 1881) was given to him for experimental purposes. These plates were exposed and developed, and gave very passable negatives; the image was rather weak, but there was little tendency to fog, and the plates developed steadily. This box of plates had

been packed with strips of thick paper between the edges of the plates; the plates were thus kept apart from each other. It is needless to say that the plates were not coated with rapid emulsions.

In a recent issue of the Journal of the Royal Photographic Society, Léon Vidal recommends a bath of bichromate of potash for restoring stale emulsions. The plate is immersed after exposure in the camera in a one per cent. solution of pot. bichromate for three minutes, washed well for five minutes, and then developed; the bichromate exercises a retarding influence on development. J. I. Pigg, F.R.M.S., F.R.P.S.

A SUGGESTED PLAN FOR PHOTOGRAPHY IN COLOURS, WITHOUT THE USE OF COLOUR SCREENS.

In bringing forward the following suggestion for photography in natural colours, by a method which would necessitate but a single negative, a single exposure, and no colour screens, except an orthochromatic light filter for taking the photograph, I do so fully aware that the realisation of the plan may be somewhat remote, owing to technical difficulties in the construction of the apparatus. The theory of the method is, however, so simple, and the working of the process would be such a simple one, provided the apparatus were constructed, that I think it may be of interest to bring it into notice and briefly discuss its advantages and drawbacks. My plan may be looked upon as an extension of the Joly process of colour-photography. It differs from it in the following important point. In the Joly process, as is well known, a colour screen ruled with alternate red, green, and violet lines is placed in front of the negative during exposure, and, after a positive transparency has been made, this is viewed in contact with another similarly ruled colour screen. My proposal is to replace the artificial colour screen with its artificial spectra, by real spectra produced optically.

The following diagrammatic sketch of the arrangements will make this clearer:—Let A be an objective producing an image not more than 2 in. in diameter in the plane M. Let G be a grating of 300 lines per inch, situate in the plane M. The opaque interspaces of the grating to be twice the width of the clear spaces. Let B be a second objective, projecting an image of the plane M on the ground-glass screen S, with a magnification of two diameters. Let P be a narrow-angled prism, placed just in front of the grating, of such dispersive power that the spectra which it produces on the screen S of the clear lines just lie next to one another without overlapping.

Provided the image at M were white (or, in other words, only white light fell upon the grating), then the effect of the above arrangement would be to cover an area of four diameters on the screen with a series of contiguous spectra (150 per inch). To the unaided eye this surface would appear of a greyish white. In the diagram, part of the screen is shown covered with these spectra (of an exaggerated width). Now suppose for a moment that another grating of 150 lines per inch were laid over the screen, the lines being parallel to the spectra. Then each line of this grating would cover up the same portion of each successive spectrum and the whole field would appear to the eye of some uniform colour. If, for example, the lines covered up the red portion of each spectrum, then the field would appear in the complementary colour to red, viz., green. If the number of lines of the grating laid over the screen do not exactly correspond with the number of spectra, a comparatively quite long spectrum can be visually produced, because then the successive black lines do not block out exactly the same portions of spectra, but successive portions.

The production of this long composite spectrum, consisting of some hundreds of portions of the narrow spectra, is a rather striking experiment. However, this blocking out of spectra on the ground-glass screen by means of another grating has only been mentioned by way of illustrating the principle, and we can now consider the actual process proposed. If the screen is replaced by a photographic plate and a suitable orthochromatic filter, placed in front of the lens A, and a photograph be taken of, say, a blue flower on a white ground, the result would be that the image of the flower would be represented on the plate by the blue portions of the spectra only, and on development these portions would be darkened in the negative. Now let a positive transparency be made from this negative, and let it be placed in exactly the same position as the original negative. Remove the orthochromatic filter which was used, place some source of light at the focus of the lens A, so that the grating G is illuminated with white light, and spectra are produced in the plane of the transparency. Then we should find that the dark portions of the positive just block out all portions of the image of the flower except the blue, and to the unaided eye it would appear in its natural blue colour. It can readily be seen that composite colours, however complex, would be produced just as readily; for, provided the orthochromatic filter used was a suitable one, the colours would affect the different portions of the spectra

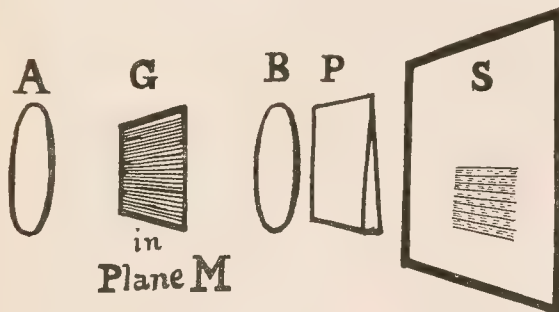
colour, would require to be placed in an apparatus, viz., the camera itself.

The advantages are summed up in the fact that: (1) We should have the maximum of simplicity in working the process, for it would be the same as that for making ordinary transparencies, without any additional labour. (2) Without employing colour screens, the colours would be produced by a natural optical method, securing greater fidelity of result, because the colours would be analytically correct. If it should be possible at a future date to produce paper ruled or printed with imitation spectra, as fine as 150 per inch, and the paper coated with ordinary emulsion, for contact printing, then any number of colour prints could be made from the original negative, in the ordinary way, and we might expect to see the day when amateurs could produce passable photographs in natural colours as easily as they now do ordinary photographs. In conclusion, I may mention that I have only been able to make experiments so far as concerns the visual production of colours by the method described of laying a grating on the ground-glass screen. Should this article lead any one to follow up the suggestions made, it will have achieved its purpose.

JULIUS RHEINBERG.

HOW TO MAKE PARALLAX STEREOGRAMS.

[From the "Journal of the Royal Photographic Society."]



on the plate, just in proportion to the actual intensity of the separate spectrum colours of which they are composed.

A few words as to certain practical points. The grating used would require to be made with the dark interspaces perfectly opaque. The orthochromatic filter used would require to be such that a photograph of the spectrum gave a deposit on the plate equal in density throughout its entire length. It would differ, therefore, from the usual orthochromatic filter, which is made to fulfil the condition that the deposit on the plate shall correspond to Maxwell's colour curve of visual luminosity. In viewing the photograph, a finely ground glass screen or other light-diffusing medium would have to be placed in contact with the film side of the positive, as otherwise the object would only appear correct in colour when viewed from one particular point. In place of using the prism P along with the lens B, a suitably decentred lens, without any prism at all, would probably do equally well.

We can now discuss the advantages and disadvantages if the system be properly carried out. The latter appear to me to be:—(1) The photographs would, just as in the Joly process, be less bright than ordinary ones, as a surface produced by a series of narrow spectra is necessarily less bright than a surface white all over. (2) As the optical system is essentially the same as that of a telescope, the field of view would be comparatively small. (3) The photograph, in order to be viewed in

The parallax stereogram photograph consists of a single transparent image divided into lines (100 to 150 to the inch), alternate lines forming one of a stereoscopic pair of images, and the intermediate lines forming the other image, so that it has the appearance of a pair of stereoscopic images mechanically superposed. In order that each eye may see only the lines belonging to its respective view-point, the photograph is covered by a line-screen, with a definite separation from the surface of the photograph, such that lines of the photograph covered by screen-lines to one eye, are seen by parallax of vision by the other eye. The combination of the photograph and line-screen in suitable adjustment constitutes the parallax stereogram, which, when viewed from a suitable distance, directly in front, shows the objects in perfect stereoscopic relief.

The simplest method of making the parallax stereogram photograph is by means of a camera having at the front a single plano convex lens of about 3 in. in diameter, behind which are two small openings about $2\frac{1}{2}$ in. apart in a horizontal plane (Fig. 1), so that an image is formed from two view-points, corresponding to the separation of the eyes. The image thus formed may be a perfectly sharp single image of objects at some one distance from the camera, but then objects at every other camera distance will form two images laterally displaced and superposed, exactly as in two ordinary stereoscopic images mechanically superposed. It is then only necessary to cover the sensitive plate with an opaque line-screen suitably adjusted with reference to the spacing of the lines, separation of view-points, and camera extension, in order that the light coming from the two camera apertures may form separate images in juxtaposed lines. A transparency from the negative thus obtained is then covered by a line-screen with adjustment like that in the camera, and viewed from a point corresponding effect of an ordinary double stereogram in the stereoscope. to the position of the lens apertures, in order to produce the If, however, these conditions are strictly adhered to, the result will be pseudoscopic instead of stereoscopic, just as in ordinary stereoscopic photography the result is pseudoscopic before the images are cut apart and transposed. The stereoscopic effect is obtained by shifting the cover-screen laterally the width of

one screen-line, but with the result that the perspective is distorted when a moderately-large angle of view is included.

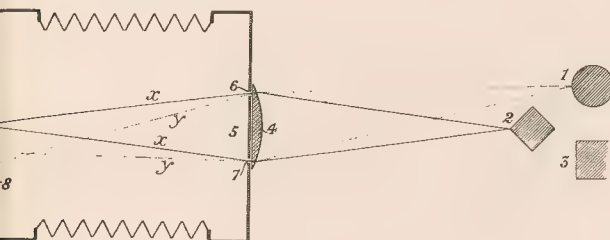


Fig. 1.

In order that the path of the rays to or from every part of the stereogram may be absolutely identical in photographing and in viewing, the image formed through each aperture in the camera should be laterally inverted, so that the two pencils of light belonging to near objects bisect before reaching the screen, and pencils from far objects after passing through it. This may be effected by placing laterally inverting prisms in front of the lens apertures, as shown, for instance, in Fig. 2,

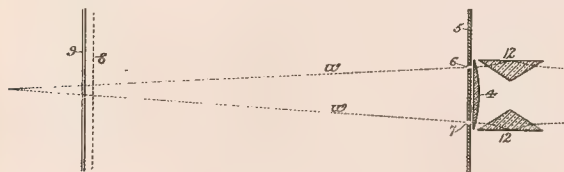


Fig. 2

in which w represent the path of rays coming from an object more distant from the lens on one side than the screen and sensitive plate on the other. With this arrangement the objects will be seen laterally reversed, unless photographed in a mirror, but in other respects the results will be much better than without the inverting prisms.

The employment of the inverting prisms also permits of dispensing with the large lens. The fact that the prisms may be so disposed as to direct the two pencils of rays towards the axis of the camera in the same manner as the prismatic edges of a single lens, permits of the use of two separate lenses (Fig.

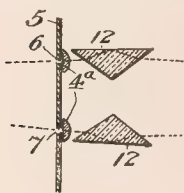


Fig. 3.

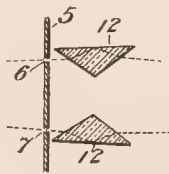


Fig. 4.

3), or even of "pin-hole" apertures without lenses (Fig. 4), and this method of controlling the parallax independently of the focal length of the lenses possesses certain practical advantages. Objects can be photographed so as to appear to be at the plane of the photograph, or within or beyond it, at will. When the arrangement shown in Fig. 3 is employed, it is advantageous to have pairs of lenses of various foci, in order to keep to one camera extension, and owing to the small size of the apertures, simple lenses may be used.

The most perfect screen I have used for this work is a one-hundred lines to the inch uncovered Levy single-line screen (made to order) with "hard filling," and opaque lines twice as

broad as clear spaces. A card-mat separator is used, and the sensitive plate pressed flat by a thick plate-glass at the back in the dark slide. The requisite thickness of the card-separator depends upon the camera extension, etc., and can be readily calculated.

The cover-screens for the parallax stereograms are made by contact printing on transparency plates, from a negative made by contact printing from the original Levy screen, and intensified by mercury and ammonia. The lines should be quite opaque, and the spaces perfectly clear, and, while good enough for this purpose, such screens are not good enough for use in making the negatives.

Owing to the fact that neither the transparencies nor the cover-screens are ordinarily flat, it is necessary, in mounting them up together, to use a third glass, convex side (preferably ground, against the back of the transparency, and to exert sufficient pressure in the binding to make the inside faces parallel. It requires considerable skill to make these adjustments perfectly, but with practice it can be done very quickly.

Other means for making parallax stereogram negatives suggest themselves, but the other methods described possess certain advantages, and are, perhaps, the most interesting.

F. E. IVES.

Mr. J. W. Swan said he should like to congratulate Mr. Ives on another very ingenious contribution—one of many—to photographic progress. Mr. Ives' name came to the speaker's mind when the first paper was read the ground traversed by that paper had been so completely gone over by Mr. Ives in the past. He felt that Mr. Ives was really the true teacher of the principles laid down in that paper. They now owed to him a new debt. He had never seen anything more vivid and beautiful in stereoscopic effects than that produced by the simple and ingenious apparatus exhibited. Mr. Ives' new stereoscope had the great merit of enabling the stereoscopic image to be seen without visual effort.

After some further remarks of a congratulatory nature from those present, Mr. Swan, continuing, said that the paper and the exhibit reminded him of that by-gone time when gigantic lenses were in common use in photographic studios; when letters were appearing in the *Times*, from the pen of Sir David Brewster, severely criticising the pictorial characteristics of the photographic portraits of that period. Sir David spoke of the photographic portrait taken with large lenses as a monstrosity composed of an infinite number of superposed incoincident images, and he contended that photographic portraiture would never be natural until portraits were taken by lenses no larger than the pupil of the human eye. At that time such an increase of sensitiveness of the photographic surface as would make that practice possible was then far beyond reach, and seemed unlikely of attainment. Meeting as they did that day, and having the former state of things recalled to their memory, they might well rejoice in the progress made in the immensely-increased sensitiveness of the photographic plate which had enabled lenses to be used as small as, and even smaller, than the ideal lens of Brewster's imagination. Brewster would also have rejoiced as they rejoiced in the very general improvement in lens construction achieved during the fifty years the completion of which they commemorated that day.

[The parallax stereogram shown by the author of the paper at the Exhibition of 1902 was exhibited during the reading of the paper.]

WE regret to record the death of Mr. William Butcher, of the firm of Messrs. W. Butcher and Son, dealers in photographic apparatus, which took place on Monday week at Hastings, where he had been staying for some time.

REDUCERS.

In a recent letter on persulphate for reducing negatives some objections are made to ferricyanide on the ground of its causing stains and eating away shadow detail. These defects are not inherent in the reducer, but in the methods of using it. When negatives are free from pyro no stain is caused; but if they are taken straight from an old fixing bath contaminated with pyro, and placed in ferricyanide, stains are sure to be caused, and they seem almost incapable of being removed, although some of the stain disappears in the subsequent washing. If a negative is to be reduced with ferricyanide, it should be washed after fixing for at least five minutes, to remove hypo solution containing developer, and if pyro has been used the washing should be longer; and in all cases fresh hypo should be used for making up the reducing solution. After reduction the negative should be fixed again for half a minute in order that any undissolved ferrocyanide of silver may be cleared away. I have used the Howard-Farmer reducer for many years, and always keep some of it ready in the dark-room. My method is to put half a pound of ferricyanide into an old pyro bottle, which is filled up with water and occasionally shaken. This forms practically a saturated solution. This method may not be very scientific, but in my hands it answers very well, and I have used it for ten years and more. When a negative has to be reduced, a few crystals of hypo are put into a dish, and, if the weather is cold, some warm water is poured over them. (At this time of year I always have some warm water handy in the dark-room.) Some of the saturated solution is poured into the dish, the amount being regulated by the nature and amount of reduction desired. If the negative is too dense, and likely to produce a hard print, the reducing solution is used very strong, and the amount of hypo, at the same time, is made proportionate. The water-tap should be turned on and the dish of solution kept close to it, the negative is plunged into the reducer and rocked vigorously for three or four seconds, then snatched from the dish and held under the tap, before being examined for density. It will be found that the high-lights have been reduced in greater proportion than the shadows. The latter, as a rule, do not appear to have been affected at all, and the result is a reduction of contrast. This method is rather heroic, and there is certainly some danger of unequal reduction, but experience and practice, as in all other photographic manipulations, will make the process easy and safe. The reduction seems more certain if the negative has not been dried, and it is not necessary that it should have been thoroughly washed, but the greater part of the fixing solution should have been removed from the film. If it is necessary to reduce a negative that has been dried or even varnished it can be done, but the *whole* of the varnish must be removed and the film softened by soaking, for an hour or so, in water. After reducing in this way it is advisable to refix the negative, to remove any ferrocyanide of silver that may be undissolved.

When the negative is not hard, but too dense generally, so that it would print slowly, the same reducer will put matters right, but it should be used a great deal weaker, and the operation will take perhaps a minute or more. A general reduction of density then seems to take place, lights and shadows in about the same proportion. The negative should be removed from the dish from time to time during the process, and rinsed under the tap and examined for density. It is probably not necessary to refix after this method.

Sometimes it is necessary to reduce the shadows of a negative without touching the high-light, as, for instance, a copy of a line-drawing in which from over-exposure the fine lines are obscured. Again the ferricyanide comes in, but it must be very diluted this time, and the process may take three or four

minutes. Now, the shadows seem to be reduced most, and the high-lights appear to be affected but little, if at all. The same strength of solution is very useful for clearing lantern slides, especially when carbonate of ammonium has been used in the developer, as it sometimes leaves a brownish yellow deposit all over the film. This will generally yield to the weak reducer, without affecting the general density of the slide, in any appreciable degree. I usually judge the strength of the solution by its colour: not very scientific, again; but, fortunately, photography, like tailoring, has not yet been reduced to the level of an exact science. I should not advise any one to make a first attempt on a valuable negative, but to experiment with a few wasters, for if other photographers are like myself they will have plenty to work upon.

But perhaps my chief use of the Howard-Farmer reducer is for local reduction, and here I think it is without a rival. For this purpose it should be used neither so strong as to act very quickly, nor so weak as to reduce slowly. It is not suitable for very small spaces; Globe metal polish and wash-leather is better for them. But for fairly large patches it is excellent, and may be applied with a camel-hair mop or a tuft of cotton-wool. For my own part I prefer the fingers, using three fingers for large patches, two for smaller ones, and one finger for smaller still; cotton-wool sometimes leaves streaky marks, and puts on so much solution that it runs where it is not wanted, but the fingers do not leave streaks and put on just enough, and not too much. During the process the negative must be rinsed every few seconds, and the progress of the reduction examined. This method is useful for emphasising some principal objects by reducing the strength of more subordinate ones, and so on, for removing halation in interiors, and for taking down the harsh whites in landscapes, where a piece of road runs out at the bottom of the negative, and for a host of other things. Then it has another use, for removing those iridescent stains that appear when plates are stale and have been developed with ammonia; for this purpose it may be used so weak that it will not affect the image. The reducer that has been used for plates will remove those nasty stains that come on dishes that have been used for pyro and ammonia. In fact, to parody the well-known puff, no dark-room is complete without it.

HAROLD BAKER.

THE DEPOSITION OF FOG BY ELECTRICITY.

At a recent meeting of the Midland Institute Scientific Society Sir Oliver Lodge, Principal of the University of Birmingham, gave a most interesting demonstration of the deposition of smoke and fog by means of a discharge of electricity. He began by saying that the usual definition of fog, mist, or cloud, as vapour of water floating in the air, was incorrect, and that a better definition was "particles of water falling through the air," although the rate of falling was very slow, and sometimes checked by upward currents of air. An ordinary land fog might be described as a perspiration of the earth. Some twenty years ago Sir Oliver began his experiments at Liverpool, and found that if a warm rod was placed in a box filled with smoke, a clear or dust-free space was formed round the rod, and streamed upward above it. The early experiments were made with an ordinary cigar box, with a glass end, and filled with cigar smoke. A discharge of electricity was found to make the particles of smoke fall and leave the air quite clear. A practical demonstration was then given by filling a glass shade with the dense white smoke of burning magnesium, a current from a machine with two revolving glass plates was then discharged from a rod inside the shade, and in a few seconds the smoke became violently agitated, and condensed in white flakes on the sides and base of the glass shade, leaving the air

within quite clear. Sir Oliver Lodge then described how he had a tall mast fixed at the top of a high building in Liverpool, connected with a powerful electrical machine, and then waited for a fog to come. It was a long time before a sea mist appeared, and then he was away from Liverpool, but his assistant at once set the machinery to work, and found that a clear space of fifty to sixty yards was formed round the mast, and the fog was seen to be rolling in from all sides.

Sir Oliver Lodge brought the subject before the Dock Board, and suggested that it should be tried in the Mersey, especially on stationary light-ships, which would be able to keep an area clear of fog round them; but before anything was settled he left Liverpool for Birmingham, and the matter dropped.

There were, of course, practical difficulties in the way, one of them being the delicacy of the machinery for producing the current, and another the difficulty of insulating a current of such intensity as three million volts. The only practical means of producing such a current on a scale sufficient to have any effect was to use an alternating current, and then by means of a transformer raise the voltage to the necessary intensity, but an alternating current is useless for depositing fog. And there the matter rested for some time. When, however, the Cooper-Hewitt mercury-vapour lamp was invented, it occurred to Sir Oliver that by its means he could separate the negative and positive electricity and send them in different directions. A battery of small Cooper-Hewitt lamps was fitted up, and a high-tension alternating current was sent through them, and one pole was connected to the discharging rod in the bell jar of smoke, and the smoke was quickly deposited in flakes as before. A really practical method has, therefore, been evolved of depositing fog, but whether its use on a large scale is feasible is a question yet to be answered. The arrangement of a battery of mercury-vapour tubes for separating the poles of an alternating current is very ingenious. The current alternated from positive to negative three hundred times per second. The large Cooper-Hewitt lamp exhibited was extremely interesting. It gave a line of light four feet long, each half-inch of which appeared as brilliant as the ordinary arc-lamp used for street lighting, and the amount of current used was very small, being only three amperes. Unfortunately, the effect on the faces of the spectators is very ghastly, and resembles that of the sodium flame—an experiment most of us have probably made at some time or another. If any photographer wishes to see what his sitters would look like he has only to put a handful of salt in a saucer, pour some methylated spirit over, and take it in the dark-room and light it. A piece of vermilion sealing-wax looks like a bit of lead, and the faces with bright complexions look especially deathly. But for process work and printing such a light would be wonderfully cheap and very efficient.

Would it not be possible to devise an enlarging light with such a lamp by using a long glass tube somewhat in the shape of a gridiron, to illuminate the whole of a negative, and so avoid using a condenser? An enlargement from a portrait negative with a condenser is far inferior in its values to one from the same negative by daylight, the amount of the objectionable "working up" on the print in the latter is extremely small, so as to become little more than spotting. Such a lamp ought not to be expensive to make and to maintain. I beg to offer the idea to any one who feels inclined to try it.

For portrait work some means of introducing red into the light is necessary, unless friends of the sitter and all mirrors are removed from the studio. But as the light is so powerful the introduction of red into translucent screens ought to have but little effect on the actinic power of the light.

A STUDIO WORKER.

SOME POST-CARD STORIES.

[From "The Picture Postcard."]

SEEING how largely picture post-cards now enter into daily life, it would be strange if they were never connected with curious happenings, or the causes of comedies, or even the players of a part in tragedies. And, as a matter of fact, they have contributed so often to the material of real dramas that there is no need to draw upon the imagination for stories of thrilling human interest connected with cards. I propose, therefore, to draw on my stores of newspaper reports for the few stories I have space to tell; needless to say, they are all facts from real life.

My first story may be called a comedy, though it was by no means comical, but doubtless very painful for the chief persons concerned. It is about a young Italian couple and a bold, bad photographer. The lady was the daughter of a well-known Genoese painter, and she was engaged to be married to a rich and doubtless handsome young gentleman. Naturally enough, our fair heroine wished to have her portrait taken, and went to the studio of the photographer—the villain of the piece. Perhaps "villain" is too strong a word, and so we will call him the evil genius, for he did not intend to harm his sitter, although he was the cause of the trouble. It seems, then, that the young lady, who was very beautiful, made such an exquisite portrait that he reproduced her on and as picture post-cards. These were so pretty that very soon all Genoa was full of them. The consequence was disastrous, for the family of the hero so strongly objected to his marrying a "post-card girl" that, after several painful scenes, the match was broken off. The photographer contended that the young lady gave him leave to have her portrait reproduced, which she, of course, denied. Whether or not he had played on her vanity and really got her permission, is not for me to suggest; I only know that human nature is weak, that beauty is a fatal gift, and that the pretty lady lost her lover. Sordid truth compels me to add that this very modern young lady sought consolation to her wounded feelings by promptly suing the offending photographer for the substantial sum of £3,000 "as and for liquidated damages." Whether or not she got it, or any part of it, deponent cannot tell; all I can say is, she deserved compensation of some sort for her trouble and loss—perhaps she had her revenge by subsequently marrying the photographer!

My next story is a true tragedy of a post-card, for it embraces all the elements of love, elopement, theft, murder, and suicide. In the early part of this year, Friedrich Arndt, a book-keeper, of Magdeburg, stole £1,000 belonging to his employers. Most of this money he spent in presents for his pretty sweetheart, Elsie Senders. When the funds began to dwindle he persuaded Elsie to accompany him to Berlin, where, under an assumed name, they would begin a new life. They took a room at a well-known hotel in the centre of Berlin, and registered as "Herr Schneider und Frau." Unfortunately, "Frau Schneider" could not deny herself the pleasure of writing a picture post-card to some of her friends in Magdeburg. This put the police on the track of the errant couple, and one morning Arndt, or "Schneider," noticed that the police were in the hotel. When the guardians of the law approached his door, he put a revolver to the temple of poor, misguided Elsie, and shot her. He then killed himself. Elsie was just able to tell the story of the tragedy before she died. Alas for Elsie, alas for Frederick, and alas for poor human nature! It is a sad story, and the only detail which differentiates it from dozens of similar tragedies, is the simple fact that a picture post-card was the immediate cause of the dénouement of the tragedy.

Among other crimes connected with post-cards, I remember the case of a foreign criminal who was arrested in the town to which he had fled by a policeman who recognised him through having seen his portrait on a post-card. Quite recently, the Armenian who murdered three of his compatriots, and then committed suicide, was identified by the assistant at a shop where he had bought a picture post-card just before the fatal deed. Less tragic, but very painful to the Royal Family of Belgium, must have been the post-cards offered by hawkers outside the Cathedral of Brussels after the requiem mass for the repose of the soul of the late Queen of

the Belgians. These cards bore portraits of the King and Queen and their children, and the hawkers, making capital of the well-known family disagreements, cried: "Buy what no one has ever seen, the Royal Family reunited."

HAL HALIDAY.

THE LATE MR. MARSHALL WANE.

MR. MARSHALL WANE, the well-known photographer, passed away suddenly, but very peacefully in his sleep, at his residence, 7, Holborn Terrace, Glasgow, on Monday, 14th December. He was in good health almost to the day of his death, which was most unexpected. Mr. Wane was born in 1833, and thus was seventy years of age. He was devoted to his profession, and first began to photograph in 1852 as an amateur, when he was nineteen years of age. Self-taught from the beginning, and always very ingenious, he made his first camera out of a cigar-box, and a lens out of a mustard tin, and a magnifying glass. As is usually done by amateurs, he experimented on his friends in the garden, with a blanket as a background; when it rained an umbrella was put up. The only time the young amateur had was during his lunch hour, and he was often so engrossed in his work that he had to run all the way to the office—two miles away. These early attempts were glass positives, only a few inches in size. Rapidly becoming proficient, there was such a demand from friends for portraits made by the new art, that all his spare cash was spent in photographic material; so a small charge was made to cover expenses. The money thus made was put into a child's earthenware money-box, which had to be broken when filled. Full in a very short time, it was found to contain sufficient to purchase an up-to-date outfit from London. This was done, and with superior appliances his work so much improved, and was so much admired, that he decided to start business as a professional. Accordingly, he began in 1854, at Knutsford, and, successful from the start, was enabled to build a studio in Douglas, Isle of Man, in 1858, where he remained twenty-three years.

Married in 1861, Mr. and Mrs. Wane's married life has been an ideal one. Up to a year ago, Mrs. Wane has always been associated with Mr. Wane in the business, and was nearly as well known to their clients as he was—in every sense of the word she has been his "partner" through life, and her woman's wit and good advice has proved invaluable on many occasions.

In 1879 Mr. Wane was induced by the late Lord Loch, who was then Governor of the Island, and several influential friends to go to Edinburgh, where he remained until 1902, when he received an offer for his business by a company which he accepted. In the following year he opened a studio at 518, Great Western Road, Glasgow, with a view to leaving it to his two sons, after giving them the benefit of his well-known name; also his invaluable advice and experience. He had just accomplished his last wish, "To give his boys a fair start," when he was called away. The business will be carried on under the name of "Marshall Wane" by his two sons, Mr. H. P. Wane, a medallist and technical expert, and Charles Marshall Wane. Mr. Wane, fond of all outdoor sports, was a good swimmer and a capital shot, and could cycle his fifty miles a day easily; he was the oldest cyclist in Scotland, having been one for nearly forty years. He could play a good game of billiards, and was fond of a game of whist. He was very fond of reading. Mr. Wane was known by a large circle of friends, and to quote one of them—"To know him was to love him and esteem him."

THE KEARTON NATURE PHOTOGRAPHS. — We understand that the Brothers Kerton have arranged to hold an exhibition of enlarged photographs of birds, beasts, reptiles, and insects, at the Modern Gallery, Bond Street, W., from the 2nd to the 12th of January inclusive. The Gallery will be open from 10 a.m. till 9 p.m., and Mr. R. Kerton, F.Z.S., will deliver limelight lectures to children each afternoon, and to adults in the evening.

WHAT PHYSICAL CHEMISTRY HAS DONE FOR CHEMISTRY.

[Abstract of a paper read before the Chemical Section of the Franklin Institute.]

PHYSICAL chemistry has furnished us with several generalisations which have greatly modified our methods of dealing with chemical phenomena. Among these may be cited the Theory of Electrolytic Dissociation, the Law of Mass Action, Faraday's Law, the basis of chemical valence, and the Phase Rule. Of these generalisations time will permit us to consider only one or two, and we can only make a few applications of the most important of them all—the Theory of Electrolytic Dissociation. A word or two in reference to the origin of the theory:—

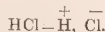
Osmotic Pressure.—When a solution of any substance is brought in contact with the pure solvent, or with a solution of different concentration, at the surface of contact of the two solutions there exists a pressure which tends to drive the dissolved substance from the region of greater to the region of lesser concentration. This is known as osmotic pressure. The first to measure the magnitude of this pressure was the botanist, Wilhelm Pfeffer, who found that salts gave a greater osmotic pressure, for equivalent concentrations, than solutions of substances like cane sugar.

Origin of the Theory of Electrolytic Dissociation.—It remained for Van't Hoff to point out that the electrolytes in general—acids, bases, and salts—exerted a greater osmotic pressure than the non-electrolytes. He also showed that osmotic pressure is a property which depends only upon the number of parts of the dissolved substance in a given volume of the solvent, and not upon the nature of the parts. Since osmotic pressure depends only upon the ratio between the number of parts of the dissolved substance and the number of parts of the solvent, and since electrolytes exert an osmotic pressure that is greater than can be accounted for on the basis of the existence of these substances in the molecular condition, we are forced to the conclusion that the molecules of electrolytes are broken down in solution into parts. These part molecules are called ions.

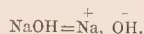
I cannot take up here the evidence bearing upon the theory of electrolytic dissociation, since it would lead much too far. Suffice it to say that the experimental evidence, as far as it has been established in a trustworthy manner, is practically unanimously in favour of the theory, and the amount of such evidence already at hand is simply overwhelming. The theory of electrolytic dissociation is as well established as most of our laws in science, and is to-day almost universally accepted by the leading chemists and physical chemists throughout the world.

Neutralisation of Acids and Bases.—Let us now see what the theory has done for chemistry. Here again we can take up only a few of the many applications of this most important generalisation. Take a class of chemical reactions that are more or less familiar to every one—the neutralisation of acids and bases. It has long been known that when an acid is brought in contact with a base, both are neutralised, and when the solution is evaporated a salt is obtained. Since a different salt was obtained with every acid and base employed, we had as many new phases of the problem of neutralisation as we had acids and bases to react.

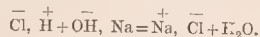
This whole subject has been beautifully unified and simplified by means of our theory. Take the neutralisation of hydrochloric acid with sodium hydroxide. Hydrochloric acid in dilute solution is a mixture of hydrogen ions and chlorine ions:—



Sodium hydroxide in dilute solution is a mixture of sodium ions and hydroxyl ions:—

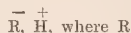


When these solutions are brought together we have:—

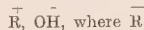


What takes place and all that takes place in the above case is the union of the hydrogen ion of the acid with the hydroxyl ion of the base, forming a molecule of water. The anion of the acid, chlorine, and the cation of the base, sodium, remain after the process of neutralisation in exactly the same condition as before neutralisation.

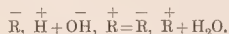
took place, and a salt is formed only when the solvent which dissociated the salt into its ions is removed. We may now discuss the subject of neutralisation in general. We may represent any acid by:—



is the anion, which differs in composition for every acid, and the cation hydrogen which is common to every acid. Similarly, we may represent any base by:—



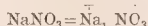
is the cation of the base. Its composition varying with every base, and hydroxyl is the anion common to all bases. When any base reacts with any acid, we have:—



Water is always formed, and the anion of the acid \bar{R} , and the cation of the base $\overset{+}{R}$, remain in the solution after the process of neutralisation in exactly the same condition as before neutralisation took place. In order to obtain the salt the water which holds the ions apart must be removed.

Neutralisation, then, in terms of our theory consists in the formation of a molecule of water from a molecule of the acid and a molecule of the base, and in nothing else. One process of neutralisation is, therefore, exactly the same as any other process of neutralisation, regardless of the nature of the acid or the nature of the base involved. If this is true it is very important, since it refers all the processes of neutralisation to a common cause—the union of the hydrogen ion of the acid with the hydroxyl ion of the base.

Thermoneutrality of Salts.—Another application of the theory of electrolytic dissociation in thermochemistry is interesting and important. It has long been known that when dilute solutions of neutral salts are mixed there is no thermal change—heat is neither liberated nor absorbed. This is the well-known law of the thermoneutrality of salts. While the fact was established beyond question, and various suggestions had been made to account for it, it was generally conceded that no one of these was at all satisfactory. The explanation to-day is very simple. Take the two salts, potassium chloride and sodium nitrate; a dilute, aqueous solution of potassium chloride contains only potassium ions and chlorine ions; a dilute solution of sodium nitrate contains sodium ions and nitric ions.



When the two solutions are mixed we have in the mixture potassium and sodium cations and chlorine and nitric anions, and nothing else. In a word, we have exactly the same ions in the mixture as in the solutions before they were mixed. There being no chemical change, there should be no thermal change, and such is the fact. The law of the thermoneutrality of salts could have been predicted from the theory of electrolytic dissociation, had it not been discovered long before the theory was discovered.

HARRY C. JONES

THE Nottingham Camera Club's exhibition will be held in the Mechanics' Lecture Hall, Nottingham, on Wednesday, Thursday, Friday, and Saturday, March 9th, 10th, 11th, and 12th, 1904.

ROYAL Photographic Society.—On January 5th, 1904 (Tuesday), the first of the series of Practical Demonstrations of Printing Processes will be given. The subject will be Silver Printing by Mr. Henry W. Bennett. Synopsis—(1) Type of negative. (2) The choice of a paper. (3) Storage of paper and prints. Printing:—General precautions—estimating, correct exposure, etc. Preliminary washing and toning. Choice of a toning bath. Precautions necessary to ensure successful toning. Estimating final colour. Fixing and final washing. Causes of fading. Aids to permanence. Mr. J. T. Ashby will occupy the chair.

Commercial & Legal Intelligence

MR. PHILIP G. HUNT has taken larger premises at No. 100, Deansgate, Manchester, and invites the wholesale, and trade, to send for samples and prices of collotype, plain and coloured, also real photograph post-cards, which are executed from his own or customers' originals.

ELITE PORTRAIT COMPANY, LIMITED.—The above-named company has been registered with a capital of £1,000 in £1 shares. Object, to adopt an agreement with E. I. Davis for the acquisition of the business of the Elite Portrait Company, of 267, High Holborn, and to carry on the business of manufacturers of and dealers in photographic material and apparatus, photographs, pictures, prints, and engravings, publishers of works of art, photographers, etc. No initial public issue. E. I. Davis is the first managing director, with power to appoint other directors. Remuneration of managing director, £350. Registered office, 267, High Holborn, W.C.

CAMPBELL-GRAY AND EDWARDS-DUNCAN, LIMITED.—The above-named company has been registered with a capital of £3,000 in £1 shares. Object, to adopt agreements (1) with A. J. Campbell and C. E. Gray, and (2) with P. T. Edwards and C. W. W. Duncan for the acquisition of the businesses of photographers, process block makers, dealers in photographic materials and etchings, art publishers, illustrators, designers, draughtsmen, engravers, etc., carried on by the said A. J. Campbell and C. Gray at 17, Cheapside, E.C., and by the said P. T. Edwards and C. W. W. Duncan at 173, Fleet Street, E.C., and to carry on the said undertakings. No initial public issue. The first directors (to number not less than two or more than seven) are A. J. Campbell, C. E. Gray, P. T. Edwards, and C. W. W. Duncan. Qualification (except first directors), £500. Registered office, 17, Cheapside, E.C.

MR. JAMES A. SINCLAIR, of 54, Haymarket, London, S.W., writes: "Some few weeks since, when announcing to you my resignation as Manager to Messrs. Ross, Ltd., of Cockspur Street, S.W., I mentioned that I was inaugurating a new business at 54, Haymarket, S.W. The extensive and necessary alterations to the building are now complete. The policy which I have pursued in the past, of only recommending articles of undoubted quality and reputation, will be maintained, and I shall always be glad to help customers with advice regarding any of their requirements. The Departments of my new firm will be as follows:—Photographic Materials: The usual photographic sundries and chemicals will be sold at lowest prices. A speciality will be made of hand cameras, by the leading makers, at prices ranging from £1 to £50. A dark-room is available for customers. Optics: Ross, Voigtlander, and Zeiss prism binoculars are stocked, and the various makes may be compared. Naval and military telescopes, as well as opera and field glasses, will be recommended on their merits. Eyesight Testing and Spectacle Making: In this department we have engaged the assistance of Mr. H. C. Patey, F.S.M.C., who is qualified by passing the highest examination of the Spectacle Makers' Company. We reserve a special room for this important work, and test for all errors of refraction in myopia, hypermetropia, presbyopia, astigmatism, etc., and supply accurately-ground lenses and pebbles in perfectly fitting frames. Where disease is found, or where we consider it advisable for the patient to consult an oculist, we do not hesitate to say so. Oculists' prescriptions are carefully made up, particular care being taken that the spectacles or eye-glasses supplied allow the lenses to come into the correct position before the eyes."

THE "FREE PHOTO" DODGE.—At a sale on December 28th a young man named Michael Finnegan, of Claremount street, Chorlton-on-Medlock, who is an agent of the Empire Art Co., Shakespeare Street, Manchester, was summoned for assaulting Mary Ann Garner, King Street, Sale, under peculiar circumstances. Mr. Desquesnes, who appeared for the complainant, said the case was one of assault arising out of some transactions relating to a portrait which complainant's husband agreed to purchase some time ago. These people sent round agents professing to supply a portrait of some member of the family absolutely free of charge, but there was a "slight" condition

attached that they should pay for the frame. When the complainant's husband entered into the transaction, all he was told was that he would have to pay 1s. weekly. On the date of the alleged assault, December 19th, defendant took the picture to the complainant's house. She examined the frame and said it was rubbish. In the result, defendant lost his temper, and in the struggle to get possession of the picture she was banged against the door, and when the police arrived she was found to be bleeding from a wound in the hand. Mrs. Garner said the defendant demanded 7s. 6d., but she told him the agreement was for 1s. per week. He told her it was a matter of their fighting the police in Manchester. Police-constable Watson said when he arrived Mrs. Garner had been badly knocked about. Defendant said his instructions from the company were to take back the picture if the balance was not paid. He declined to be kept a prisoner in the house. The Chairman (Mr. George Rooke) said the real question was that of assault. Defendant replied that they were both injured, and that it was her own fault. Mr. Desquesnes produced the "picture," which he thought would be dear at 1s. The Chairman said the Bench were unanimous in convicting, and fined the defendant 20s., including costs.

THE Civil Service Motor and Cycle Agency, Limited.—The Report of the Directors of this Company (proprietors of the Service Photographic Society) states that the trading for the twelve months ending September 30th, 1903, has shown a gross profit of £3,839 10s. 1½d. (comparing with £3,110 2s. 1½d. in the previous year), and a net profit of £977 9s. 1d. The amount brought forward from last year, after deducting income-tax, interest on deposits, etc., was £57 0s. 3d., which amount, added to the profit on the past year's trading, gives an available balance of £1,054 9s. 4d., and, after payment of the interim dividend on Preference holdings of £50 and upwards, leaves a balance of £975 8s. 9d. to be disposed of. The Directors propose to devote this to the payment of the balance of the 6 per cent. dividend on the Preference shares, to pay 5 per cent. on the Ordinary shares, to carry £250 to reserve (increasing that account to £1,000), and to carry forward £50 12s. 7½d. The profit has been arrived at after making a proper allowance for depreciation, bad debts, and rebates for prompt payment of easy payment accounts, and considering the extremely unfavourable conditions of the past season, the Directors have no doubt that the shareholders will consider the result satisfactory. In the last Report the Directors called attention to the fact that it was proposed to devote more attention to the motor business. In furtherance of this policy they have during the year taken additional premises in Featherstone Buildings, which are conveniently near to 292, High Holborn, and well adapted to the present requirements of the Motor Department. The Directors consider that the results already attained have fully justified this step, and believe that this department of the business can be made a very profitable one. Some of the items of expense in the Profit and Loss Account have shown an increase, but in view of the initial expense in connection with the motor business, the Directors do not think that the increase can be regarded as unsatisfactory, and they hope that, under normal conditions, the percentage to turnover will show a decrease during the coming year. It is with very great pleasure that the Directors call attention to the fact that without any special advertisement, and without any special item of expense being brought into the accounts, 1,512 Preference shares have been applied for during the year. There only remained at the date of the accounts 274 of these shares still unapplied for, and as the Directors hope that the steady development of the business during the coming season will make further money desirable, they are giving notice of a proposed increase in capital, and trust to receive the support of the shareholders in getting the new shares applied for. The Service Furnishing Society, Limited, is now on a dividend-paying basis, the profit on trading during the past year being a very satisfactory one, and your Directors have every confidence that the "Interest from Investment Account" will show a steady and continued increase.

"PICTURESQUE NORWAY" is the title of a series of post-cards issued by the well-known photographic publishing house of Valentine. The work is entirely executed at Dundee, and a color process is employed for the impressions, which are singularly charming and effective.

Exhibitions.

THE KEARTON EXHIBITION.

THE Kearton Nature Photographic Exhibition, a collection of pictures of birds, beasts, reptiles, and insects, will be held from January 2nd to 12th inclusive, at the Modern Gallery, 175, Bond Street, W. The Exhibition will contain enlargements of such photographs as A Trout under Water, A Curlew standing by her Nest and Eggs, A Pair of Common Snipes sitting side by side covering their Chicks, A Great Crested Grebe on her Nest, Rabbits at Play, Leverets in their Forms, A Pied Blackbird, Butterflies Asleep with their Wings covered with Dewdrops, A Grass Snake basking in the Sun, An Adder or Viper, A Stoat trying to drag away a Rabbit it has just killed, Owls Asleep and Awake, A Song Thrush Photographed whilst at Roost by Flashlight, An Adult Cuckoo, A Corncrake on her Nest, The Exceedingly Shy Water-Rail at Home, A Red Grouse on her Nest, A French or Red-Legged Partridge on her Nest made beneath a Broken Plant Pot, A Woodpecker running up the Trunk of a Tree, Young Eagles in their Eyrie, Sea Birds at Home, and a great number of other rare and interesting creatures photographed amidst their natural surroundings. The programme is as follows:—Jan. 2—Open from 10 a.m. till 9.30 p.m.; Children's Lecture, 3 to 5.40; Evening Lecture, 8 to 9; Jan. 4—Same as Jan. 2; Jan. 5—Same as Jan. 2; Jan. 6—10 a.m. to 6 p.m. (Afternoon Lecture only); Jan. 7—Same as Jan. 2; Jan. 8—Same as Jan. 6; Jan. 9—Same as Jan. 2; Jan. 11—Same as Jan. 2; Jan. 12 (Last day)—same as Jan. 2.

THE BIRMINGHAM EXHIBITION.

THE Birmingham Photographic Society's 19th Annual Exhibition will be held at the Galleries of the Royal Society of Artists, New Street, Birmingham, from Saturday, February 27th, to Saturday, March 5th, 1904. The Council call the attention of exhibitors to the fact that these galleries are probably the most convenient in the country for the effective display of photographic work. It is hoped that this Exhibition will meet with such support from all artistic workers as will make it the most successful ever held by the society. The judges will be Messrs. W. R. Bland, F.R.P.S., R. Catterson-Smith (Head Master School of Art, Birmingham), J. H. Gear, F.R.P.S.; and the selection-committee, Messrs. W. T. Greatbatch, F.R.P.S., Harold Holcroft, M.A., F.R.P.S., Bernard Moore, J. Cruwys Richards. The following are the particulars of the classes:—Open Classes.—A. Framed Pictures (any subject). B. Lantern Slides (any subject; not more than 12 can be received from one exhibitor, and they will be judged separately, not in sets). Members' Classes.—C. Framed Pictures (any subject). D. Novices' Section; Framed Pictures, any subject or size, by those members only who have never taken an award (except certificate of honourable mention) in any photographic exhibition (survey work excepted) or exhibited at the Royal Photographic Society's Exhibition or Salon. E. Lantern Slides; any subject; not more than 12 can be received from one exhibitor, and they will be judged separately (not in sets). The awards will be silver and bronze medals and certificates of honourable mention. The judges will have absolute discretion as to awards. The Silver Challenge Cup will be awarded to the member gaining the highest total of awards. A silver medal counts three; bronze, two; certificate, one. This challenge cup will be held by the winner for one year, and his name will be engraved on it. Present holder, Mr. J. Cruwys Richards.

Rules and Regulations.—1, Wall Space: No entrance fees will be charged, but all pictures and slides will be submitted to the Selection Committee, who reserve the right to reject any exhibit; all exhibits sent in will pass before the judges. 2, Entry Forms: Every exhibit must be correctly described on the entry form, which is to be returned to the Exhibition hon. sec., L. Lloyd, The Hollies, Church Road, Moseley, Birmingham, not later than Monday, February 22nd. 3, Delivery of Exhibits: Exhibits will be received on Monday and Tuesday (last day), February 22nd and 23rd. They should be

addressed to the Birmingham Photographic Society, Royal Society of Artists, New Street, Birmingham. Carriage must be paid by the sender. 4, All photographs must be framed (except in case of exhibits from abroad). Ox.ord frames will not be accepted. To the back of each frame must be affixed a label bearing the name and address of the exhibitor and the title of the picture, and price if for sale. 5, Lantern Slides: All slides will be judged by limelight. They must be standard size, 3in. by 3in., and correctly spotted. Each slide must bear upon its face the title and exhibitor's name, which should also appear on the box containing the set. 6, An Award List and Catalogue will be posted to all exhibitors as soon as possible. 7, Sales: Sales must be effected through the society's officers, and are subject to 10 per cent. commission. It is understood that the price in every case is for the original picture and includes frame. The Committee would esteem it a favour if exhibitors would kindly say if a duplicate can be supplied. 8, Return of Exhibits: Exhibitors will greatly assist the Committee by giving full particulars as to the return of pictures. Those for return by post must be accompanied by stamped and addressed label, and an addressed card should be enclosed in those packages to be returned by rail. 9, Exhibits must be the unaided work of the exhibitor. Any breach of this rule will lead to the rejection of all work sent in by the offender. 10, Care of Exhibits: Every possible care will be taken of exhibits, but the Council cannot accept any responsibility for loss or damage. 11, Liverpool Exhibition: Arrangements can be made for forwarding pictures direct to this exhibition, which opens on March 25th, 1904.

FORTHCOMING EXHIBITIONS.

January 5-9.—Sefton Park Photographic Society. Particulars from H. E. Cubley, 3, Langdale Road, Liverpool.

Feb. 10-13.—The Longton and District Photographic Society. Hon. secretary, T. Mottershead, 43, Stafford Street, Longton, Staffs.

February 13-27.—Scottish National Photographic Salon. Exhibition Secretary, Alex. Mackenzie, 42, Scott Street, Perth.

February 27 to March 5.—Birmingham Photographic Society. Particulars of L. Lloyd, Hollies, Church Road, Moseley, Birmingham.

February 29 to March 3.—Cripplegate Photographic Society. Hon. Secretary, George H. Depledge, 17, Hazeldene Road, Goodmayes, Chadwell, Essex.

March 5-12.—Brechin Photographic Association. Hon. secretary, J. Kirk, 1, Infirmary Street, Brechin.

March 9-12.—Nottingham Camera Club. Hon. Secretary, Arthur Black, 9, Bowers Avenue, Nottingham.

March 15-17.—Brentford Photographic Society.

March 25 to April 9.—Northern Photographic Exhibition. Hon. Exhibition Secretary, Chas. F. Inston, F.R.P.S., 25, South John Street, Liverpool.

April 6-13.—Croydon Camera Club. Hon. Exhibition Secretary, C. U. King, Hurst Bank, Selsdon Road, Sanderstead.

Mr. S. HERBERT FRY, of 12, South Villas, Camden Square, London, N.W., sends us a copy of his almanac for 1904. The portrait of a little child, in carbon, entitled "My Lady Dolly," adorns the almanac, copies of which may be had gratis by any professional photographer on application to Mr. Fry.

WELLCOME'S Photographic Exposure Record and Diary for 1904.—One feature of the 1904 issue of Wellcome's Photographic Exposure Record and Diary is the wallet binding which is supplied with the 1s. books in place of the elastic binding previously used. The book has been revised and some new matter has been added, including a table for contact printing by artificial light. The relative speeds of plates have again been given attention. The 2s. book has been reduced to 1s. 6d. net. There are, as usual, two editions—the Northern Hemisphere edition, containing tables giving correct exposures for all countries north of the Tropic of Cancer; the Southern Hemisphere and Tropical editions covering all countries lying in the sphere indicated by its title. Most chemists and photographic dealers hold stocks or can obtain copies of the book by return of post. It is on sale at the book-stalls in London and the provinces, and is also obtainable of Messrs. Burroughs, Wellcome, and Co., Snow Hill Buildings, London, E.C.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Jan.	Name of Society.	Subject.
1.....	West London Photo. Society ...	<i>Printing Methods.</i> Mr. G. F. Blackmore.
1.....	Watford Photographic Union...	<i>The London Photographic Exhibitions.</i> Mr. H. Langford Lewis.
4.....	Ilford and District Photo. Soc.	<i>Wet Collodion.</i> Mr. W. T. Wilkinson.
4.....	Bowes Park & Dist. Photo. Soc.	<i>Conversation and Members' Exhibition.</i>
7.....	Camera Club	<i>Walled Towns in England.</i> Mr. C. H. Bothamley, F.C.S.
7.....	Bath Y.M.C.A. Camera Club.....	<i>Stereoscopic Photography.</i> Illustrated.
7.....	Watford Camera Club	Annual General Meeting and Election of Officers.
7.....	Southport Photographic Society	<i>A Cheap Telephoto Lens.</i> Mr. R. W. Woods.
7.....	Liverpool Amateur Photo. Asso.	<i>Films and Papers, Cameras, Cosin, for Daylight Development.</i> Mr. W. F. Slater.
7.....	Hull Photographic Society.....	<i>Picture Making by Photography.</i> Mr. Chas. W. Hastings.

ROYAL PHOTOGRAPHIC SOCIETY

PROCEEDINGS OF COUNCIL: THE FELLOWSHIP.

THE Council, desiring that the possession of the Fellowship shall be the highest evidence of efficiency in photography and its many applications, have passed over no proposals that seem to promise an opportunity and a method of elevating its status and improving its administration. The standard of qualification has been steadily raised during several years and no effort has been spared in the endeavour to arrive at a true estimate of the fitness, in every respect, of the candidates who have submitted their claims. The Council have recently concluded an inquiry into some proposals which had for their aim the improvement of the Fellowship in the directions indicated, but, after a long and careful consideration, they have felt it necessary to reject the chief feature of the proposed alteration. Briefly stated, the proposal was to entrust the admission of candidates for the Fellowship to the whole body of the Fellows. The Council have been able, however, to approve one or two suggestions on matters of detail and administration, which are indicated below.

It has been resolved:—

- (1) That the election of Fellows remain with the Council.
- (2) That two committees be appointed, one to consider qualifications on the scientific side of the art, and one to consider qualifications on the pictorial side, such committees to receive and consider the applications for the Fellowship and report thereon to Council.
- (3) That the two committees consist each of nine Fellows or Members of the Society who shall be appointed by the Council, one-third of each committee to retire annually by rotation and be eligible for reappointment, the three retiring members in the first two years to be decided by ballot.
- (4) That the Council fill any vacancies on the committee that may arise.
- (5) That each committee appoint a chairman. That at their meetings six form a quorum on each committee. That the chairman of each committee appoint another day for meeting in the event of no quorum being formed.
- (6) That applications for the Fellowship be recommended by two Fellows of the Society, as proposer and seconder, such recommendation to be taken as expressing only the personal or social eligibility of the candidate, the question of technical or pictorial qualification being left to the committees.
- (7) That there be two elections of Fellows in every year, one on the second Tuesday in January, and one on the second Tuesday in June, and that the applications be received by October 1st, and March 1st respectively, and that the committees meet for the first time on or before October 8th, and March 8th respectively, as near as may be.
- (8) That at the Meetings of Council when the discussion of the applications takes place, the chairman of each committee or, in his unavoidable absence, a member named by him shall be present to speak upon the applications if necessary.

(9) That the existing standing orders of Council, respecting the election of Fellows, be confirmed, except where modified by the foregoing resolutions.

The Council give notice that these amended regulations will take effect as from March 1st, 1904, and that applications at present in hand will be dealt with under the existing regulations.

THE PROGRESS MEDAL.

No nominations for the Progress Medal having been submitted to the Council by its members, there will be no award during the year 1904.

DECEMBER 22nd.—Mr. H. W. Bennett introduced a new method of sensitising carbon tissue. One of the most charming features of the carbon process, said the lecturer, was the facilities it afforded for printing in so many different and beautiful colours. The worker in a comparatively small way, however, was met by serious difficulties when he wished to keep a small stock of sensitised tissue. The obvious remedy was to sensitise the tissue oneself, as it might be required; but unless the drying arrangements were perfect, the sensitising in the ordinary way proved far from satisfactory. By the new method even the smallest quantities of tissue could be sensitised and dried in any ordinary room; the products of gas combustion would not affect it, and beautifully fine gradations might be obtained in the prints. The sensitising solution was as follows:—Potassium bichromate, 1 oz.; citric acid, $\frac{1}{2}$ oz.; water, 50 oz.; ammonia, about $\frac{3}{4}$ oz. The proportion of ammonia required might vary slightly, but sufficient should be used to change the colour of the solution to a distinct lemon yellow. This solution was suitable for all makes of tissue, except that in the case of Wellington and Ward's tissue only about one-third of the proportion of ammonia was required. The drying might be carried out without any special precautions beyond the darkening of the room, and would take from four to about seven hours. Tissue sensitised according to this method showed no tendency to break, and would allow the backing paper to be stripped off quite easily. The citric acid had considerable effect in regard to the gradations of the print, and the proportion could be increased or decreased as found desirable. The printing took about 50 per cent. longer than usual; but that was a very small disadvantage in face of the fine gradation obtainable. All makes of tissue appeared to be equally sensitive when treated in this bath. Some very fine prints made with tissue sensitised by this new method were shown.

In reply to some inquiries, the lecturer said that the keeping qualities of the solution appeared to be very good, provided it was carefully made up and distilled water used. Some of the prints shown were made with solution which had been mixed up several weeks. He usually sensitised the day before printing, and found no special precautions in regard to storage necessary, beyond keeping the tissue under pressure, and protected from the light and air.

At the same meeting, Mr. T. Thorne Baker, F.C.S., read a paper on "Combined Development and Fixing." Edinol and hydroquinone as reducing agents appeared to give more promising results than other developers, and from 3 to 25 per cent. of hypo was used in the combined solutions. Of course the hypo favoured fog, and the lecturer in his modesty, spoke of almost all his experiments proving failures; but some lantern slides which were shown, made from negatives developed and fixed simultaneously, were certainly all but perfect. The subject was admittedly a complicated and difficult one, especially as it was necessary to adjust the rate of development to the rate of fixing.

GLASGOW AND WEST OF SCOTLAND AMATEUR PHOTOGRAPHIC ASSOCIATION.

DECEMBER 22nd.—For several years it has been the custom of the Edinburgh and the Glasgow and West of Scotland Associations to exchange lecturers, and in accordance with this arrangement the Western body had on 21st ult. the privilege of hearing one of the excellent papers for which the Edinburgh Society is enviably famous. Councillor McArthy, the Edinburgh President, was the lecturer, and his subject was "The Royal Mile: the Castle to Holyrood." The

district of Edinburgh described teems with buildings which have borne their part in Scottish history, and Mr. McArthy was able to show numerous quaint and picturesque views of these old-world buildings. They are fast giving place to modern structures, but fortunately the Survey Section of Edinburgh Photographic Society has been able to secure records of many that have disappeared. A deputation of office-bearers from the Edinburgh Society, who accompanied their President, were charged with messages of hearty goodwill to their Western brethren. The joint excursion, which proved so successful last summer, will be repeated this coming season.

THE RETURN TO THE WAR-PATH.

SIGNED "P. H. E.," the following review of Mr. Douglas English's book, "Wee Tim'rous Beasties," is published in the November number of the "R. P. S. Journal":—"The half-tone block is indeed a mixed blessing; for commercial and purely scientific publications its uses can scarcely be overrated, but for decorative purposes it has lowered our illustrated papers and many of our books into a gloomy abyss of dull mediocrity that can appeal only to the Philistine, and for this reason we regret that such an excellent and unpretentious book as Mr. Douglas English's "Wee Tim'rous Beasties" should be illustrated by this art-strangling process, for his wonderful photographs of these small fry certainly deserved to be rendered in photography. His photographs have been taken with great patience and with an eye to composition and naturalistic effect that places the bulk of them far above the crude work of the usual photographic animalier. At times, however, we wonder if orthochromatic plates were used, or whether defects of tone-value are due to reproductive or printing processes, and we should have preferred the omission of the puerile pen and ink additions on page 143. Of late years the Press has gravely given forth columns of the superficial bleat of the unscientific and often uneducated "nature-loving journalist"; scribbles rarely read, though nearly always dubbed in illiterate journalese as "charming," "full of keen observation and a love of nature," etc. But there are signs that even the groundlings are growing weary of this spurious "natural history," and require something with solid evidence of original observation or with the adornment of graceful imagination, though how much a writer of scientific matter should use his imagination is a disputed point. Mr. Seton Thomson has used his freely—too freely we think. Mr. Douglas English, too, shows imagination in his text, and the result is a series of articles in every way superior to the deadly dull "cataloguing" of the Jefferies school, and the disingenuous bleat of the journalist. But to excel as a literary artist we think Mr. English should write with greater vigour—in a word, use the particular for the general, and weigh more carefully the value of his words, as well as employ the pruning-knife more freely, as witness such a pleonasm as "congestive inflammation" or such a vulgarism as "frivolling." After a rough indication on general lines of the flaws in his work, we have much pleasure in commending "Wee Tim'rous Beasties" to everybody interested in the humbler forms of animal life, and we congratulate Mr. English both on his photography and literary work as well as on the really clever way in which he has made his photographs illustrate the text—always a difficult matter with photography. This is a book to buy for every "wee tim'rous" *homo sapiens*.

THE manufacturers of Busch lenses are desirous of obtaining possession of a number of prints or negatives taken with Busch lenses. They are required for advertising purposes, and must consist of local scenery and street scenes, seascapes, and shipping views. The Company are prepared to purchase such pictures as are considered suitable, and it is understood that the purchase secures to them the right of reproduction and copyright. In sending in prints or negatives full particulars should be given of the subject of the photograph and particular kind of Busch lens used, with detail as to aperture and exposure, etc. The users of Busch lenses are requested to forward specimens of their work to Mr. Henry F. Purser, or the Busch Camera Co., 35, Charles Street, Hatton Garden, London, E.C.

Patent News.

The following applications for patents were made between December 14th and December 19th, 1903:—

Films.—No. 27,353. "Improvements in photographic films." Joseph Hart Balfour.

Packing Boxes.—No. 27,354. "Improvements in or relating to packing boxes for photographic plates and the like." (Hugo Fritzsche, Germany.) Alfred Julius Bout.

Picture Carriers.—No. 27,484. "Improvements in processes of manufacturing photographic picture carriers." Josef Edler von Slawik.

Apparatus.—No. 27,791. "Improvements in photometric apparatus." George Careless Trewby.

Printing Frame.—No. 27,829. "Photographic printing or copying frame." Complete specification. Ludwig Meir.

Post-Cards.—No. 27,831. "Improvements in sensitised cards for the production of picture post-cards or the like." Complete specification. Ludwig Meir.

Apparatus.—No. 27,835. "Improvements in photographic apparatus." John Henry Hill Duncan, Graydon Poore, and James White.

At the Röntgen Society's next ordinary general meeting, on Thursday, January 7th, 1904, at 20, Hanover Square, a paper will be read by Dr. G. B. Batten on "The Revelations of Radium."

ART VELOX.—Messrs. J. J. Griffin and Sons, Ltd., of 20-26, Sardinia Street, London, W.C., announce the introduction of a new grade of Velox called Art Velox. The characteristics of the new paper are as follows:—It is coated with an emulsion which gives just the necessary amount of contrast for printing from average negatives, especially negatives of that density which are produced by the new developing machines or by time development. The surface is a mean between glossy and matt. The paper is slower than the other grades of Velox—hence considerably more latitude in exposure is secured. The prices are the same as Carbon Velox.

GLASGOW East-End Industrial Exhibition.—The fine art section of this exhibition, which was opened by Lord Balfour of Burleigh, on 9th December last, contains 331 frames in the Competitive Loan Photographic Section, and the Judges, Messrs. J. Craig Annan; Tom McEwan, R.S.W.; and James Patrick, who had at their disposal one gold, two silver, and an unlimited number of bronze medals and certificates, have now completed the judging. Owing to the number of good pictures of almost equal merit, it was thought that the difference between a gold and silver medal was too great a distinction to make, and the gold medal was therefore withheld, and an additional silver medal substituted for it. Three silver and two bronze medals and three certificates were awarded as follows, viz.: Silver medals, No. 46, "Evening on the Clyde," by W. S. McLachlan; No. 289, "Cantie wi' Little," by John Hepburn; No. 294, "Figure Study," by Alexander Allan. Bronze medals, No. 51, "My Little Dutch," by Arthur Marshall; No. 326, "A Pillar of the Church," also by Arthur Marshall; No. 226, "The Harbour," by T. Faston; No. 305, "From Choir to Transept," by W. G. Rowse; No. 386, "In the Height of the Storm," by F. J. Mortimer. Certificates, No. 207, "Evening, Loch Tay," by Thomas W. Robertson; No. 210, "A Calm Morning—Sunrise," by James Baillie; No. 245, "The Old Homestead," by John W. Downs. The Invitation Loan Collection contains 57 frames, which adds quite a finishing touch to the whole Photographic Section, and some idea of its merit can be formed when we know that it contains some examples of the work of such eminent men as Craig Annan, Fred. Hollyer, Arch. Cochrane, Harold Baker, F. Holland Day, F. H. Evans, James Patrick, William Crooke, Douglas English, Dr. C. F. Grindrod, David Blount, and many others. Taking it altogether, the Photographic Section must be considered a great success, and no one having the opportunity should miss paying it a visit. The Exhibition remains open until April.

Correspondence.

* * Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.

* We do not undertake responsibility for the opinions expressed by our correspondents.

FIRE INSURANCE.

To the Editors.

Gentlemen,—The calendar contains a reminder that the premium for fire insurance is now due. May I, therefore, ask your powerful help to point out to policy-holders, and particularly to those insuring the contents of a private dwelling house, the very great difference between the insurance which they suppose themselves to have effected, and the actual contract which their policies represent? It will come as a great shock to many a householder when his eyes are opened to the pitfalls lurking beneath the ordinary domestic fire policy, and he realises what "a fool's paradise" he has secured, in exchange for his fire premium. By means of a "combine," known as the "Tariff Ring," the fire offices have not only hoodwinked the public, but have completely tied the hands of the Press, and have rendered it impossible for any report of fire insurance settlements to ever appear in any of the newspapers. So that, although the onus is upon the insured to thoroughly understand the full purport and effect of the very many and particularly obscure and complicated conditions of his policy, yet the ordinary means, and to many men practically the only means, of acquiring such information—the official reports of cases in the Press—are deliberately and purposely withheld by the fire offices, from reaching the public.

Now, a person estimates that the cost of replacement of his goods would, in the event of a total loss by fire, amount to a particular sum. He therefore elects to insure for this sum, and pays a premium accordingly. But although the office accepts this premium, and issues a policy for the sum named, there is no admission by the office, in terms, on the policy, that the insured's goods are of this value, or that his goods, or any part of them, exist at all. After a fire, when the things are destroyed, and the insured is asking for the loss to be made good, the office then, under the conditions of the policy, insists upon a thorough and exhaustive inquiry, and demands strict proof of every single item of the loss—not only as to its existence and value at the time of the fire but also as to when and where it was obtained and how much it cost.

The insured has to obtain, at his own expense, copies of the invoices and full details of the items from the books of account of the various persons from whom any of the articles claimed for were obtained, and is not entitled to be indemnified for any article whatever unless he not only specify it, but also substantiate and maintain the claim in respect of its value. The office deutes an assessor to ascertain the amount of the damage caused by the fire, and this amount, even in the case of a total loss, may, in the opinion of the office, be wholly out of proportion to the insured's estimate, and to the sum for which he insured. Indeed, it may not even reach a third of that sum. From these considerations it will readily be seen that after a fire, and particularly when a private dwelling house has been destroyed, there is every reasonable probability of a dispute arising between the insured and the offices—a dispute, of course, as to the amount of the loss. Indeed, the office has anticipated this, and accordingly has inserted in every policy a cunningly-devised clause, known as the arbitration clause, the effect of which is to deprive the insured of his ordinary right of action against the office in the public courts, and to compel all differences and matters in dispute to be referred to arbitration, which takes place in private. By means, therefore, of this compulsory arbitration clause, the insured forfeits his greatest protection—his right to sue the office, and seek justice in open court, upon any dispute arising under the policy, and the office is enabled, in the convenient obscurity which arbitration affords, to contest every single item of the claim, even down to articles of a few pence.

The arbitrator—a practising barrister—sits at the comfortable fee of 20 guineas a day, and naturally has no wish to shorten the inquiry;

the office continues in possession of the insured's premises and of the salvage, a proceeding that is certain to reflect adversely upon the insured, in proportion to the delay; the office interviews the persons with whom the insured has had business relations, and discusses in detail with them the item of the claim; the law costs mount up to a truly appalling sum; the goodwill of the insured's business (which, by the way, is not protected under his fire policy) is seriously menaced; and, indeed, every circumstance of the position becomes a factor in enabling the office to force a settlement. Under the sheltering power of this "law in the dark," the office bullies, insults, and torments the poor wretched insured to an extent that is positively scandalous, and fully conscious that no appeal is possible to the courts, and that no official report can reach the newspapers, the office raises the vilest possible insinuations, without daring to offer a single particle of evidence in support of them, or to attempt to justify them. Insurers, at the time of insuring, do not in the least appreciate the contract they are entering into, and it is not until a man's property has been destroyed by fire, and he is making a claim, that he realises how thoroughly and completely his policy conditions place him at the mercy of the office. He cannot sue the office for the amount he thinks he is entitled to be paid, and even should he succeed in proving before an arbitrator a far greater loss than the amount the office is willing to pay, the costs, the delay, the worry, and the anxiety entailed in doing so will more than counterbalance the advantage obtained. It needs no laboured argument to show that the way is thus carefully paved for the assessor, after a little judicious parleying, to drive a desperately hard bargain with his victim, with considerable advantage to the office, and a corresponding fee to the assessor.

These shameful compromises are now being advertised all over the country, under the catch-penny phrase of "prompt and liberal settlements"; but every insurer that hands over a premium to any tariff office on the faith of such advertisements will find that his policy, even though it be called an "unconditional fire (furniture) policy," contains the condition imposing arbitration, which, cruelly fulfilling its unholy function, extinguishes any chance of what the office pretends to promise to the insured—a "prompt and liberal settlement" of his loss. Let me, then, Mr. Editor, earnestly beg of your readers, for their own protection, not to accept any policy of fire insurance of which the arbitration clause is a condition. Upon whatever grounds of expediency its inclusion may be based, it is sufficiently significant that no straightforward explanation is forthcoming. With a view to more fully explain to householders their position under their policy, I issued a little pamphlet, based upon experience, dealing with "Some Difficulties of Fire Insurance." Through the courtesy of the Press, I have been enabled to distribute many thousands of copies, and unknown correspondents in all parts have thanked me most heartily for its publication, assuring me that its circulation is quite a public service. I have still some copies left, which can be had gratis, and possibly a perusal of this pamphlet, particularly just now, may be of very real interest to many of your readers.—I am, Sir, your obedient servant,

W. H. EADY, M.A.

Enfield, London, N., 21st December.

A WARNING.

To the Editors.

Gentlemen,—For the protection of your readers and the public generally in Great Britain, I desire to warn you against the practices of an individual styling himself U. Nehring, of 16, East Forty-Second Street, New York. Under pretence of manufacturing photographic goods, he has succeeded in swindling hundreds of unsuspecting people interested in photography in the United States. He operates in such a way as to just keep out of the clutches of the law.

I notice on his letter-heads, "Agencies in London and Berlin," which I presume he uses only as a further blind to enhance his own importance. His method of procedure is this: He sends out a mailing list of his own products, supplementing it with a sheet of bargains in second-hand Zeiss, Goerz, Voigtlaender, and other high-priced objectives. As far as any one has been able to find out, he has none of these lenses, and never had any of them, but he advises intending pur-

chasers to remit cash with order, so as to ensure first chance. To those who, like myself, have been caught with this improvised bait, he politely replies that the lens ordered has just been sold, but that he will send another just as good. An answer is sent that a substitute is not wanted, but to return the money at once if the lens ordered is not forthcoming. No response to this demand is made, but in course of a few weeks the party ordering, say, a high-class Zeiss lens has the privilege of paying expressage on a cheap-looking lens and mount marked "Nehring Anastigmat," which on trial proves worthless. It is returned at once, with demand for refunding of money, which, however, under one pretence or another, Nehring retains. Five of my friends in this city, as well as myself, have been thus swindled. Correspondence with the various magazines published in the United States also shows that they receive daily complaints of a similar nature regarding this man, and that he has never paid them for such advertising as he has hoodwinked them out of.

Fearing that he may be planning to transfer his field of activity to England (this country proving too hot for him), my object in writing you is to put you on your guard, in order that you may notify your readers.

Besides inferior lenses, he makes what he terms "ampliscopes" and "Nehring's Focussing Finder," both impossibilities, as well as other insignificant articles calculated to catch the eye of the public. They are not worth wasting time over. He keeps all remittances prepaid to him, without hope of recovery on the part of the victim.

I refer you, for confirmation of the above, to the Editors of the following magazines published in the United States, selected from widely separated localities, to show you that this man's manipulations are confined to no particular State or city:—"The Camera and Dark Room," New York; "The Camera," Philadelphia, Pa.; "The Photo-Beacon," Chicago, Ills.; "Camera-Craft," San Francisco, California.—

WALTER BRUCE,

Manager, Bond Department.

First National Bank, Columbus, Ohio,

December 14th, 1903.

PHOTOGRAPHIC WASHING.

To the Editors.

Gentlemen,—It is evident to everyone that the usual four hours' washing of photographs to eliminate the hypo is the cause of an enormous waste of water and time. Probably millions of gallons of water every week are wasted in this way. On this account I gave some attention to the matter, and have found a remedy which I desire to put before your readers. By my process five minutes is sufficient, instead of the four hours. Most chemists know that barium chloride has an exceedingly strong affinity for sulphur; it is even more energetic in this respect than lime. The formula of its action may be shown below:

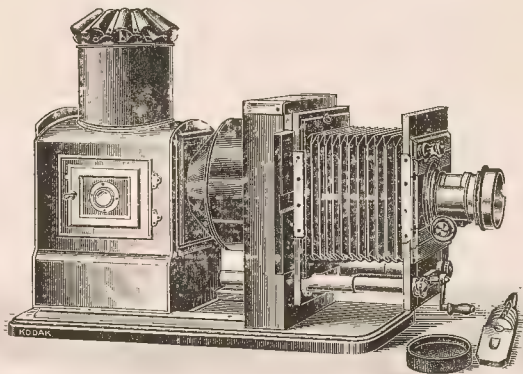


This shows that by adding barium chloride to hyposulphite of soda both are broken up instantly. The barium unites with the sulphur and the soda with the chlorine, so that the products are barium sulphate and common salt. Now, barium sulphate, in this case, is a loose, very heavy, white (poisonous) powder, quite insoluble, easily rinsed off the photos, and the common salt remains in the solution. It has long been known that even common salt alone tends to quicken the process of hypo elimination. Then the process is quite simple. It is this: Make a 5 per cent. solution (exactitude is not necessary) of this barium chloride—which costs by retail about 1s. to 1s. 6d. per pound, or wholesale £4 to £5 sterling per ton, that is, about one halfpenny per pound. Put this solution in a dish ready for the dipping of all the photos.

When the photos have been developed and have been ten minutes in the hypo, rinse them for a minute in running water, and swab, if you will, on both sides with a cotton swab. Then dip for two minutes in the barium chloride, afterwards rinse again and swab the photo in

KODAK CO.'S LANTERN LIST.

Large diameter superior quality lens with stops, yellow cap, rack and pinion; duplex lamp, reversible carrier, rising front, fine adjustment focussing rack.

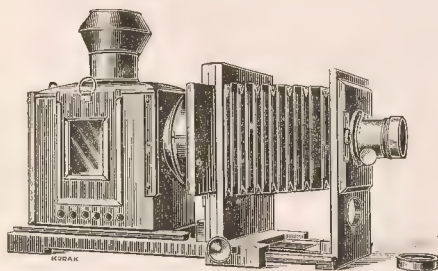


PRICE—

- No. 1, with $5\frac{1}{2}$ inch condenser, **£6 10s.**
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Finest quality enlarging lantern of Russian iron and brass-bound polished walnut, with every necessary movement.



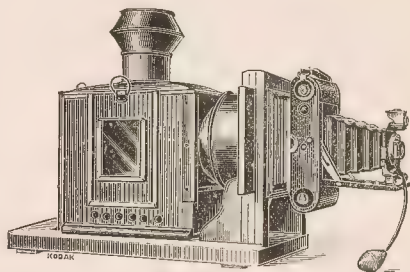
THE “ORIEL” ENLARGER.

A new moderate-priced Enlarger, fitted with good condenser and lens, the latter fitted with iris diaphragm, rack and pinion, and yellow glass cap.

The body of this lantern is of Russian iron, with polished walnut front and base. It is also fitted with rising front, rack and pinion focussing and reversible negative holder.

The “Oriol” Enlarger can be had with either incandescent gas fittings or with a special oil lamp.

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The front of the Enlarger is fitted with a carrier, on which the Kodak can be instantly attached or detached.

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|---|-------------|
| No. 1, for use with Nos. 0 and 1 Folding Pocket Kodaks ... | £3 3 |
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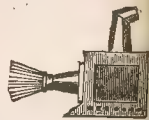
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MANCHESTER OXYGEN COMPANY, Limited, Great Marlborough Street, MANCHESTER.
BIRMINGHAM OXYGEN COMPANY, Limited, Saltley Works, BIRMINGHAM.

the running water. That is all. Five minutes is sufficient, instead of the four hours. I find, also, that the whites of the photos are improved by this process.

Your readers will no doubt vote to me a monument for this invention; but also, I think, I have a fair claim to the gratitude of water-supply companies.—I am, yours, etc.,

JOHN NOTON.

Southport, December 29th, 1903.

THE ILLINGWORTH COMPETITIONS.

To the Editors.

Gentlemen,—We have pleasure in telling you that in our recent Bromide "Sample" Competition, wherein we sent gratis to every applicant three sample pieces of our new bromide paper, we have had a magnificent response, over 600 entries having been received. The quality of the prints being so good, we gave five extra prizes of £1 each. The winning print was sent in by Mr. Herbert Birstow, 5, Hyde Park Gardens, Halifax, and the five extra were won as follows: Mrs. Manson, Bury St. Edmunds; Miss Constance Ellis, Shalford, Surrey; Mr. John Malcomson, Belfast; Mr. John Wickens, Upper Bangor, N. Wales; Mr. Nicholas E. Smirnoff, London, W.—With compliments, we are, yours faithfully,

THOMAS ILLINGWORTH AND CO., LTD.

Willesden Junction, London, N.W.,
December 29th, 1903.

FILM TROUBLES.

To the Editors.

Gentlemen,—I am writing to you to inquire whether you can inform me as to the cause of the markings on the enclosed film.

It is rather curious, but a number of films which I developed before made a trip of 300 miles up the river were all right, but in this No. 2 size and also in a No. 5, but both, on returning and on being developed, showed the same markings; plates, although no particular care was taken in packing, were not affected.

The films were packed in cotton-wool and in tin boxes, and adhesive plaster put round to keep them as airtight as possible. If you could explain I would be extremely grateful.

I have developed all with pyro-soda developer. The only thing is, that the sodium sulphite has effervesced; but this was the case before started from Sesheke, and when I developed the first lot. None of the films were over-date when developed. The water was also cool and good Zambesi water.

I have developed at different times a large number of spoils, but have never found quite the same markings.

The enclosed photo is not of the Victoria Falls, but of the Onya Falls, Siomo, which is about 300 miles higher up the river; they are very little known, and I suppose I am the first one who has ever photographed them from one end to the other. The fall of water is about 100ft., and the Zambesi at this point is about a mile wide. The falls are charming although not nearly as grand as the Victoria Falls. I went up from Kasangula to Sesheke, and from here to Lialui by the native dug-out. They are rummy things to travel in, and a bit shaky, and are generally paddled by from three to six niggers, who stand up in the boat and paddle. I only got upset once, in some rapids but got a dose of fever from it, as I was upset just before sun-down, and had to sleep in wet blankets.

Sport is very good; you get bick buck, Quagga, and I saw elephant too; but of course I had just expended my last cartridge at the time. I also shot "hippo" as well.

I could write you a long letter on my experiences, but am afraid you are far too busy to give attention to the trials and tribulations of one who is unknown to you.

I may mention in conclusion that I have been a subscriber to your "Journal" for several years now, and I have read it in a good many

curious places. I read the last one I had pretty thoroughly as I came down from Lualaba, as I was entirely by myself, with the exception of about fifty porters; even the "ads." were read and re-read.

I suppose when you receive this the festive season will be upon us. I hope I shall not be 500 miles from a railway and liquid refreshment as I was not long since.

With kindest regards and every good wish for a happy Christmas and a prosperous New Year.—Believe me, yours truly,

PERCY M. CLARK.

Sesheke, Zambesi River, Barotseland, Africa.

November 15th, 1903.

P.S.—If you by any chance have a 1904 Almanac left, would you kindly send it?

[The markings to which our correspondent refers are of a reticular character. In early gelatine days we traced the effect to the use of an overheated developing solution.—Eds., B.J.P.]

MR. DRINKWATER BUTT, F.R.P.S., of Gower Street and Kensington, has just completed designs and accepted the tender of Mr. A. Cliff, of Evesham, for additions and alterations at The Den, Crophorne, Worcestershire, the residence of Mr. A. H. Avery, a partner in the well-known firm of scale-makers of Birmingham. This picturesque country house, overlooking the valley of the Avon, was originally a group of cottages of the half-timber period characteristic of the neighbourhood, and was converted into a single house by the late Sir Lawson Tait, the eminent surgeon. Since the property came into the hands of Mr. Avery it has been further improved under the direction of Mr. Edwin Lutyens and Mr. Drinkwater Butt, the former designing the quaint sunk garden, and the latter restoring the old-style leading of the windows, and being now responsible for the additions, new gables, etc. Great care has been taken in the preservation of the old work, and in making the new to thoroughly harmonise with it.—"The Building News."

THE Egyptian Hall, the approaching demolition of which was announced last week by Mr. Maskelyne, has been more or less devoted to picture exhibitions since the dispersal of the Bullock Natural History Museum. It was in 1812 that the Egyptian Hall was built with its present frontage by Mr. Bullock, says "The Morning Post," in what was then regarded as "a style of magnificence which has added an ornament to the Metropolis," but in 1819 the Bullock collection was sold by auction, and two years afterwards the proprietor let one of his galleries to the Old Water-Colour Society, whose exhibition was held in the room thus hired (the "Roman" Gallery) in 1821 and 1822. Haydon had already in 1820 showed his "Jerusalem" to crowds of sightseers at the Egyptian Hall, where a quarter of a century later the despairing painter exhibited his last efforts in the shape of some large subject pictures. The exhibition of 1846 was an absolute failure. It resulted in a loss to the artist of more than £100, while Tom Thumb, who was shown at the same time in the Egyptian Hall, attracted thousands of visitors. This was the last straw, and Haydon committed suicide on the 20th of June. Six years later, in 1852, the Dudley collection of Old Masters was shown in the room that has since been known as the Dudley Gallery, and in 1858 the second exhibition of the newly-formed Society of Lady Artists was held in another room of the Egyptian Hall. In 1865 a body of artists began the exhibitions that were commonly called the "Dudley," after the room in which they were held. To the Dudley exhibitions many of our strongest water-colours painters contributed until the reorganisation of the Society in 1883. It was, too, at the Dudley in 1881 that the Queen, as Princess of Wales, made her first appearance as an exhibitor at a public gallery. Some years later a well-known critic, Mr. Harry Quilter, showed, amid luxurious surroundings, the results of his labours in various fields of art, and the Dudley Gallery Art Society has held regular exhibitions at the Egyptian Hall since the old "Dudley" was dissolved in 1883. The disappearance of a building with such curiously varied and interesting artistic associations will be regretted by all painters, but by none so keenly as those who are connected with the New English Art Club, which has in the Dudley Gallery a room exactly fitted for its exhibitions, both in size and locality.

Answers to Correspondents.

- ** All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.**
- ** Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.**
- ** Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & Co., 24, Wellington-street, Strand, London, W.C.**
- ** For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.**

PHOTOGRAPHS REGISTERED:—

- W. J. Usherwood, Station Road, Penrith. *Photograph of railway collision at Penrith Station.*
- J. C. Brown, The Studio, High Street, Annan, N.B. *Two photographs of fishing fleet at Annan.*
- A. A. Grigor, Johannesburg, Transvaal, S. Africa. *Photograph of Mrs. Ians, the N.C.O.'s of the Grigor-Ians' family and their decorations.*
- T. Mason, 164, Market Street, Crewe. *Photograph of Crewe Volunteers and Reservists' Memorial Monument.*
- E. G. Brewis, 8, New Bridge Street, Newcastle-on-Tyne. *Eight photographs of Miss B. J. Lindsay.*

PAINTING REGISTERED:—

- W. G. Wise, Camp Studio, Bulford Camp, near Salisbury. *Painting consisting of a crown, gun, scrolls, two Latin inscriptions, four flags, and circle of rose, shamrock, and thistle.*
- C. M. PARROTT.—1. Obtainable, we believe, of Messrs. Percy Lund, Humphries, and Co., Bradford. 2. Two shillings and three pence per dozen.

TOYM.—If the agreement was for a specific use (say one issue of a paper), and the reproduction was employed for another purpose, we believe you could recover.

LANTERN PLATES.—CYANTYPE.—"E. Y. E. N." says: "Can you kindly inform me (1) Where chloro-bromo plates more rapid than 'Alpha' plates, and as transparent, are to be obtained? (2) How long will the mixed solutions for cyanotype (viz., ammonio-citrate and ferricyanide) keep? Will they keep two hours or more?" In reply: (1) Try the "Special" lantern plates of the same makers as the "Alpha." (2) Yes.

POSTCARD PHOTOGRAPHY.—"POSTCARD" writes: "Will you please tell me if you consider enclosed postcard mask worth patenting and putting on the market? It is simple, and light-tight for daylight work, even when card projects from printing-frame, and for gas-light work the card can be held in contact with negative for printing without the use of printing frame, thus saving a lot of time now wasted with ordinary masks and frames." In reply: We do not think our correspondent's idea worth a patent. The best way, however, to test its commercial value is to obtain provisional protection for it, and then submit it to some house which makes a speciality of post-card photography.

CLEANING DAGUERRETYPE.—"LARGO" says: "I should esteem it a favour if you could let me know the best method of cleaning a Daguerreotype on copper. It has become stained and discoloured." In reply: The tarnish may be removed with a solution of cyanide of potassium. Rinse the Daguerreotype under the tap until the water flows freely; then pour on and off, say, a 10-grain solution of cyanide of potassium until the tarnish is removed, and then well wash with distilled water. Unless you are familiar with the Daguerreotype process, and we assume you are not, we should advise you to experiment with one or two valuable pictures before attempting to deal with a valuable one. Or, better still, entrust the work to an expert in the process. Bear in mind that the image in a Daguerreotype is a very delicate one, and easily irreparably ruined.

LENS FOR HAND CAMERA.—"FOCAL LENGTH" asks: "Will you kindly reply to the following in next week's paper? No. 1. For a

quarter-plate and five by four hand camera, what would be the best focal length of lens, respectively, to buy, in order to secure good perspective? No. 2. I am quite in the dark about this matter of perspective, for on a quarter-plate, with a lens of 5½ in. focus, I get a negative which I am told is worth enlarging, the subject being a beach scene. Again, on the same size plate (quarter-plate), with a 5½ in. focus, I secure a harbour scene, with a vessel as the principal object, but am told that there is exaggerated perspective, owing to a lens of too short focus being used. What I do not understand is that with the lens a quarter of an inch longer focus, false perspective should be attributed to my effort, when nothing is said about such a defect in the beach scene, with a lens of shorter focus is used. Can you kindly put me on the right track by telling me what focal length of lens to use on a quarter-plate to avoid this exaggerated perspective, whether I attempt an ordinary beach scene or a harbour scene with a vessel in the foreground? No. 3. Recently I saw a print for criticism, which had been taken on a quarter-plate with a 5½ in. focus lens, and thinking that the focus of a lens for a quarter-plate ought not, for correct perspective, to have been less than about 6½ in. focus (i.e., one and a half times the longest side of the plate). I asked that if I wished to enlarge this print, how much I ought to cut away from the foreground in order to make up for the deficiency of a too short focus lens, and to procure good perspective in enlargement, the reply being that no further help would be given to me unless I stated the size to which I intended to enlarge. Will you kindly explain, as I am here totally in the dark, and if possible tell me to what size to enlarge to secure a more agreeable perspective?" In reply: 1. For a quarter-plate, lenses of about 5½ in. are what are generally employed, and for the five by four sizes those of about 6½ in. 2. In neither case is the perspective false or exaggerated. Pictures are taken with short focus lenses, the perspective may be violent and unpleasing, but it is still true. 3. Simply away sufficient of the foreground, if there be too much, to make a pleasing picture. It is simply a matter of taste and judgment. There are no set rules in the matter.

HOLMFIRTH and District Photographic Society.—An Exhibition of Photographic Work will be held in the Technical Institute, Holmfirth, on Friday and Saturday, January 8th and 9th, 1904. The judges will be Messrs. Godfrey Bingley and Gilbert Foster, R.B.A. Admission—Season ticket, 1s.; after 6 p.m. on Friday, 6d.; Saturday, 3d.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.—Members' Competition. The following are the results:—Silver medal, presented by Mr. Calder Marshall, for the best print illustrating the subject "Solitude," awarded to Mr. C. H. Oakden, F.R.P.S. Bronze medal, presented to Mr. C. Churchill, F.R.P.S., for members who had not previously gained an award, won by Mr. G. W. Clarke. "Excursion" Silver medal, offered by Mr. J. T. French, withheld, there being sufficient competitors: 1st, H. C. Beckett; 2nd, E. W. Taylor. Judges were Messrs. Selfe and Steen, of the Hackney Photographic Society.

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* * The Editor can only be seen by appointment.

* * We do not undertake to answer letters by post.

EX CATHEDRA.

The Setting of Gelatine. Dr. Paul von Schroeder is quoted in a recent number of "Nature" as pointing out that gelatine solutions undergo two types of change, a non-reversible hydrolysis by which the setting power of the solution is permanently impaired, and a reversible change as the result of which the jelly melts when heated and slowly solidifies when cooled. The setting power of a solution is accurately indicated by its viscosity. If after rapidly cooling from 100 deg. the viscosity is measured at 25 deg., a low value is obtained which gradually increases until, if the decomposition of the gelatine has not proceeded too far, it culminates in the setting of the whole mass. By measuring the increment of viscosity during one hour it is possible to predict whether the solution will set in the course of the next twenty-four hours. The reverse process by which the gelatine swells and then dissolves in water presents similar points of interest. Gelatine saturated with water has a higher vapour-pressure than water itself, and loses weight in a saturated atmosphere.

* * *

A New Work on Optics. Eleven years have passed since Dr. Czapski's work on the "Theory of Optical Instruments, according to Abbe," was published. Three years ago the author was approached, and asked to revise the work, but he soon realised that the pressure of his

duties rendered the task an impossible one. To these circumstances we owe the conception of the present work, the first volume of which has just been published by Julius Springer, of Berlin, under the title: "Die Bilderzeugung in Optischen Instrumenten vom Standpunkte der Geometrischer Optik" ("Formation of the Image in Optical Instruments, from the Point of View of Geometrical Optics"). The authorship is a combined one, in which the scientific staff of the Carl Zeiss Optical Works have taken part, the writers being Drs. P. Culmann, S. Czapski, A. Koenig, F. Löwe, M. von Rohr, H. Siedentopf, and E. Wandersleb. The onerous duty of editing the volume was undertaken by Dr. M. von Rohr. Some idea of the comprehensiveness of the book may be formed from the fact that it is an exposition of the writings of the more important authors upon optics, whose theories in some cases have been extended. The chapter on Abbe's geometrical theory of optical delineation may be looked upon as authoritative. Very important modifications of Dr. Czapski's treatise will be found in Chapters 5, 6, and 9, written by Dr. Koenig and Dr. Moritz von Rohr. We can only give in these few lines an indication of the scope of this work, but we look upon it as one of exceptional value to the theoretical optician.

* * *

Jan Szczepanik. We have heard much in this country of this extraordinary inventive genius, whose work, measured by the amount of printers' ink spent upon it, is destined to be of great importance to mankind. "Photographische Industrie," however, publishes an appreciation of his work, which differs materially from the popular idea, so carefully nursed by the daily Press. In 1898 the Telectroscope was announced. This instrument was to bring within our sight objects at a distance by electrical means. It was to have been exhibited at the Paris Exposition in 1900, but instead, only a series of drawings illustrating the proposed solution of the problem were forthcoming. Next we were startled by the invention of a method by which photographs could be reproduced in textile fabrics, without the intervention of the designer; but an advertisement in the "Wiener Zeitung" supplies a significant comment upon the practical value of the process, the whole plant of the "Jan Szczepanik, Société des Inventions" being offered for sale at public auction by the judicial authorities. Recently an equally remarkable invention was produced by this prolific brain. The problem of colour photography was solved, and a patent obtained for a process in which the three films of stained gelatine were isolated by intermediate films of collodion. Dr. Neuhauss, of Berlin, experimented with the process, condemned it as quite impracticable, and pronounced it not worth printers' ink. Its only redeeming feature was

the money it had brought to the Patent Office in the shape of fees. We look forward with interest to the next great invention of this remarkable man.

* * *

The Weather in 1903.

No one requires reminding that the year just past was an exceedingly wet one, and by no means propitious to outdoor photography. Now that the year is finished it is interesting to see from the statistics that have been issued what the weather really was. The return for London (Brixton) of the rainfall for the year was 37.95 inches, and is the largest recorded for the last sixty years; and it is nearly double what we had in 1902, when it was only 19.28 inches. It is curious to note that the wettest months were the three summer ones, June, July, and August, the aggregate excess for these three months being no less than 9.47 inches above the average. It is also curious to note that February ("fill dyke") was the driest month of the year, and that the year's rainfall at Greenwich was 2.37 inches less than it was at Brixton. Yarmouth, curiously enough, had less rain than usual last year; the total fall there was but 24.8 inches, while the average is 26.4 inches. Many have thought that last year was, with so much rain, a very cold one, but the returns show that it was not, for the temperature was 0.3deg. in excess of the average for the last sixty years, and is 1deg. warmer than 1902. These are the Greenwich returns, and they are pretty much in accord with those of Brixton as regards the temperature. The warmest months of the year were July and August; but they were both below the average. The months with the temperature above the average were January, February, March, May, October, and November, and the greatest excess was in February, which had 5.5deg. In the whole year there were only eight days with the thermometer over 80deg. With regard to sunlight, always an interesting subject to photographers, it appears that June and August both had 188 hours of sunshine, and there were upwards of 180 hours in May and July. It appears there were at Greenwich in all 180 hours more sunshine than usual. It, therefore, seems, contrary to what many outdoor photographers may have surmised, that they have not much to complain of regarding light, wet though the year has been, seeing that we had 180 hours bright sunshine in excess of the average.

* * *

Snow Pictures.

Up to the present photographers in the home district have had no opportunity of obtaining pictures of snow or wintry subjects, as in this uncertain climate of ours it is impossible to even conjecture when they will have, or whether they will have at all, this winter. There is no doubt whatever that if the chance arises it will be quickly availed of by many. Now the taking of photographs of snow pictures, given the snow, is by no means difficult, and moreover, subjects that would otherwise be uninteresting often become excellent ones when clad with a covering of snow. Although snow subjects are not difficult to deal with, amateur results, as a rule, are far from being satisfactory. This is possibly due to the fact that they so seldom have the opportunity of trying their hands in this direction. Many who have only taken up photography during the last year, of course, have not yet tried their "prentice" hand at the work. One of the great faults with snow pictures is that there are no half-tones, or delicate gradations, in the snow itself. It is usually a bald white mass, without detail. This, in the majority of cases, arises from the development being carried too far, so that the finer gradations become buried. Some, when they make their first essay in de-

veloping a picture of a snow scene, may be inclined to take the sky as a guide as to the density required. But this should not be done; the snow itself should be the criterion. Some years ago, we remember there was a little discussion as to whether in a snow picture the sky or the snow should be the lighter of the two, and their opinions seemed to differ. But there is no question that pictorially, the snow should be the whiter and the more brilliant. We have now hanging before us an excellent reproduction of a drawing of Rowbottom's, entitled "Winter." In this the snow where the light strikes it is a brilliant white, while in the other portions of the snow the white is slightly subdued, being a little more grey. The sky in the horizon is a tolerable dark grey, and at the upper portion a lighter grey, but nothing approaching that of the snow, except towards the shadows. In taking pictures of snow subjects, under-exposure should be avoided, and in the development the high lights on the snow should be taken as the guide to density, and nothing else. The sky may then appear somewhat thin, but then it should print darker than the snow itself. These little hints may just now be of service to some amateurs who have not yet attempted the photographing of winter scenes, for it may happen that their first attempt may be their last for many months, as, with this fickle climate of ours, we may have a heavy fall of snow one day, and it may be all melted the next; and perhaps we may have no more until next winter. Therefore the chance should not be lost through failure in the manipulations.

* * *

Sulphocyanides of Silver and Potassium.

The downfall of the old gold toning and fixing both was assured by the researches of Messrs. Davanne and Girard, who showed, half a century ago almost, how *inter alia* two compounds of silver with what was then termed hyposulphite of soda existed, one soluble and stable, and the other extremely unstable. This latter was formed by the action of an insufficient amount of the hypo upon the silver chloride, and was almost a normal condition of the old toning and fixing bath saturated with silver in a minimum amount of hypo. The state of affairs was well indicated by the colour of the prints, rich purples, but very yellow whites. All that colour scale is altered now; we get any range of shades from sepia to almost black, and the whites, instead of the dingy yellow, are pure as the paper itself. At the same time in view of the immense popularity of the sulphocyanide toning solution, and the millions of prints produced by its aid now spread over the world it is worth a moment's thought to consider whether there may be any parallel between the two. Formerly we had a maximum of silver and a minimum of solvent—result: fading. Now we have a maximum of silver and a minimum of a still weaker solvent. Result: query. But, after all, the cases are not quite on all fours; for in the modern toning, although, at first, the print is subjected to conditions analogous to those of the dangerous old bath, they very soon are treated (or should be) to a bath capable of dissolving away at a rapid rate all the silver chloride present, and very much more if it were there to be acted on. Some experiments recently made by Mr. Harry W. Foote, according to the American "Chemical Journal," allow some little trepidation in this respect, for he finds thiocyanide compounds alarmingly similar to the thiosulphite. He used double thiocyanates of silver and potassium, and, on the authority of the makers, Messrs. Wells and Merriman, he gives three distinct compounds as being preparable, containing respectively one, two and three equivalents of thiocyanide, and it is to be remarked that the salt with one equivalent is unstable and at ordinary temperatures

readily dissociates, but not with the formation of those treacherous sulpho acids which accompany the decomposition of hypo in contact with silver chloride.

* * *

The Roller Squeegee. A more useful piece of apparatus than the roller squeegee it would be hard to find, for it can be turned to so many purposes, both inside and outside the photographic work-room. It will do anything from the rubbing smooth a refractory print, to giving a smooth layer of ink to a collotype plate. But until we read an advertisement just now current in one of the non-photographic journals, we had no idea that the little roller could be employed in ways quite foreign to "the daily round, the common task." Perhaps we should not have realised the full extent of these new applications of the giddy roller, had the advertisement in question not been endowed with a picture of a young lady who is shown busily squeegeeing her face with the implement in question. It was this picture that led us on, like her mother, Eve, to inquire with the curiosity peculiar to man, into the inner meaning of this thing. In other words, we read the advertisement, and this is what we learnt about it. The roller in question is described as a new beautifier, which is warranted to produce a perfect complexion, removing wrinkles, crows'-feet, and all facial blemishes; besides this it will develop, or reduce as desired. These facts are not given on the mere word of the advertiser, but are vouched for by two American papers, and we therefore need not stop to inquire whether they are true or not. And we may at once explain that the development and reduction here mentioned have nothing to do with the same terms used in their photographic sense. It is a development or reduction of different parts of the body which are indicated. It is a cure for want of plumpness, or too much rotundity, as the case may be, and it must be confessed that this roller is gifted with extraordinary powers if it can make at will either a hill or valley on the human frame. Then we read that it is "an electric roller in the strictest sense," whatever that may mean; but as it has been designed "by a physician and electrician known throughout Europe," our confidence is restored, and we know that the word "electric" is not used as it is by some ignorant advertisers merely as a catch-penny device. To advertisers of that stamp the word "electric" is even more blessed than "mesopotamia," and they apply it to anything from a pill to a hairbrush. The electric roller requires "no charging" (it is the buyers of it who are charged), and it will last, like radium, for ever. "No shock, sting, or burn, as in the old batteries, but pleasant and soothing in its action. Always ready for use on all parts of the body for all diseases." This is, indeed, a great discovery, and one specially valuable to a photographer, for he has the apparatus at hand. No more doctors' bills. If disease attacks any parts of the body, he has merely to give it a rub with the roller squeegee and he will be cured. Possibly there may be a bit of magnetised steel hidden in this particular electric roller "to save its face"—to use a provincialism—and it would be advisable to purchase one in order to see whether that is the case; but, on the whole, we believe that the photographic implement as commonly used would be quite as efficacious as the "electric" one.

* * *

Speaking Likenesses.

M. Bertillon, whose name is so widely known as Chief of the Anthropometrical Department of the Prefecture of Police in Paris, has recently much extended the use of photography for the identification of criminals and undesirables. He is aware

that a single photograph of a man is likely to mislead the police, and to very often cause the arrest of the wrong person, and, as a matter of fact, the blunders of this description have run up to as much as sixty per cent. In financial affairs this is generally looked upon as a very high rate of interest, and it is certainly rather too much for justice to countenance when applied to the identification of innocent persons. A new system which is termed "portraits partes" has therefore been introduced, and it is found so successful in practice that the failures have been reduced to one per cent. The "portrait parte" does not depend upon one picture, but upon several, the object being to analyse, as it were, each face with a view to making a study of the different features. The police are being instructed in this new system, and although at the outset they did not take very kindly to it, they are now quite interested in the matter, and have taken it up with the greatest enthusiasm. Some novelists are very prone to give elaborate details of the eyes of their heroes and heroines, while the mouth and the nose are always of secondary importance. But, according to M. Bertillon, the ear is the feature which possesses the greatest variety of shapes, and therefore in the "portrait parte" the ear stands first in importance as a means of identification. There are fifteen other details of the head and face to which the police have to pay attention. Indeed, the myrmidons of the law have to understand the "points" of a human being, just as a fancier understands the various "points" of a dog. The need of identification is much greater in the Paris police offices than in London, for the French officers have greater powers than our police have over here. In addition to the vulgar criminal, there are no fewer than 1,500 persons to whom France is forbidden. What a blessed thing it would be for Londoners did such a law prevail here, for there are many undesirables who "never would be missed"; but we cherish not only our own scum, but the unsavoury skimmings from all the other European capitals, including, of course, the 1,500 for whom France is too hot. Then besides these the French police have to keep a good look-out for a few hundred criminals who have escaped from the penal settlements in Guiana and New Caledonia. These have all had their photographs taken, at the expense of the State, in several positions, full face and side face, so that the shape of the nose, mouth, ears, etc., can be duly noted and measured, each picture being one-tenth the size of the original. In one month, by aid of these portraits, twenty-five persons have been arrested, and in each case the right man has been taken. Truly "the way of the transgressor is hard," but it has become a good deal harder since M. Bertillon made such extended use of the photographic camera.

The London and Provincial Photographic Association.—The hon. secretary has issued the following notice to members:—In handing you herewith a copy of the programme for the ensuing quarter, I beg to draw your attention to the papers to be read before the Association. I trust you will, by frequent attendance, endorse my efforts to make the L. and P. a centre of photographic interest and information: The papers will be of wide interest and are by competent exponents, and it now remains for members to show their appreciation of the kindness of the lecturers, by giving them a "full house" and hearty reception. It places myself and your officers in a very awkward position when we can only offer a small audience as the sole return for the time and trouble taken. The annual supper will take place on February 18th, and I shall be glad to forward tickets at 3s. each. The chair will be taken by Mr. E. J. Wall. The affiliation competition pictures and slides will be judged on January 14th by Messrs. Thomas, Salmon, and Mackie, and I shall be pleased to furnish further particulars.

WINTER TROUBLES AND WINTER PRECAUTIONS.

By the time this issue of the JOURNAL is in the hands of readers we shall be well in the year 1904, and up to the present—that is, up to the time of writing—we have had no severe wintry weather. Those who have been looking forward to a time when they could obtain snow and frost pictures are still awaiting the opportunity. Still there is ample time for us to have what is sometimes described as a “good old-fashioned winter.” Now a good old-fashioned winter brings with it considerable inconvenience, and to none, perhaps, greater than to photographers, particularly if they are attended with a frozen water supply, for example.

Although up to the present there has been no really inclement weather yet, it has been cold enough to occasion inconvenience, and sometimes trouble, the cause of which has been unsuspected by some whose practical acquaintance with photography is somewhat limited. Indeed, we know of more than one instance of trouble, due entirely to depressed temperature, the cause of which was actually unrealised by the photographers, yet they were professionals, though, we may add, not with a very extended experience in the business. The trouble here referred to was at first attributed to the quality of the plates; they were charged with being slow, though they were of a very quick brand; also that they would not yield sufficient printing density. In each case the difficulty, when the cause was explained, was got over by warming the developing solutions and the dishes to about 56deg. or 70deg.F., as well as the dark-room itself. It is commonly recommended at this season to warm the developer up to this temperature, but a little consideration will show that the advantage gained is quickly discounted if the temperature of the room itself is not much above 40deg., and this is frequently the case with some dark-rooms. Under such conditions the solutions rapidly cool, and the advantages, gained at first, become next to nil before the development is complete, if it is at all long, and in the case of under-exposure it may necessarily be so.

When there are no other means of heating the room, a paraffin stove becomes very convenient. One with a four, or four-and-a-half-inch wick will keep a good-sized dark-room at a genial temperature, and the solutions in good working order during the daytime, and a common paraffin lamp, with an inch wick, will do the same during the night with the door shut, notwithstanding that the outside temperature may be at the freezing point. Objection is sometimes raised to paraffin stoves on account of smell. This objection becomes groundless, as it does with oil lanterns, if the wicks be kept nicely trimmed and the outsides of the reservoirs perfectly clean. Although the fumes from a neglected oil-stove are unpleasant to smell, they, unlike those from coke or gas, have no injurious action on photographic operations.

Depression of temperature retards chemical action, and has a marvellous effect on the fixation of both negatives and prints. They fix much slower than when the solutions are warmer, but in the case of negatives the effect can be seen, and if care be taken that the plate remains in the fixing-bath for double the time it took to remove the bromide of silver, not much trouble will be met with as regards that operation. But if not, and the negative has to be intensified, stains may well be anticipated. In the case of paper prints, there is no such guide as to complete fixation, and the conversion of the hypo-silver salts into the freely soluble condition, and, as a result, yellow stains frequently make their appearance when the prints are finished, owing to their being insufficiently fixed. At

this season of the year, if the fixing-bath is anything under 30deg., and the room is cold, at least double the usual time in the solution should be allowed to ensure that the prints are perfectly fixed, and the hypo-salts of silver brought into the freely soluble state, necessary for their entire removal. Even when this is done there comes the question of washing.

When the water is very cold it has not the same solvent action on the hypo in the films, whether plates or paper; hence, unless the washing waters are warmed, a longer time should be given to the washing; but in the majority of cases this is not done. Indeed, when the operation is entrusted solely to inexperienced lads and girls it is often curtailed on account of the unpleasantness of having to be continually dabbling in abnormally cold water. Where the albumen, or the collodio-chloride, processes are employed this is not so likely to be the case as with them. Warmer or even hot water may be employed for the washing. This treatment the majority of gelatine papers will not stand.

Having alluded to some of the troubles that winter cold may bring about, there is perhaps a still greater one that may beset the professional worker—namely, a frozen water supply. This, in the greater number of cases, may be avoided were a few timely precautions taken; yet they are too often neglected until too late. There is now sold by most of the large ironmongers a thick felt, made specially for binding round exposed water-pipes. This felt is an excellent non-conductor of heat, and affords a good protection to the pipes. In place of that the hay bands, with which trusses of hay are bound together, if wound round the pipes answers well. When the service pipe from the street main is laid near the surface of the ground, as is too often the case, six inches of stable manure laid on the ground above it will prevent the frost from reaching the pipe. Another good way of preventing the water from freezing in the pipes is to leave the taps continually dribbling. This, of course, the water companies would object to if they knew of it; but they need not be consulted on the subject. If the water is paid for by meter they raise no objection, of course, as the slight extra cost to the consumer is sometimes amply compensated for in the avoidance of a frozen-up supply, and, perhaps, burst pipes. If perchance for want of due precaution being taken, the pipes get frozen, they should, without delay, be examined from end to end to see if there are any bursts. If there are, they will be seen as enlargements of the pipe at those places, and the services of a plumber should be sought at once to do the necessary repairs. If this be neglected, it may result in the flooding of the place when a thaw sets in, and possibly much damage being done.

By the death of Mr. Mason Jackson, which occurred in London on December 29th, in his eighty-fifth year, journalism has lost one of its most respected veterans. Mr. Jackson was for thirty-five years the art editor of the “Illustrated London News,” taking that position after the death of Mr. Herbert Ingram, M.P. In this capacity Mr. Jackson wielded considerable influence in the development of illustrated journalism, and his book on the progress of this section of newspaper work is a standard history which no writer on the advance of the Press can neglect. Mr. Jackson came from the county of Thomas Bewick, and like him was an engraver. His first work for the Press was done for the “Morning Chronicle,” in the absence of his brother, Mr. John Jackson, a well-known wood engraver. Joining the staff of the “Illustrated London News,” he had much to do with the enterprising record of historic events which that pioneer of illustrated journals contained during the Victorian era. Mr. Jackson was well known to most black-and-white artists, and he has left the memory of a genial and upright man.—“The Times.”

THE MICRO-PLANAR LENS COMPARED WITH A FIRST-CLASS LOW-POWER MICRO-OBJECTIVE.

AN article on "The Micro-Planar Lens," which appeared in the JOURNAL of October 30th, 1903, has greatly interested me, in view of the fact that I have had considerable experience in the use of one of these lenses (a 75 mm. by Zeiss) during the past year, the results of which do not lead me to the conclusions reached by its writer, Mr. J. I. Pigg. Believing that the subject, as viewed from another standpoint, may prove interesting, I venture to record here my own observations and conclusions.

The construction and appearance of the micro-planars are so lucidly described by Mr. Pigg as to require no further remarks. He is mistaken, however, when he gives the 2in. as the lowest power of this form of lens. Zeiss lists five sizes—20, 35, 50, 75, and 100 mm., or $\frac{3}{4}$ in., 1 $\frac{1}{4}$ in., 2in., 3in., and 4in. equivalent foci respectively. His experience was with the 35 mm., or 1 $\frac{1}{4}$ in. size, my own, as stated, with the 75 mm., or 3in.

The micro-planars are, in fact, photographic lenses of very short foci, specially designed for moderate enlargements of both opaque and transparent subjects, notably the three larger sizes, 50 mm., 75 mm., and 100 mm., which can be used only on a microscope with very wide body, as furnished in the Zeiss stand, intended for this work, or by attachment directly to the camera. The amplifications obtainable with these are quite low, even with long bellows cameras rarely exceeding 10 diameters—photo-macrographs, in fact. The two smaller sizes—20 mm. and 35 mm.—are fitted with the Society screw, adapting them to any microscope, and with these photo-micrographs of moderate magnifications can be made without excessive length of bellows in the camera. But since none of them can be used with an ocular their range of amplification is quite limited.

The use of photographic lenses for photo-macrography, or photo-micrography, is no new thing, however. I have so employed them for more than a dozen years with excellent results. Beck's rapid rectilinears of 5in. and 7in. foci, their wide angle of 3 $\frac{1}{2}$ in., and Ross's concentric 4in. have constituted my battery for amplifications up to 8 diameters. Samples of their work may be seen in my little book, "The A B C of Photo-micrography."

In comparing the performances of an ordinary achromat and micro-planar of same foci, it seems to me that both should be used with full openings, as the former must be, necessarily. But Mr. Pigg finds that with objects requiring "exceptional depth of definition" the micro-planar may be stopped down to F. 16, which, of course, will greatly increase its performance in that direction, to the disadvantage of the achromat. My own experience with these two lenses seems to show that, with the micro-planar, used at its full opening upon objects having several planes of surface requiring "exceptional depth of definition," there is but little difference in their performances, the achromat having perhaps a slight advantage over the other. Stopped down to F. 16, the micro-planar is at its best for this sort of work, and possibly better than its rivals.

But—there are, of course, lenses and lenses, notably among the very low powers. My own 3in. is by Beck, as are equally fine 1 $\frac{1}{4}$ in., 2in., and 4in., which I am the happy possessor of. I do not believe a finer 3in. exists, although it was made more than twenty-five years ago, and has been in steady use all that time. It is corrected for photography by Wenham's method—the insertion of a double convex lens of some 6in. focus in the extreme rear of its mounting. The full opening is slightly less than that of the micro-planar, but the numerical aperture is greatly in excess of the latter lens. Their speed is very nearly the same, especially when transmitted light is used. The

greatest difference between their performances is to be found in the actual field of view which they can embrace and properly define. The 3in. achromat will take in the whole of an object not exceeding $\frac{3}{4}$ in. in diameter, and define it perfectly to the margin without any approach to "fuzziness." The 75 mm., according to Zeiss's catalogue, will "cover and photograph an object 1 $\frac{1}{4}$ in. by 1 $\frac{1}{4}$ in. at full aperture, and 2 $\frac{1}{4}$ in. by 2 $\frac{1}{4}$ in. when stopped down with the iris diaphragm." This is probably correct, but I have had no opportunity to verify it, since the largest opening in the stage of their photo-micrographic microscope is only 1 $\frac{1}{4}$ in. in diameter (one of the numerous defects in this much over-rated stand), which renders the large body, specially designed for using the three larger sizes of micro-planars, of but little practical value. But these may be used very effectively on an ordinary camera with sufficient bellows extension for photo-micrographing opaque objects of sizes named above. They are also excellent for small photographs of landscapes, etc., if one has a camera which can be closed sufficiently for their short foci. At least, the 75 mm. may be thus employed, as I have found in actual use, from which I infer that both the 50 mm. and 100 mm. are equally available for the same purpose.

As these remarks would lose much of their interest and possible value without illustrations, I have made a few comparative negatives from subjects suitable to test both lenses under varying conditions of illumination and amplification, reproductions from which are submitted herewith. The opaque specimens were photographed with an upright camera, and lying flat on the microscope stage, all the apparatus being placed close to a window with western exposure, and the illumination effected by diffused daylight reflected evenly by their surfaces, with no shadows. It is a matter of regret that the shortness of camera extension—just 2ft.—prevented a greater amplification than seven diameters with these lenses of 3in. focus. And here may be noted a point of decided superiority in the micro-objective over the micro-planar. The former lens may be used in conjunction with an eye piece, materially increasing its amplification, with a short bellows camera, whilst the micro-planar cannot be so employed, its construction not admitting the use of an ocular. Hence, as it was necessary for the purpose of comparison to employ the same amplification with both lenses, I found myself restricted in its extent to the limitations imposed by the micro-planar. As illustrative of this important fact, it seems proper to add to the pictures of opaque objects at equal amplifications a third one of same subject, more highly magnified by means of an eyepiece used with the 3in. micro-objective.

A perusal of the foregoing brief remarks, together with careful comparison of the accompanying illustrations, will, I think, convince any one that I have at least good ground for contention that the micro-planar is not the superior of a good or first-class achromatic micro-objective, even in the limited field to which the former lens is restricted. It has its sphere of usefulness, undoubtedly, and some work may be done with the lower powers that is not possible to a microscope achromat, but such instances are rare, whilst I have never attempted work in any field common alike to both in which the performance of the microscope objective was not equal, or just a little superior, to that of the micro-planar. To be sure, my experience with the latter has been confined to the 3in., but it is in these low powers that one would naturally expect to find the great superiority of this form of lens—if such existed. In the higher powers, up to $\frac{3}{4}$ in., the greater numerical apertures of the microscope objectives must give them an immense advantage over the micro-planars, to say nothing of their adaptation to use with eyepieces.

Mr. Pigg's article concludes with this summing up: "The



Fig. 1.—Star Fish. + 7. Photo-macrographed with Zeiss' Micro-planar lens. 75 mm.=3 in. Opaque.



Fig. 2.—Star Fish. + 7. Photo macrographed with Beck's 3 in. microscope objective. Opaque.



Fig. 3.—Star Fish. + 12 Photo-micrographed with Beck's 3 in. microscope objective and aplanatic ocular. Opaque.



Fig. 4.—Egg of Butterfly. + 25. Photo-micrographed with Beck's 3 in. microscope objective and aplanatic ocular. Opaque.

foregoing illustrations prove that, though in some cases the microscope objective is superior to the anastigmat lens, the latter is, as a rule, the superior instrument for photo-micrographic purposes." My own experience seems to lead to the opposite conclusion—that in a limited number of cases the anastigmat lens or micro-planar may be superior to the microscope objectives, but, broadly speaking, the latter, as a rule, is vastly the superior instrument for photo-micrographic purposes. Where cost is of no special moment, the addition of a low-power micro-planar to one's battery of lenses is doubtless desirable, but for the majority of workers not so favoured by fortune, it would be a great mistake to invest in this alone, under the mistaken impression that he was thereby

providing himself with the "superior instrument." But I must conclude, and allow the illustrations to speak for themselves.

Fig. I. A star fish, made with the micro-planar lens of 75 mm. focus. Opaque, illuminated by diffused daylight.

Fig. II. The same subject, photo-micrographed with Beck's 3 in. microscope objective; illumination and all other procedures same as with Fig. I; exposure of each ten seconds. The distance from top to lower visible surface of specimen is over one-eighth of an inch. Both are well defined, but the sharpness throughout would seem to be slightly greater in this one by the achromat.

Fig. III. This illustration is given to shew that the micro-



Fig. 5.—Wing of Mosquito. $+15\frac{1}{2}$. Photo-micrographed with Beck's 3-in. microscope objective. Transparent.



Fig. 6.—Wing of Mosquito. Photo-micrographed with Zeiss' micro-planar lens. 75 mm. = 3 in. focus. Transparent.

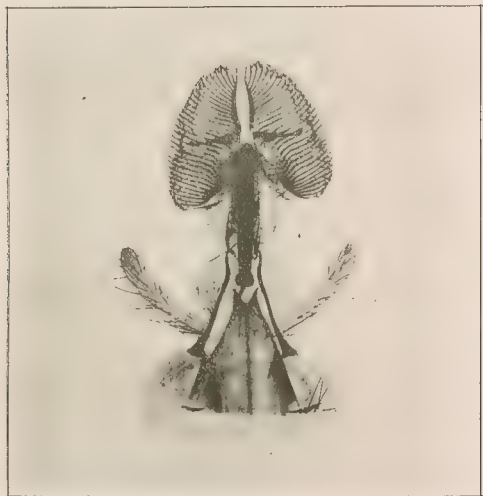


Fig. 7.—Proboscis of Blow Fly. $+23$. Photo-micrographed with Beck's 3-in. microscope objective. Transparent.



Fig. 8.—Proboscis of Blow Fly. $+23$. Photo-micrographed with Zeiss micro planar lens. 75 mm. = 3 in. focus.

scope objective may be used with an ocular to increase its amplification, without any impairment of the defining or penetrating qualities. With the short camera the limit of the micro-planar was reached at $+7$, being the same as that of the microscope objective projecting the image without an eyepiece. By merely adding the latter—not possible with the micro-planar—the amplification was almost doubled without loss of definition. Time of exposure was also doubled—20 seconds.

Fig. IV. Egg of butterfly, also an opaque object, magnified $+25$ diameters, with the same optical arrangement as used on Fig. III., and bellows length increased some six inches. At this power the penetration of the objective seems to continue good.

Fig. V. Wing of mosquito, magnified $15\frac{1}{2}$ diameters with Beck's 3in microscope objective.

Fig. VI. The same subject, $+15$ diameters, with Zeiss's

micro-planar lens, 75 mm. These were made under precisely the same conditions. Rapid orthochromatic plates, ground glass screen, and electric arc as radiant. Exposure, one second. The delicate hairs on lower edge of wing, and other markings, are rather better shown by the micro-objective than by the planar.

Fig. VII. Proboscis of blow fly, $+23$. Made with Beck's 3in. microscope objective.

Fig. VIII. This is same subject as preceding, and was photographed with Zeiss's micro-planar lens, 75 mm. Plate, radiant, and exposure alike—rapid orthochromatic, electric arc, and two seconds. Screens were ground glass and aurantia, dyed rather deeply. Details decidedly better shown in Fig. VII. than in the other, especially the membrane of the palpi.

W. H. WALMSLEY.

THE VERANT, A NEW INSTRUMENT FOR VIEWING PHOTOGRAPHS FROM THE CORRECT STANDPOINT.

[A Paper read before the Royal Photographic Society.]

THE representation of a solid object on the ground glass of a camera is not an image in the optical sense, in so far as it is not conjugate to the object with regard to the lens. In fact, looking more closely into it, we behold a kind of projection similar to representations yielded by a pin-hole camera, and moreover, we may easily watch this projection at the side of the objects, if we suppose the camera lens as an ideal objective, free from distortion, astigmatism, and curvature of field.

The image plane is of course determined by the ground glass, and we shall refer to it as to the "ground glass plane." In consequence of the general optical laws, there is one plane only at the object side conjugate to the ground glass plane. As we all know, from the use of the optical lantern—the distance between lens and slide being given—there is only one position of the screen where the diapositive will appear at its sharpest. In our general case, we will call this plane "the plane focussed

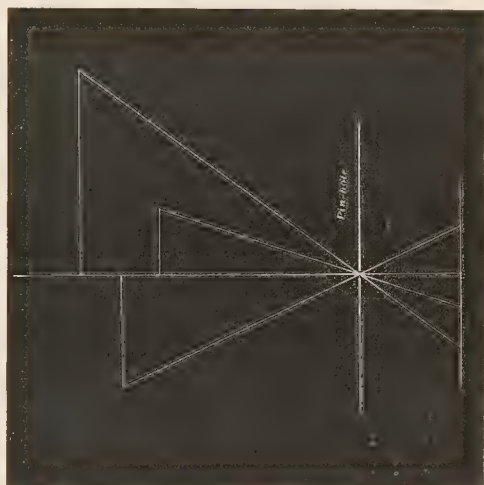


Fig. 1.—Projection by means of a pin-hole camera.

for," and we know by experience that it is generally at a considerable, sometimes at an infinite, distance from the lens. None but the points of this plane focussed for are optically conjugate to points of the ground glass, and are rendered there as sharp points, whereas object points before or behind the plane focussed for, are represented on the ground glass as circles of indistinctness. They are formed because the ground glass intersects each image-forming pencil of definite aperture, not in its apex, but before or behind it. The object to these circles of indistinctness is obtained by looking for intersection between the conjugate object plane, i.e., the plane focussed for—and the image-forming pencil before entering the lens. In this way, every circle of indistinctness can be constructed at the object side, and the whole function of the lens consists in optically rendering on the ground glass in n -fold reduction the delineation on the plane focussed for.

Assuming, therefore, rays emanating in every direction from the different object-points behind, in or in front of the plane focussed for, the question now arises which of these enter the objective, and the answer is, all the pencils passing the aperture in the diaphragm. This is easy enough in the case of objectives

with a stop in front; if, however, the stop is enclosed between two lenses, the pencils must be directed towards the image of the diaphragm formed by the front combination; in the same way an observer at the object side cannot see the stop itself, but its image formed by the front lens. As not more than one image of any object is produced by an optical system, only such rays as aim at this image will pass after refraction through the

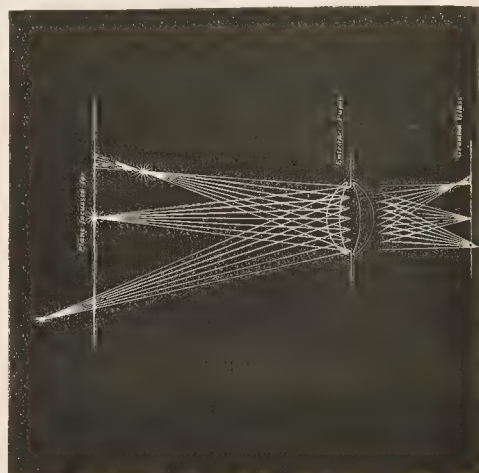


Fig. 2.—Delineation on the plane focussed for.

stop itself. We will call, with Professor Abbe, this image of the diaphragm the entrance pupil of the system.

Apart from its importance with regard to sharpness, the entrance pupil governs the perspective of the photograph; not only

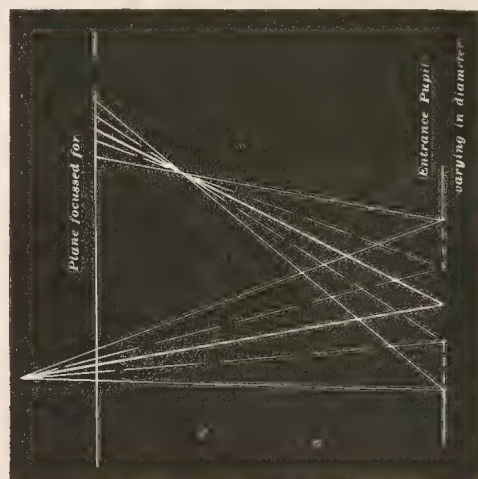


Fig. 3.—Entrance pupil governing the perspective.

the object-points themselves lie on pencils which pass through the centre of the entrance pupil, but also the centres of the circles of indistinctness, by which object-points outside the plane focussed for are represented on this plane. Any alteration of the diameter of the entrance pupil is followed, with regard to the circles of indistinctness, by a proportionate range of their diameters, but the position of their centres is quite independent

of this alteration. Assuming now objectives considerably stopped down, the projection on the plane focussed for will appear sharp, as thin pencils only will pass through the middle of the entrance pupil. This centre, therefore, will serve as the centre of projection for the objects, the station point.

Considering the image formed on the ground glass as the n -fold reduction of the delineation on the plane focussed for, we do not find any difficulty in placing a print between the station point and the plane focussed for so that they exactly correspond. The pencil from any point on the plane focussed for, aiming at the centre of the entrance pupil, will meet the transposed print exactly in its conjugate point, and vice versa, each ray connecting the station point with any point of the print will when continued reach the respective object-point.

The distance between the print and the station point depends on the focal length and the construction of the camera lens, but here it will suffice to know that it is equal to the focal length when we restrict ourselves to landscape photography where the scale of reduction, if not infinite, is at any rate a high number. We will call this distance "the correct viewing distance," and

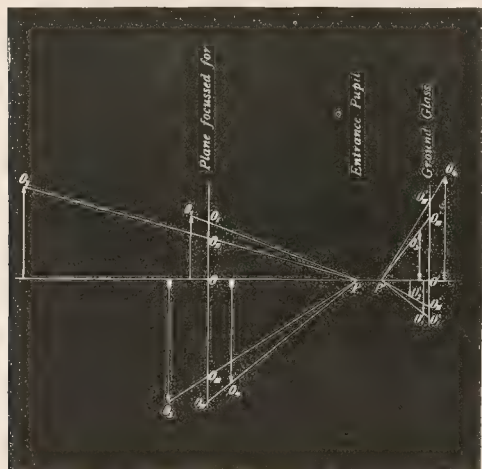


Fig. 4.—Centre of the entrance pupil serving as the station point.

it must be realised if we wish to obtain an impression corresponding with nature. For then only will the pencils from the points of the print include at the station point the same angles as were formed at the centre of the entrance pupil of the camera lens when the photograph was taken.

Before we begin to apply these theoretical rules in practice for viewing photographs taken with the ordinary—non-steroscopic—camera, we must mention one rather self-evident point. As there is naturally in such photographs one station point only, it is important that the picture should be inspected by one eye only. Apart from this, the binocular inspection of an apparently plane picture, held at a short distance, will lead us to the notion of a plane object, and this will forcibly contend against the apprehension of relief.

It is prescribed by a sufficiently well-known rule, to bring the observer's eye—more exactly the centre of its pupil—into the station point, in order to obtain on the retina equally sized images as are formed in inspecting the natural landscape. This is certainly correct, but nevertheless the impression gained in this way will not be quite true to nature, because we are not

accustomed to inspect natural objects with a motionless eye, on the contrary, we direct our eye successively to each part of

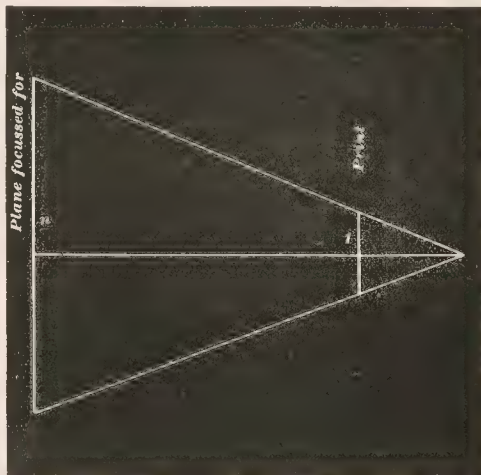


Fig. 5.—Print properly placed with regard to the delineation on the plane focussed for.

the objects, so that for the estimation of apparent magnitude, the angles are important which are formed by consecutive directions of the axis of the eye when revolving on its centre of rotation. The old rule, therefore, has to be accordingly altered so that not the pupil of the eye but its centre of rotation is to coincide with the station points.

The distance between print and cornea being diminished by 10 to 11 mm. again, it is the more impossible for a normal eye with a distance of distinct vision of 25 cm. (10 inches) to correctly view the majority of existing photographs, as they are taken with lenses of too short a focal length. There are, of course, ways of getting out of this difficulty. As far back as 1844 Geo. S.

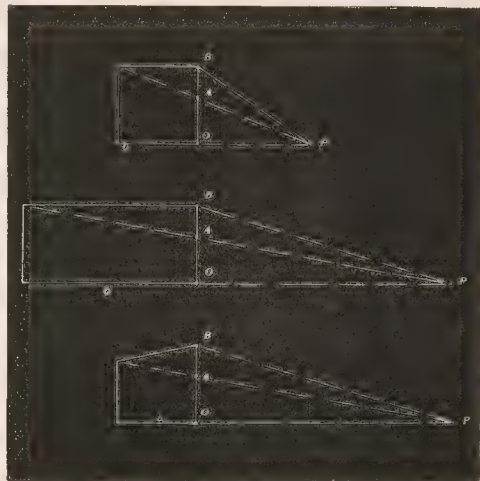


Fig. 6.—Apparent alterations of depth and of form due to increased distance between eye and print.

Cundell,* with a view to pleasant perspective, recommended photographic objectives of considerable focal length; or ordinary photographs could be magnified to such an extent that the correct viewing distance became equal to or larger than 25 cm. (10 inches). But both remedies have their serious drawbacks; either expensive, unwieldy cameras or troublesome manipulations are necessary.

When, however, disregarding these remedies, the normal eye is brought into an incorrect (too great) distance from the photograph the impression is a wrong one, as it is untrue to nature. As may be inferred from simple laws of perspective, the possible deception will lie between the two following limits; firstly, the observer, knowing the real distance between the objects represented on the photograph, apprehends near objects too large, distant objects, too small; secondly, the observer, knowing the real relation of height and breadth of the objects represented apprehends too great a depth. These alterations of perspective are perfectly known to every photographer.

A short-sighted person is often able, by the near distance of

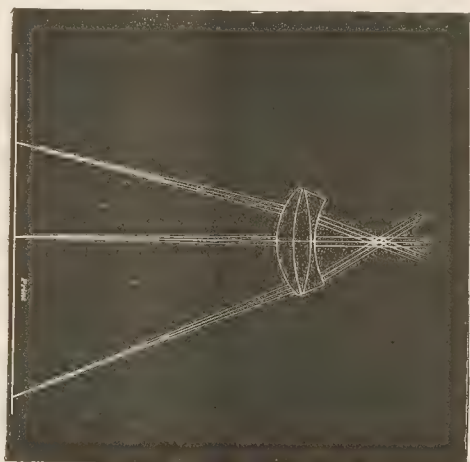


Fig. 7.—Diagram of the Verant lens.

distinct vision to inspect from the correct viewing distance, an ordinary photograph (taken with a short focus lens); the impression gained in this way will be perfectly true to nature as far as regards perspective, only the distinctness of vision is greater and the accommodating innervation may be different. The innervation forms, however, but a very rough means of estimating distance, and the impression will hardly be altered when this sensation is at variance with the ordinary state of things.

We are now prepared for the following question: How might a normal-sighted person, in looking at ordinary photographs, not only enjoy the advantage of the short-sighted, but at the same time preserve the correct state of accommodative innervation? This may be achieved by means of an alteration of the second expediency, mentioned before, that is, by replacing the physical magnification by a virtual one. In accordance with Professor A. Gullstrand, we will put forward the following proposition; to construct a viewing glass with the object of forming a virtual, distant, orthoscopic image of a print brought into its front focal plane. The crossing point of the principal rays must at

the same time lie at such a distance from the nearest lens as to be accessible to the eye's centre of rotation.

Further, Professor Gullstrand,* according to rough calculations, proposed a type of lens fulfilling these conditions and requested the Carl Zeiss firm to take up this inquiry. This was after a time done, and a patent was applied for in the spring of 1903 for two binary systems showing a print in the front focal plane to an eye accommodating for infinity, free from colour and distortion. Systems of this kind are used in the instruments I am going to bring before you, and they were called Verant lenses from the Latin: *verus* = true. From the foregoing, you will know that, made of the focal length of the camera lens they will produce the same impression in which an eye at the place of the camera lens would be affected by the objects themselves.

These lenses are free from astigmatism, but not from curvature of field which has the same character as in photographic objectives of older type. In consequence of this, the central part of a print in the front focal plane will appear at infinite

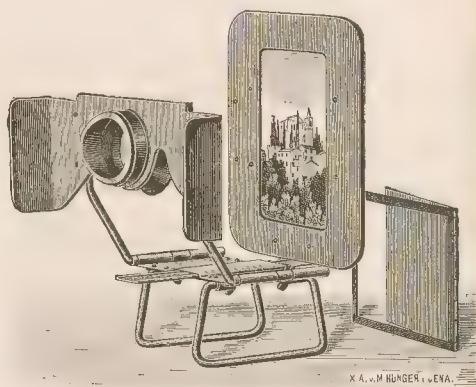


Fig. 8.—Single Verant standing on its handles, with holder for unmounted prints. The unsymmetrical cap is adjusted in the drawing for the left eye. It is important to bring the instrument as close as possible to the eye. When used with the right eye the cap has to be turned 180 degrees.

distance, whereas the margin will appear nearer. Inspecting in the Verant the margin of a print we must therefore alter our accommodation for the central part. This is done spontaneously by young and middle-aged people, whereas an elderly person will have to alter the focus for the margin. Short-sighted people are advised to use their ordinary spectacles; they will, of course cause the inherent distortion which, however, is generally overlooked.

Summing up, we come to the following conclusions: supposing we have a Verant lens of the focal length of the camera objective, a normal eye will obtain, through the Verant, as far as perspective and accommodation is concerned, the same impression it would obtain from the natural landscape when brought to the place of the entrance pupil of the camera lens. And if colour is neglected the impression caused by the photograph will exactly correspond with that exercised by the natural objects.

This necessarily affects our apprehension of relief, and our

* On the Practice of the Calotype Process of Photography. *Phil. Mag.*, 1844 (3), 24, 321-332.

* According to a letter of July 6th, 1902, Professor A. Gullstrand claims priority for "das P. in der Verlegung des Knotenpunktes für die axialen Strahlen der austretenden Lichtschmelze in den Drehpunkt des Auges und das Prinzip der Zusammensetzung aus zwei Menschen mit Brechkraft und Biegung von entgegengesetzten Vorzeichen."

estimation of distance must correspond with the conclusions we should derive from monocular inspection of the objects themselves. Accepting Sir David Brewster's* distinction between the criteria of distance and the seeing of distance, we can obviously not see distance by monocular vision without accommodative innervation, but we are restricted to the four first criteria of distance, i.e.,

1. The interposition of numerous objects between the eye and the object.
2. The variation in the apparent magnitude of known objects.
3. The degree of variety in the colours and tints of objects.
4. The degree of distinctness in the outline and minute parts of objects.

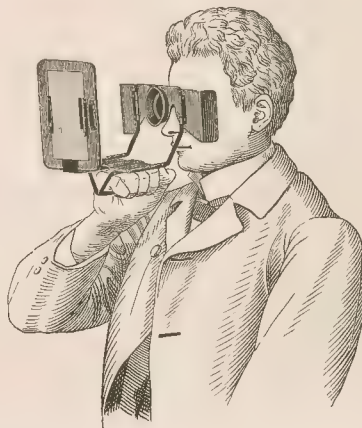
All these with partial exception of the third, apply equally to monocular inspection of a photograph in the Verant, and they exert in this case on our mind the same powerful influence as solid objects do in monocular vision; to use Sir David Brewster's words, "the monocular relief" of a photograph in the Verant is obvious. We are, therefore, justified by this impression of solidity, in concluding that the criteria of depth are of much greater importance than is generally conceded to them. At the end of our lecture we shall point out another instance in favour of this conclusion.

When the Verant lens has a focal length different from that of the camera objective, the perspective of the print is altered; in the case of a longer Verant focus, the possible alterations correspond to the extreme cases already enumerated when dealing with the wrong impression conveyed to a normal eye by a short focus picture. In the case of a shorter Verant focus, the possible alterations are exactly the reverse, as the angles of vision become larger than the angles at the entrance pupil of the camera lens. The conditions are now precisely as in the case of a field glass, for it is the very function of a telescope to enlarge for the observer's eye the angles at the object side enclosed between the axis and the pencils entering the objective serving here as the entrance pupil of the telescope. It is probably due to the very limited extension of field in the telescope that this alteration of perspective is not better known, for the whole field of a telescope of say four diameters will hardly exceed 10 degrees. Using glasses of still less power in opera glasses, for instance, sometimes not more than $1\frac{1}{2}$ diameter is realised—the angles at the object side are certainly increased, but at the same time, their telescopic alteration becomes too inconsiderable to enforce itself as a deterioration of perspective. For our Verant lens, we may easily infer from this example that we need not be too particular in choosing its focal length in accordance with that of the camera objective. We have therefore planned two different Verant foci, one of 11 cm. ($4\frac{1}{4}$ -inch), and one of 15 cm. (5 9-10-inch). If we allow for the equivalent focal lengths a discrepancy of 1 : 6.5 = 15.4 per cent., the former Verant lens will suffice for objectives from 9.3 cm. ($3\frac{3}{8}$ inches) to 12.7 cm. (5-inch), and the latter from 12.7 cm. (5-inch) to 17.3 cm. (6.82 inches). Our Jena experiments showed for differences of such order, no appreciable alteration in our apprehension of relief; or in other words, the alteration due to such differences is not apparent to the average observer if he judge from memory alone without comparing the impression gained in the Verant with the impression produced by the objects themselves.

On this occasion we will point out the help to the better understanding of the principle of the telescope for which the Verant lens, of different focal length may be applied. Camera objective and Verant lens repeat the entire function of the telescope as regards perspective, but as the part of the objective

is separated by a certain space of time from that of the eye-piece, both are more easily understood; the camera lens acts as the telescopic objective, and the print takes the place of the aerial image formed behind the objective; as it has physical existence, it can be lighted sufficiently so that a regulation of the way of the pencils by means of a field lens is unnecessary. The eye-piece is replaced by the Verant lens forming a distinct image of the print for a normal eye accommodating for infinity. If, for instance, a Verant lens of 11 cm. be used for inspecting a photograph taken with an objective of 44 cm., the function of a four-fold telescope is illustrated with the difference, however, of a field not restricted to 10 degrees but extending beyond $16\frac{1}{2}$ degrees. In proportion to this enlargement of field, the alteration of perspective will be more clearly apprehended; as the print can be viewed with the naked eye from the correct standpoint, one is able at any time—not being restricted to natural objects—to compare the impression obtained from one standpoint by means of the naked eye with the impression obtained from the same standpoint through a field glass of four diameters.

It was only natural to apply lenses of this description to binocular instruments. Let us suppose two Verant lenses



Single Verant. In use, the handles are brought together and clasped in the four fingers.

arranged at a distance of about two inches of their parallel axes (the lower limit of interocular distances occurring) we immediately see that short foci alone are applicable; otherwise the prints would either hinder each other, if anything approaching a considerable field of view were required, or plane mirrors would have to be applied. We disregarded, however, this expediency first used in Wheatstone's classical stereoscope, because a double Verant provided with mirrors could by no means have been adapted for paper prints, but would have been restricted in consequence of the difficulty of lighting to the exclusive use of transparencies.

Let us for a moment suppose that ordinary transparencies will bear even a high magnification and that Verant lenses of a corresponding short focus could be constructed with so great a distance as 25 mm. (1 inch) between stop and nearest lens. Taking this for granted, the advantage would certainly be with short focus lenses, as the angles of vision subtended to the eye by a clear breadth of, say, 48 mm. (1 9-10 inch) would be correspondingly large. The question now arises, what magnification in diameters will be borne by an ordinary negative? For it is

* *This Stereoscope*, London, J. Murray, 1853, pp 4-56.

the grain of the negative, not of the transparency, which decides the possible magnification. In our experiments we came to the conclusion that, say a three-fold magnification is allowed, whereas ordinary negatives give a decidedly unpleasant effect under a four-fold magnifier. We therefore chose a focus of 73 mm. (2.9 inches) for the double Verant, and in consequence thereof, we see the clear breadth of the transparency under an angle of $36\frac{1}{2}$ degrees, and its diagonal under 50 degrees. With a still shorter focus of the Verant lens—we made a very satisfactory specimen of 63 mm. ($2\frac{1}{2}$ inches) — the angles are respectively $41\frac{1}{2}$ degrees and $56\frac{1}{2}$ degrees. Such lenses would naturally show more clearly the advantage gained by this instrument, but they will not do with directly copied transparencies, and to substitute reduced slides (say to $\frac{1}{2}$ from objectives of 127 mm. (5 inches) in order to reduce the grain of the negative in the same proportion would be too troublesome for the majority of photographers.

In adapting the double Verant to the observer's interocular distance, we must, in accordance with Mr. L. Bolton's able paper, insist that each Verant lens is to be placed exactly opposite the centre of vision of the corresponding print. In the double Verant, we obtained this end by rigidly connecting the lens with the print holder. It is then, of course, impossible to mount these stereoscopic prints in the usual manner.

In using the double Verant (the distance between the camera lenses had been 65 mm. (2.9-16 inches), the impression was quite true to nature, as was ascertained by direct comparison with the objects photographed. In using the same double Verant for pictures taken with objectives of less separation 20 mm. (4-5 inch), near objects appeared larger, whereas their size was apparently diminished in the case of a separation between the camera lenses exceeding 65 mm. (2.9-16 inches). I must, however, mention that in order to show these alterations rather great deviations from the interocular distance were necessary. Following up this connection between apparent size of near objects in the stereoscope and deviation from the interocular distance, it was natural to repeat with our double Verant the old experiment of placing identical prints in the stereoscope. The result was very satisfactory for landscape prints without near foreground. In viewing such with both eyes, the trifling stereoscopic differences, that is the means of seeing distance, are not missed, whereas the criteria of distance are rendered with all truth photography is able to show. Our satisfactory apprehension of relief formed by the inspection of identical pictures is the other proof of my view that the importance of the criteria of seeing is generally undervalued.

DR. MORITZ VON ROHR.

DISCUSSION.

Dr. von Rohr then showed to the audience the instruments to which he referred, and produced some prints for examination. Through the kindness of a friend he was in possession of some London views, so that those present would be able to judge for themselves whether the impression given by means of the instruments was correct or not.

Mr. John Stuart said he had been much charmed with the lecture they had just heard, and thought their thanks were due to Dr. von Rohr for first bringing such a useful and elegant instrument to the notice of the Society. No doubt the instrument would prove, not only a personal, but also a commercial success. To be able to see single views stereoscopically, as was shown by these instruments, was, he thought, quite novel and of great interest, and he would not have believed that such relief was possible unless he had actually seen it himself. The stereoscopic relief when two pictures were used, both

reversed and non-reversed, was very beautiful, and the effects exceedingly natural. He, personally, was very glad that Dr. von Rohr had come such a long distance to show them these interesting devices. With regard to the lecture itself, it was, of course (as was to be expected from Dr. von Rohr) of a mathematical nature, and he thought members would follow and appreciate the various points better when they read it leisurely in print, than in listening to it that evening.

Mr. L. Bolton said that Dr. von Rohr's paper explained why it was that he (the speaker) had failed to obtain the projections of certain surfaces into others by means of the stereoscope to which he had referred at the end of his paper, read before the Society early this year. The failure to do this, the possibility of which was indicated by geometry, was doubtless due to the neglect of the principles on which Dr. von Rohr had insisted, and therefore supported Dr. von Rohr's contentions.

Mr. Philip Everitt said he thought there was one point particularly deserving of emphasis with regard to the double Verant. He referred to the use of the instrument in viewing identical pictures, so as to see them as one picture in relief. This was a very curious effect, and deserving of a great deal of attention. So far as the practice of photography was concerned he thought that an examination of this matter might be found very valuable. With this instrument they might take two prints from one negative, and see them as though they were stereoscopic. An amateur could therefore make use of his entire stock of negatives, stereoscopic or ordinary. If the one chosen should be too large he might reduce it to the size requisite for use in this instrument; and, with two prints from the negative, obtain the effect of a stereoscopic picture without having to go again to the place where the original photograph was taken. He thought this was a very valuable point, and one deserving of a great deal of attention. With regard to the single Verant also, he thought it would prove of very great advantage. They could place a print in this instrument, and see the view as though they were really in the spot where the view was taken, except, of course, that the colour was lacking. They had seen some toys—he must call them toys, for they were not constructed scientifically—somewhat after the style of these instruments, but in the case of the Verant the construction was such that they were enabled to see an exact reproduction of the forms of nature.

Dr. von Rohr expressed his thanks to the audience for the patience with which they had listened to his explanation of the instruments. He was well aware that he could not make the theory of the whole instrument clear in so short a time as three-quarters of an hour; but he thought that if they looked over the paper when printed they would be able to see what he would like to have conveyed to them that evening. He must add that he was indebted in a very great measure to some writers of former times who got upon similar lines before, and whose work had been of great help to him. The first man he referred to was Sir David Brewster, who had done so much in calling attention to binocular relief in the stereoscope; but as he had pointed out in his lecture, he did not think that Sir David Brewster had sufficiently appreciated monocular relief, although he was certainly conscious of its value. Another name he must mention was that of his old and highly valued friend, Mr. R. H. Bow, of Edinburgh, to whom later writers on optics were indebted in a great measure. As far back as 1863* he had constructed an instrument somewhat similar to those before them this evening, adapted for viewing lantern slides. Mr. Bow had been very near to develop, as regards perspective, the importance of the centre of rotation of the eye; but as he (the speaker) had ascertained from Mr. Bow himself, when he had the pleasure

* "On the Advantages of Photographic Transparencies, &c." THE BRITISH JOURNAL OF PHOTOGRAPHY, 1863, 19, pp. 101-102.

seeing him in the spring of 1903, he had stopped just short of this point which was left for Prof. Gullstrand. In later years there appeared some important papers, and he referred especially to H. Helmholtz's treatment of the stereoscope and the telestereoscope.* Among the productions of the last year he must call attention to a valuable paper by a Dutch lieutenant, L. E. W. van Albada.† Then last, but not least, must mention Mr. Lyndon Bolton.‡ In Mr. Bolton's paper the cause of the incorrect reproduction of distances in the stereoscope was mentioned. The eye-pieces were of too great optical length for inspection of the prints. He (the speaker) tried to avoid this, and he had the pleasure of showing one of those present—Mr. Frederic J. Cheshire—stereoscopic slides in this instrument, and of having that gentleman compare these with the objects themselves. He could not show this to all those present, but perhaps some would be interested in taking the objects accessible to all, and they would be able by means of the instruments—which the firm of Carl Zeiss intended to present to the Society—to ascertain the correctness of the views at he had put forward.

Mr. John Stuart asked how soon the instruments were likely to be upon the market, and as to the price at which the instruments were to be sold?

Dr. von Rohr replied that the single Verant would be upon the market from that time. The single Verants would be priced at about 24s. or 25s. each. With regard to the double Verants, it would be some time before they were ready.

The Chairman had pleasure in proposing a vote of thanks to Dr. von Rohr for his very interesting lecture. He cordially endorsed the remarks made by Mr. Everitt regarding the practical use of the instrument, and thought that there could be no doubt that it would be an immense advantage to be able to obtain stereoscopic effects in the way shown from ordinary photographs. With these instruments there would be no need of using a special stereoscopic camera with double lenses as in ordinary work, nor for special mounting for stereoscopic vision. Both the double and the single Verants appeared successful in showing photographs in proper relief and true perspective. On behalf of the Society he wished to thank Messrs. Carl Zeiss for the very handsome donation they had so kindly made to the Society.

Mr. Frederic J. Cheshire said he had been referred to by Dr. von Rohr as having seen and made certain experiments. He thought that what he saw might be of interest to those present. Some weeks ago he had the delightful experience of passing a few hours with Dr. von Rohr, and discussing with, or rather being lectured to by him on the questions that had come before them that evening. At the close of the discussion was taken by Dr. von Rohr upon the flat roof of the building without any intimation being given as to what he was to look for. Standing at a certain spot he was asked to look at a pair of photographs in the Verant, and then compare what he saw with the free-vision views from the same spot. On thus comparing photographs taken with an inter-objective distance of 40 millimetres, his own inter-pupil distance being 71 millimetres, he could not see any difference, except what they could naturally expect to find in a photograph, such as absence of colour, etc. Then he compared photographs taken with an inter-objective distance of 40 millimetres. Immediately on his right was a row of skylights of bee-hive shape, stretching from his feet to the edge of the building, and on looking through the Verant at the photographs taken with the inter-objective distance of 40 millimetres, the only difference he noticed was

that the skylights in the immediate foreground appeared to be larger when seen through the double Verant than in nature itself. Of course, that could not really have been the case; it must have been a subjective impression. Then he took photographs taken with an inter-objective distance of 105 millimetres, and compared them with nature, and under those circumstances the objects in the immediate foreground appeared to be much smaller than in nature. Mr. Cheshire took the opportunity of asking Dr. von Rohr, whom they all knew as the author of a classic book on "The Theory and History of Photographic Objectives," whether there was any likelihood of his book being translated into English in the immediate future.

Dr. von Rohr said that it was very kind of Mr. Cheshire to refer in such an appreciative manner to the book. He was afraid that he could not answer the question. There would be no objection on his part to having a translation, although he would like to make some important alterations in the work; but he was afraid there would be some difficulty in finding an English publisher sufficiently venturesome to publish an English edition of the work.

Mr. W. E. CROZIER has commenced business at 22, Harrison Terrace, Truro, Cornwall, as a photographic dealer.

WE have to thank the Editors of "The Photogram" for a bound volume of that admirable publication for the year 1903.

A CORRESPONDENT writes:—"In looking over a map of Africa to-day I discovered a town marked Kodok, situated near Fashoda, with whom the name of Major Marchand is associated. It would be interesting to be informed if this is a native name or the native pronunciation of this place, or a modern name to an ancient town."

Mr. W. B. SAMUEL, of 87, Clapham Road, London, S.W., writes:—"In your 'Answers to Correspondents' in the last number, 'Largo' asks how to clean daguerreotypes. I have made it part of my business for years past cleaning and restoring daguerreotypes for the profession. I shall esteem it a great favour if you will put me in communication with him."

THE attention of customers of Brin's Oxygen Company, Limited, is directed to the change of the company's address. Elverton Street, Westminster, is a new street connecting Horseferry Road with Vincent Square. The company's works are on the old site associated for the last seventeen years with 69, Horseferry Road, but the old entrance in Horseferry Road has been closed and new entrances opened in Elverton Street. The company has also built extensive offices in Elverton Street to accommodate all their staff, and the Commercial Office at 34, Victoria Street, will therefore be shortly abandoned. In future the exclusive address of the company in London will be Elverton Street, Westminster, S.W. New price lists addressed to the medical profession; lanternists, blowpipe users, and others have been issued by the company, who also publish a neat and useful pocket diary, containing, besides the usual spaces for notes, much technical information for lantern workers.

AN esteemed correspondent writes:—"You have published on different occasions some ways of marking printing frames so as to avoid mistakes when from one negative a certain quantity of prints were needed. I have used several of these, and principally the one going backward, beginning for instance at 100 to finish with one, in which case I saw at first glance how many were yet needed, but the writing of each number was a loss of time. I have now hit on the following idea, which I find more practical and more rapid. I make a square the size of my printing frame and I divide it in ten small squares each way, making 100, and I number them, the first 10 to the left top 100 below 90, and so on until last one is No. 10. Now, upon taking out a print, or if one prefers when putting the paper in the frame to print, I make a pencil mark first on 100, then on the following square to the right, and so on until I have them all filled, and then the 100 or the job, whatever the number may be, is finished, and no possible mistake can happen except such a mistake as can happen with any other method, and in that case unavoidable."

* "Handbuch der Physiologischen Optik." Second Edition, pp. 793, 812-820.
 † "Orthostereoskopie." "Phot. Corr.," 1902, 39, 550-555; 1903, 40, 21-24, 150-154.
 ‡ "Stereoscopic Distortion." "Phot. Journ.," 1903, 43, 107-118.

"JUDY" ON THE TANQUERAY SYSTEM.

(Reprinted from "Judy" for the Professional Photographers' Association.)

THE ROTTENOTINT PORTRAIT

Is the Most Marvellous Offer Ever Offered.

A Six Shilling Portrait for Eight and Three-halfpence.

SEND ALL AT ONCE.

To Readers of "Judy."—The Editor is still completing arrangements whereby readers can obtain

A LARGE FULL-SIZE ROTTENOTINT PORTRAIT,

superbly packed in pale blue paper, and secured with pink twine, for the small sum of Eight Shillings and Three-halfpence Post Free on receipt of Six Shillings and Sixpence.

HOW TO OBTAIN THE WONDERFUL PORTRAIT.

All you have to do is to send all at once Nine Shillings and Ninepence, together with your Dog Licence and Birth Certificate. We do the rest. In sending, please state whether for hot or cold climate.

THE FRAME ALONE

Is worth One and Fourpence (2ft. by 3ft.), with full directions how to use it. Testimonials from all the leading Physicians in Drury Lane. Write your name and address plainly in ink (red preferred) and send us Eleven Shillings and Three Halfpence to cover postage. If, after reading this, you fail to understand the price, send us another Shilling and Sixpence. The portrait will not be sent unless desired.

The Rottenotint is a silent process known only to the artist.

"Truth" has given me notices for years.

Two portraits for Three Shillings and One Halfpenny.

Specimens can be seen at the Offices on payment of Seven Shillings and Sevenpence.

The "Morning Leader" says: "Oh, rot!"

Agents Wanted Five Minutes after Portraits are Received.

A FEW TESTIMONIALS.

Dear "Judy,"—Rottenotint to hand this morning. The frame still works a little stiffly, but that, no doubt, is a fault which time alone will rectify. The portrait itself is marvellous. Who is it?—O. O.

Dear "Judy,"—The Rottenotint has not yet arrived, but I gather that it will be here now shortly. The engine has been repaired, and no further breaks-down on the line are anticipated. In order to avoid delay this end, I have arranged to have it conveyed from the Railway in a closed van.—Yours Hopefully, SMITH.

Dear "Judy,"—Rottenotint almost arrived. We can hear it at the top of the street. Many, many thanks! Thanks! Awfully obliged! Delighted, in fact! Thanks!—FLO.

Dear "Judy,"—I have your Rottenotint of the 21st inst., for which please accept my heartfelt thanks. Will you please say whether it should be boiled in hot or cold water. I have looked it up in Nuttall's, but can find no reference to it.—Yours truly, A. S. S.

Dear "Judy,"—My wife and I have now returned after the long sea voyage recommended by medical experts, and are, therefore, quite prepared to receive Rottenotint. Wire as soon as dispatched. We hope for the best.—Yours Confidently, THOS. JAY.

PUBLISHERS of works of fine art and of photographs suffer greatly at the hands of pirates; but, evidently, not to the extent that the music publishers do, for the Musical Copyright Association report that during the month of December 140,855 pirated copies of music and 22 sets of pirated plates have been seized, which shows the extent of the illicit music trade. In spite of these extensive seizures this illicit trade still goes on.

Exhibitions.

BOROUGH POLYTECHNIC PHOTOGRAPHIC SOCIETY.

THE ninth annual exhibition of the Borough Polytechnic Photographic Society was open to the public on each evening of last week at the Borough Polytechnic, Borough Road, S.E.

Although this year's exhibition was perhaps slightly in advance of last year's, we cannot say that the work generally impressed us with the idea that the members are making the progress in artistic knowledge that might reasonably be expected. From the constitution of the society it follows that the bulk of the exhibits would be efforts of beginners, and from that standpoint the exhibition showed that the elementary factors in practical photography are as well taught as of yore, and it was as good as ever in the display of technical ability but there is certainly a check in pictorial progression. The landscape class undoubtedly manifested retrogression rather than progression, and it is hardly too severe criticism to say that not a single photograph in it was up to what ought to be the standard of acceptance of the Royal Photographic Society's exhibition. Many of the members seem to have devoted their principal efforts to architecture, and the work in this branch of photography was admirable in quality. Pictures of more than average excellence were shown by E. R. Bull, J. W. Hodges, F. W. Mundy, H. V. Abbott, T. R. Somerford, F. W. Gregg, and W. Page. We were pleased to notice a decided increase of interest in figure studies, and much of the work was obviously the result of careful arrangement and not merely of the haphazard kind that has constituted the usual filling of the class in most exhibitions heretofore. Many of the pictures had commendable points, and, judged by the standard of what we have been accustomed to meet with in members' classes at exhibitions, was decidedly good. The prevailing faults were those due to inexperience in methods of treatment, and in applying those methods which are well understood in dealing with landscapes, etc., to subjects of so different a character. Some of the best work in the class was by A. J. Bullock, E. W. Burch, J. W. Francis, W. Page, F. W. Gregg, and G. Wynne. The interest taken in architecture was strongly indicated in the lantern slides, the majority in number and the best slides being architectural subjects. In addition to the competitive classes there was an excellent exhibit of work of veterans of the society, most of the pictures having been exhibited at previous exhibitions, and there were trade exhibits by the Rotary Photographic Co., Kodak, Ltd., Wellington and Ward, the Prosser-Roberts Co., and Tyler Bros. and England.

The judges were Mr. srs. C. Churchill, J. A. Hodges, and W. Thomas.

THE AWARDS.

Landscape, etc.—Silver medal, H. C. Philcon; bronze medal, A. Hopkins.

Architecture.—Silver medal, F. W. Gregg; bronze medal, W. Page. Portraits, Figure Studies, Flowers, Animals, etc.—Silver medal, G. W. Francis; bronze medal, H. V. Abbott; honourable mention, G. Wynne. Lantern Slides.—J. W. Hodges (two awards).

EXHIBITION AT WISHAW

DURING the New Year holidays the Wishaw and District Amateur Photographic Association (Federated with the Scottish Photographic Federation) held an "Arts and Crafts" Exhibition in the Public School. Here photography holds the premier position, no less than nineteen classes being allotted to it, while close on three hundred entries are forward.

The open classes show some excellent work, quite a number of prominent exhibitors being represented; while the members' classes show a satisfactory improvement on last year, several of their classes containing really fine work. The judges were Mr. J. W. Eadie and Mr. Archibald Campbell, Scottish Photographic Federation judges, and Mr. John B. MacLachlan, Secretary to the Federation.

The following is the full list of awards:—

Open Class.—Portraiture—1, Alex. McDuff, Glasgow, "A Study";

Dan Dunlop, Motherwell, "Portrait Study;" 3, John A. W. Fryer, Wishaw, "Pensive."

Open to Amateurs.—Championship Gold Medal—William Clayden, Plymouth, "A Misty Morn." Landscape or Sea Cape—1, William Layden, Plymouth, "A Gleam of Light;" 2, W. S. Crocket, Glasgow, "A Bend in the Road;" 3, A. W. Walburn, West Hartlepool, "A November Afternoon." Flowers, Fruit, or Still Life—1, Robert Burnie, Glasgow, "Roses;" 2, Alexander Sandilands, Wishaw, "Almond Blossom;" 3, A. Walburn, West Hartlepool, "Ivy Geranium." Architecture—1, W. A. Clark, Birmingham, "Crypt, Winchester;" 2, William Milroy, Glasgow, "An Aisle;" 3, Arthur Marshall, Nottingham, "A Pillar of the Church." Enlargement—1, John Smith, Hastings, "Weary, Worn, and Sad;" 2, Arthur Marshall, Nottingham, "Sunday Morning at Whitby;" 3, R. B. Spanswick, St. Albans, "A Summer Morn." Lantern Slides (set of three)—1, William Milroy, Glasgow; 2, Rev. E. Travers Clark, Newham-on-Severn; 3, George A. Booth, Preston. Stereoscopic Prints or Transparencies (set of four)—H. Wormleighton, Leicester.

Confined to Burgh of Wishaw and Parish of Cambusnethan.—Any subject (Boys and Girls under Sixteen)—1, A. Macintyre; 2, Andrew Muir. Any Subject (Confined to Ladies)—1, Miss M. B. Pettigrew.

Confined to Association.—Landscape or Seascape—1, Alexander Sandilands; 2, James Fallow; 3, Richard Sneddon. Flowers, Fruit, or Still Life—1, Alexander Sandilands; 2, Thomas Peat. Animals—1, Alexander Sandilands; 2, R. Sneddon. Snapshots of Objects in Motion—1, Adam Allan; 2, W. Sandilands. View taken in the Burgh of Wishaw—1, R. C. Macdonald. Portraiture—1, John A. W. Fryer; 2, J. Fallow; 3, N. S. McMurtrie. Enlargement—1, J. Fallow. Lantern Slides—1, Alexander Hinshelwood, Jun.; 2, Alexander Symon.

Confined to Members who Received no Awards at First Exhibition.—John A. W. Fryer; 2, Adam Allan. Best Mounted Photograph—J. Fallow.

FORTHCOMING EXHIBITIONS.

January 8-9.—Holmfirth and District Photographic Society.

February 10-13.—The Longton and District Photographic Society. Hon. Secretary, T. Mottershead, 43, Stafford Street, Longton, Staffs.

February 13-27.—Scottish National Photographic Salon. Exhibition Secretary, Alex. Mackenzie, 42, Scott Street, Perth.

February 27 to March 5.—Birmingham Photographic Society. Particulars of L. Lloyd Hollies, Church Road, Moseley, Birmingham.

February 29 to March 3.—Cripplegate Photographic Society. Hon. Secretary, George H. Depledge, 17, Hazeldene Road, Goodmayes, Hadwell, Essex.

March 5-12.—Brechin Photographic Association. Hon. Secretary, J. Kirk, 1, Infirmary Street, Brechin.

March 9-12.—Nottingham Camera Club. Hon. Secretary, Arthur Black, 9, Bowers Avenue, Nottingham.

March 15-17.—Brentford Photographic Society.

March 25 to April 9.—Northern Photographic Exhibition. Hon. Exhibition Secretary, Chas. F. Inston, F.R.P.S., 25, South John Street, Liverpool.

April 6-13.—Croydon Camera Club. Hon. Exhibition Secretary, C. U. King, Hurst Bank, Selsdon Road, Sanderstead.

SECONDARY Radiation produced by Radium Rays.—I lately had occasion to produce some radium radiographs of two partially overlapping pennies contained in a paper envelope which was laid directly upon the photographic plate. A print from one of the results shows that the shadow of the upper coin is blurred and diminished where the rays pass through air from the edge of this coin to the plate, but that it is sharp and of the correct size where the rays pass to the plate through the lower coin. This seems to point to the production of a considerable secondary radiation by the rays in their passage through air.—L. R. Wilberforce in "Nature."

Patent News.

The following applications for patents were made between December 21 and December 31, 1903:—

Developing Chambers.—No. 27,942. "Improvements in photographic developing and changing chambers." Alfred William Southey.

Shutters.—No. 27,962. "Improvements in shutters for photographic cameras." The Thornton-Pickard Manufacturing Company, Ltd.

Stereoscopic Views.—No. 27,971. "Improved means for taking stereoscopic photographic views." Claus Matthiesen.

Exposure Meters.—No. 27,986. "Improvements in or relating to actinometers and photographic exposure meters." (Date applied for under Patents Act, 1901, 12th May, 1903, being date of application in France.) Complete specification. Edouard Degen.

Trichromatic Photography.—No. 28,001. "Improvements in the production of negatives for trichromatic photography." Thomas Knight Grant and Frederick Joseph Stedman.

Frame Closures.—No. 28,044. "Improvements in spring closures for photograph and like frames." Wilhelm Bloesser.

Enlarging Apparatus.—No. 28,168. "Photographic enlarging apparatus." Complete specification. Young Shannon.

Shutters.—No. 28,319. "Improvements in and connected with focal plane shutters for photographic cameras." Charles Edwin Pollard.

Shutters.—No. 28,358. "Improvements in or relating to focal plane or other roller blind shutters for photographic purposes." Arthur Lewis Adams.

Lantern Slides.—No. 28,364. "Improvements in optical magic lantern and other slides and pictures." Theodore Brown and Ernest Osman Brown.

Light Filter.—No. 28,410. "An improved photographic-ray filter." (Rollin H. Stocoum, United States.) Percy Richard Julius Willis.

Film Holder.—No. 28,538. "A new or improved device for holding photographic films, papers, and the like during the process of washing or developing." John Wilkinson and Alfred Wilkinson.

Developing Apparatus.—No. 28,750. "Improvements in apparatus for developing photographic plates or films." Complete specification. Norman Somerville Brodie.

Photos.—No. 28,766. "Improvements in photographic pictures." Samuel Henry Crocker.

Shutter Attachment.—No. 28,792. "New or improved means for attaching to photographic shutters, mechanism for the transmission of power in varying directions for the purpose of releasing or operating such shutters." Charles Henry Watson and Arthur Henry Edwards.

Colour Photography.—No. 28,798. "Improvements in and connected with stereoscopic colour photography." Charles Louis Adrien Brasseur.

MR. J. TILFORD writes:—Many thanks for the "Almanac." I was much pleased to see the articles in favour of wet collodion and albumen paper, both processes having always been favourites with me. I have some prints on the latter made in 1858, that show little signs of fading, although at that time I had not much knowledge of the conditions conducive to permanence.

THE death on December 19th, 1903, at Hove of Mr. John Henry Brown recalls the little-known fact that, as the inventor of the iris diaphragm, he has laid the scientific world under a considerable obligation. "In the early seventies," Dr. Hollis writes from Hove, "he took his home-made model to Smith and Beck, the predecessors of the well-known firm of opticians in Cornhill. This model he showed me, many years ago, and although roughly constructed it differed in no important detail from the type of apparatus at present in the market. As he did not patent the little contrivance he reaped no pecuniary reward for his ingenuity. Although frail in body and physically somewhat infirm, Mr. Brown by indomitable energy made and retained for many years a large practice as a dental surgeon. He was a fellow of the Royal Astronomical Society, and died aged sixty-seven, much respected.—"Nature."

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Jan.	Name of Society.	Subject.
8	Aberdeen Photographic Assoc.	<i>Development of Slides from Black to Warm Tones.</i> Mr. G. R. Ford.
10	South London Photo. Society...	<i>Excursion to Chigwell.</i> Leader, Mr. G. Brown.
11	South London Photo. Society...	<i>Carbon Printing.</i>
11	Ilford and District Photo. Soc.	<i>A Visit to the Birthplace of Photography.</i> Mr. Geo. E. Brown.
11	Ulster Amateur Photo. Society.	<i>Annual Meeting. Lecture, The Making of a Photographic Lens.</i> Mr. J. Campbell Carson.
11	Nottingham Camera Club	<i>Down Among the Dutchmen.</i> Illustrated. Mr. E. H. Atkin.
11	Glasgow & W. of Scotland P.A.	<i>Some Technical Hints.</i> Demonstrated. Mr. Wm. Goodwin.
12	Brentford Photo. Society	<i>Ozotype.</i> Mr. Thos. Manly.
12	Rotherham Photo. Society	<i>How to Strip Negatives.</i> Demonstration. Photogram Lecture. Chat on "Developers and Developing."
12	Perthshire Soc. of Nat. Science	<i>Members' Lantern Night.</i>
12	Aberdeen Photographic Assoc.	<i>Enlarging Night.</i> Operator, Mr. J. Milne.
14	Camera Club	<i>Dust-Raising Qualities of Motor Cars.</i> Col. R. E. B. Crompton, C.B., and Mr. Crawley.
14	Watford Camera Club	<i>Post Card Competition and Negative Making and Picture Production from a Specific Negative.</i>
14	London and Prov. Photo. Assoc.	<i>Affiliation Competitions.</i>
14	Hull Photographic Society	<i>V.P.U. Slides, No. 2 Set.</i>
14	Liverpool Amateur Photo. Assoc.	<i>The Black-Smith Method of Toning.</i>
14	Liverpool Amateur Photo. Assoc.	<i>Byomide Prints.</i> Practical Demonstration. Mr. A. C. Batty.
14	Liverpool Amateur Photo. Assoc.	<i>Lantern in Use for Testing Slides.</i>

ROYAL PHOTOGRAPHIC SOCIETY.

ELECTION OF OFFICERS, COUNCIL, AND EXHIBITION JUDGES.

(Extracts from the Articles of Association.)

Art. 21.—The officers of the Society shall be a president, four vice-presidents, a treasurer, a solicitor, an Editor of the Journal, and a secretary. All the officers except the secretary shall be elected from the members. The secretary may be a member. All offices shall be honorary except those of Editor of the Journal and of the secretary, either or both of which may be honorary or not at the discretion of the Council.

Art. 29. At least one half of those elected on the Council shall be Fellows of the Society.

Art. 46.—The election of the officers and Council, other than the officers appointed by the Council, shall be by a ballot of all those members of the Society who are entitled to vote. Such officers and other members of Council as are elected by the members shall retire annually and shall be eligible for re-election. Every member of the Society who is entitled to vote shall have the right to nominate one member as president, four members as vice-presidents, one member as treasurer, and twenty members as ordinary members of Council. . . . No member shall be eligible for nomination to the Council unless he shall have paid his subscription for the previous year.

Art. 37.—All nominations must be sent to the secretary not less than twenty-five days before the annual general meeting. . . . The annual general meeting will take place on Tuesday, February 9th, 1904.

The election of the exhibition judges will take place simultaneously with that of the officers and Council.

The Standing Orders provide that there shall be five judges in the Pictorial Section, and that they shall be members ex officio of the Pictorial Selecting and Hanging Committee, which will be made up to twelve members by the Council. In the Scientific and Technical Section there will be seven judges elected by the members, the same forming the Scientific and Technical Selecting and Hanging Committee.

A form of nomination is sent to each member. It may be returned at any time before, but not later than, January 15th, 1904, and should

be addressed to the Secretary, Royal Photographic Society of Great Britain, No. 66, Russell Square, London, W.C.

ATTENDANCES OF OFFICERS, MEMBERS OF COUNCIL, AND COMMITTEEMEN DURING 1903.

Council Meetings.	Number of possible attendances.	Committee Meetings.	Number of possible attendances.	Name.	Number of Attendances at	
					Council Meetings.	Committee Meetings.
13	7			Sir W. de W. Abney (<i>President</i>)	9	4
13	3			The Earl of Crawford	—	—
13	8			Thomas R. Dallmeyer	9	3
11	13			Maj.-Gen. J. Waterhouse	9	7
11	6			Sir H. Trueman Wood	1	1
13	7			John Sterry (<i>Treasurer</i>)	12	5
13	1			Francis Ince (<i>Solicitor</i>)	—	—
11	1			J. T. Ashby	7	—
13	—			H. Walter Barnett	4	—
13	1			C. H. Bothamley	—	—
13	—			James Cadett	—	—
13	6			St. Lawrence Carson	11	4
11	1			Charles Churchill	10	1
10	6			Leslie E. Clift	9	4
13	14			Douglas English	8	9
13	9			T. E. Freshwater	11	5
10	6			Thomas K. Grant	7	4
13	8			A. Haddon	10	2
13	—			Sir W. J. Herschel, Bart.	—	—
13	7			G. Lindsey Johnson	5	4
13	11			J. C. S. Mumery	11	10
11	2			C. H. Oakden	9	2
13	8			E. Sanger Shepherd	3	5
13	1			Joseph W. Swan	—	—
11	3			A. A. K. Tallent	11	2
13	3			Prof. W. C. Unwin	3	1
13	4			B. Gay Wilkinson	11	3

The following gentlemen are members of Committees only. should be understood that the attendances of members of the Selecting and Hanging Committees and the Organising Committee at the Gallery are not preserved.

Possible Attendances.		Actual Attendances.
4	S. H. Fry	2
3	M. Jacolette	1
2	Chapman Jones	1
4	G. Lamley	4
2	Prof. R. Meldola	1
1	Dr. E. W. Prevost	1
1	A. Pringle	—
4	L. Selby	4
4	H. Snowden Ward	2

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

DECEMBER 31st.—Mr. T. E. Freshwater in the chair. The secretary read the programme for the ensuing three months, and urged the members to help the officers to maintain and increase both membership and attendances, at the meetings so that the committee would be able to keep up the standard of papers submitted. In the discussion that ensued Mr. Drage and others were of opinion that the London and Provincial had a better average attendance than the most societies. Mr. Mackie thought not, and pointed out that other societies had larger attendances because they went in for pictorial photography, a subject that the London and Provincial did not touch, nor did the society take any interest in practical work of any kind, and

suggested that pictorial exhibitions be organized. Mr. Everitt also is of opinion that comparative trials of plates, developers, orthochromatic work, etc., would tend to quicken interest in the society's meetings. The discussion was here adjourned till next week. The chairman then presented the gold medal of the Henderson Award to Mr. Thorne Baker, which had been awarded him by the committee.

Mr. Thorne Baker thanked the association for the medal, and for the general courtesy always extended to him at the meetings.

Mr. Baker opened a discussion on halation, dispersive and reflective. On the course of a closely reasoned address Mr. Baker said he had found that isochromatic plates were not so liable to the effects of halation as were ordinary plates; that the addition or omission of a thin layer of silver made little or no difference, nor had he found it necessary that the refractive index of the backing compound and the glass plate should agree. The backing must be in optical contact with the glass, and that red or black backing were best, brown not having any absorbing power.

Mr. Everitt and Mr. Haddon disagreed with Mr. Baker on the influence of the refractive indices of backing and glass plates, and were of the opinion that unless these did agree the full advantage of the backing could not be obtained.

On the motion of Mr. Drage the hon. secretary was instructed to write a letter to the relatives of the late Mr. Frederick York, who had always been a good friend to the London and Provincial, and whose death was a great loss to photography.

SOUTH AUSTRALIAN PHOTOGRAPHIC SOCIETY.

The exhibition of this society was held last autumn. The exhibits were on view for a week, during which time there was an excellent attendance of visitors, resulting in a considerable increase of the society's funds. More than 300 pictures were hung, nearly double the number shown last year. They included exhibits from England, India, Cape Town, the Australian States, and New Zealand. The Cape Town society was well in the front with about sixty entries. The room of the Society of Arts (in which society the Photographic is affiliated) proved none too large, but was eminently suitable, owing to the overhead lighting. The feature of the exhibition was the marked absence of glossy prints, whose place had been taken by work on matte surface papers, carbon and gum bichromate, resulting in a display of artistic and broad effects. The judges were Messrs. J. Kaufmann, H. P. Gill, and A. A. Stump for the general classes, and Messrs. Andrew Scott, W. P. Dollman, and H. Kingborough for the lantern slides. In Section I. (open to members of the S.A. Society only), the exhibits were somewhat disappointing, both as to number and quality, and in this respect the exhibition was not representative of the capabilities of the society; the few studies were, however, an exception, and compared well with those entered in Section II. (open to members of any photographic society in the world). A new class was introduced in the prospectus in accordance to the wishes of some members, viz., "unretouched prints in untouched negatives," and several exhibits were on view, a landscape by Mr. F. A. Joyner winning the bronze medal. No award was given by the judges to the hand camera class, nor to architecture (in either section). The silver medal for the best picture in Section I. was won by Mrs. M. Jay for a portrait entered under "ladies' class." In Section II., the largest number of exhibits was in the landscape class, over eighty pictures being hung; the silver medal was awarded to Stanton Browne, of Tasmania. There must have been great difficulty in the judging of this class, owing to the variety of subjects and the diversity of printing processes. Amongst the exhibits entered under "genre," was the champion picture of the exhibition, awarded a gold medal, won by Mr. D. Blount, of Great Britain. The title was "Innocence," and the process gum bichromate, the modelling of the head and shoulders of the child-subject being exceptionally good. At the year's exhibition the same gentleman won the gold medal with a different pose of the same child. Champion pictures become the property of the society, and the nucleus of a good art gallery is now in the society's possession. Several other masterpieces were shown in this

class by the same worker and exhibits of a high standard by members of the local society were entered in the list. In the class "seascapes" there was a capital show in all colours and processes; the prize was won by T. D. Leedham, New Zealand, for "When Evening's Twilight Gathers Round," a pleasing effect against the light, in a warm, brownish tone. Local workers also were exhibitors in this class and compared favourably. In Section III., non-competitive exhibits, there were five excellent studies by Mr. H. Ashworth, of South Australia. It is to be regretted that they were not entered in one of the competitive classes, as they must have scored to the honour of the society. Loan pictures were on view, and as they were by well-known photographers they received considerable attention. During the week the exhibition was visited by the patron, His Excellency George Le Hunte, K.C.M.G., etc. Every evening the prize lantern slides were shown. Short illustrated lectures, alternating with exhibitions of miscellaneous collections of slides, were given throughout the week and drew crowded houses. As some fifty slides were sent in for competition they formed an interesting lantern exhibit. The bronze medal (Section I.) was won by Mr. E. Atterton, and the silver one (Section II.) by Mr. Harold Hill, of Great Britain. The judge also selected and highly commended a slide entitled "Peaceful Evening," by Mr. Churchill Fisher, of Sydney. The judges were requested to highly commend any exhibits worthy of such commendation, the selection of pictures placed in this way proved interesting to the general public and served as an object lesson to exhibitors.—*South Australian Photographic Journal*.

SOUTHAMPTON CAMERA CLUB.

JANUARY 4TH.—Annual general meeting. The president, Mr. William Borrough Hill, in the chair. After the election of many new members the committee's report for 1903, and the financial statement, were submitted for adoption.

The former shows very satisfactory progress during the year, and it is gratifying to notice that the year closed with a membership of 140, to which were added many that evening. It is also highly pleasing to be able to record that the exhibition held from 11th to 19th December was a great success, both from a photographic and financial standpoint, the balance on that account being £35 17s. 9d., of which sum £5 were voted to the Mayor of Southampton, towards the Distress Fund. The work in the members' classes showed a marked improvement. The adoption of the report was proposed by the Hon. Secretary, Mr. S. G. Kimber, in a very lucid manner. He spoke of the amount of work done during the year, and the high position which the club occupied amongst the photographic societies, and assured the members that this could not have been done without very hard work and much sacrifice on the part of the hard-working committee with which he had so much pleasure in working. Whilst giving great praise to all, he felt it his duty to specially mention Messrs. G. Vivian, George R. Johnson, O'Connor, and Henley, who had constantly placed their services at the disposal of the club. He felt he must also mention the fact that but for the unbounded kindness of their president, who so generously placed their magnificent headquarters at their disposal, the club could not possibly be carried on so successfully. This was, he was pleased to see, specially mentioned in the report. The adoption was very ably seconded by Mr. Vialls, and carried with acclamation.

The adoption of the financial statement was proposed by the Hon. Treasurer, Mr. W. H. Trigg. This was of a highly satisfactory character, and showed a balance of £38 0s. 7d. at the bank. It was seconded by Mr. T. Weaver, and after a very useful discussion, carried unanimously.

Mr. William Borrough Hill was re-elected President, and in returning thanks said it gave him great pleasure to be at the head of so flourishing a society, and also to do all in his power to help it. He was pleased to see the suggestion to hand £5 of the exhibition profits to the Distress Fund, and would be pleased to augment the amount by another £2. The Vice-Presidents, Messrs. A. Horsley Hinton, G. T. Vivian, and Dr. Weston were also re-elected. Mr. S. G. Kimber was re-elected Hon. Secretary for the seventh time, and his election was

hailed with the utmost enthusiasm by all. He thanked them for their renewal of confidence.

Mr. W. H. Trigg was re-elected Hon. Treasurer, as was Mr. G. T. Vivian as Hon. Lanternist, and Mr. George R. Johnson as Hon. Reporter. The following were elected to serve as Committee for the ensuing year, viz.:—Messrs. A. E. Henley, M. O'Connor, A. Copeland, C. C. Cook, F. G. Ryder, H. W. Miles, G. Vials, T. M. Weaver, F. de Foubert, and Kay. The local and photographic press were accorded an enthusiastic vote of thanks for their kindness during the year.

News and Notes.

THE Croydon Camera Club have made arrangements for instruction classes to be held in the club rooms, 106, George-street, commencing end of January, open to members and ladies interested in photography. Particulars may be obtained from hon. secretary.

At the ordinary meeting of the Royal Photographic Society of Great Britain to be held at 66, Russell Square, on Tuesday, January 12th, 1904, at 8 p.m., Mr. B. H. Bentley, M.A., F.L.S., will read a paper entitled "Photographic Studies in the Biology of Flowers." The election of the scrutineers of the ballot will also take place.

MEASUREMENT of an Arc.—The Berlin correspondent of the "Standard," writing on Thursday, last week, says an estimate has just been submitted to the Foreign Office of the cost of the German share in the proposed Anglo-German measurement of an arc of the meridian in Africa. The total has been fixed at three hundred and fifty thousand marks. Negotiations with the English Government are still proceeding, and the German work in East Africa could not be commenced before 1906. The stretch of country selected for the measurement is situated between the Southern extremity of Lake Tanganyika and the Uganda Protectorate.

The Making of Worlds.—"The idea is seductive," says Miss Agnes M. Clerke, in "Knowledge," "that we see in every meteoric fire-streak a remnant of the process by which our world, and other worlds like or unlike it were formed. It is not a new idea. Chladni entertained it in 1794; and it has since from time to time been revived and rehabilitated with the aid of improved theoretical knowledge and a larger array of facts. Survivals are tempting to thought. It costs less effort to realise differences in degree than differences of kind. The enhanced activity of familiar operations is readily imagined; while perplexity is apt to shroud the results of modes of working strange to experience. Hence the presumption in favour of continuity; nor can it be said, even apart from our own mental inadequacy, that the presumption is other than legitimate. Nature is chary of her plans, lavish of her materials. Her aims are characterised by a majestic unity; but she takes little account (that we can see) of surplussage or wreckage. Now, it seems likely that meteorites represent one or the other of these two forms of waste stuff. They are analogous, apparently, either to the chips from shaped blocks, or to the dust and rubbish of their destruction. Let us consider what it is that we actually know about them. It cannot be said that the sources of our information are scanty. Fully one hundred millions are daily appropriated by the earth as she peacefully pursues her way. Their absorption leaves her unaffected. It produces no perceptible change in her internal economy, and makes no sensible addition to her mass. The hundred millions of small bodies taken up have, nevertheless, in Professor Langley's opinion, an aggregate weight of more than one hundred tons. And this increment is always going on. Yet its accumulated effect is evanescent by comparison with the enormous mass of our globe. That it was more considerable in past ages than it is at present, might be plausibly conjectured, but cannot reasonably be maintained. Geological deposits contain—unless by some rare exception—no recognisable meteoric ingredients. There is nothing to show that the earth was subject to a heavier bombardment from space during the Silurian era than in the twentieth century."

COLOURED Prints on Platona.—Prints on "Platona" paper can easily be toned to brown, plum, sepia, red-chalk, blue, and green in the following way. The prints are developed in accordance with the Ilford Platona formula in exactly the same way as for black and white. After development they should be fixed in at least three acid baths (the importance of this will be explained later), and well washed in running water, say, for half an hour. It is better to let the prints dry after the washing, as the toning seems to proceed more easily and quickly afterwards. One bath answers for the whole range of tones, from warm black to intense blue, running through the reds and terra-cottas, finally ending with a true red-chalk or brick-red, very suitable for head and figure studies. The toning bath does not keep well, and is better freshly made up a few minutes before use. Into a measuring glass pour five ounces of warm water, and into it put five or six grains (a grain or two more or less seems to have little effect) of uranum nitrate. When this has dissolved, add about five grains of sulphite of soda. This will cause the lemon-coloured solution to turn "milky." Having seen that the sulphite of soda is all dissolved, add very carefully, stirring all the time, drop by drop, one drachm of a 10 per cent. solution of potassium ferricyanide. Then with the same care add half a drachm of hydrochloric acid. This will cause the solution to become quite clear, but of a ruddy hue. Should it be cloudy, it must be thrown away and fresh prepared, as it will only discolour the prints if it is used. The reason for the "clouding" is that the ferricyanide solution added too quickly or not stirred. At this point it will be well to note the depth of printing required for the various colours. For terra-cotta, and red-chalk the prints should err on the side of underprinting. "What is termed a "weak" print proves most suitable for these shades, as the toning bath seems to have the effect of intensifying. Too much stress cannot be laid on the importance of roughly fixing the prints for these colours; if this is not done, the prints, muddy, stained prints are certain to result. The print is placed in the toning bath and carefully rocked; it quickly changes from black to brown, and from brown to terra-cotta, and from terra-cotta to red-chalk. The red-chalk tone will be reached in about five minutes from the time when the print is first placed in the bath. Chocolate tones are very easily obtained by using a bath which is already toned, say, six half-plates; but a little longer time must be allowed, on account of the weakness of the bath. Five ounces of solution should not tone more than six half-plate prints, as the solution then becomes muddy, and should be thrown away. Blue and green tones are got by taking a print, of any colour, which has been toned in the above bath, and placing it in a solution of sulphate of iron 1/2 oz., water 20 oz. In this the brown-toned print turns slowly to green, at which stage it should be removed if green is desired, and plunged into a bowl of acidulated water; but if blue is required the toning action should be continued until the print is of the desired tone. Next remove it to a bath of hydrochloric acid 1 oz., water 8 oz., and then wash in clean water. The tone given by the blue-toning process can be used for seascapes, etc., with charming effect. A bath which gives a brighter blue is made up of iron solution 1/2 oz., hydrochloric acid 1 drachm. This gives an intense blue all over the print. Should the worker wish to have his high lights pure white, all that is necessary is to go over the parts with a fine camel-hair brush charged with the ordinary oxalate developer. Should the prints be of an unsatisfactory colour—whether brown, red, or blue—simply place them in the oxalate developer, and they will return to their natural colour. The toned prints should not be washed more than a quarter of an hour, as the colour seems inclined to fade out in some cases. The three acid baths must be used because until all the iron is eliminated the prints get a slight blue tinge in the whites. This is pretty for some subjects, but unless it is specifically required use the three acid baths. Toning should be done by daylight, as it is somewhat difficult to judge the tone by artificial light. The idea that some people have that toning platona prints is a long and tedious operation will vanish when the toning bath here given is used. It may be relied on to tone to red-chalk, at the outside in five minutes, although three minutes is usually enough.—CLARENCE PONTING, in "Photographic Scraps."

Correspondence.

* Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.

* We do not undertake responsibility for the opinions expressed by our correspondents.

FIRE INSURANCE.

To the Editors.

Gentlemen,—I have read with interest the letter inserted in your valuable paper of the 1st of this month, signed by Mr. Eady, and although I fully agree with him that it is desirable that a policy should be prepared in such a manner as to avoid, as far as possible, all chances of dispute should a loss occur; still, it must be borne in mind that it would be a very difficult thing for an insurance company to agree to pay, in the event of a loss, the amount for which a policy might have been taken out, without any further proofs that the goods claimed for were in the house at the time of the fire, and that the amount for which they were insured was reasonable, as in the latter case it would be necessary to have the articles valued by some expert, and the premiums charged would not be anything approaching the amount required for such valuation, and in the first case, even though the valuation had been supplied at the time the insurance was effected, there would be nothing to prevent the insured disposing of the property prior to the fire and still making a claim upon the company for goods which he had not in the house at the time of the loss, or for articles which may have been replaced by others of an inferior quality.

Mr. Eady points out that the chief causes of dispute arise through the difference of opinion between the insured and the company after a fire has occurred as to the value of the articles burnt. I would mention that the company I insure with recognises this point, and is prepared to sue policies agreeing with the insured what the value of the articles shall be in the event of a fire, provided he will supply the company with a catalogue of the articles valued by a suitable expert. This, in my opinion, is likely to reduce the possibility of a dispute to a minimum. The company, however, unfortunately restricts these policies to houses where the furniture is valued at not less than £500, as they put forward the plea, which certainly has considerable weight, that in the case of smaller houses where goods materially depreciate in value from wear and tear such articles are not replaced by new ones in the same proportion as in the case of houses containing furniture of greater value, and consequently it would be an incentive to a policy-holder not to take any special precautions against fire, as it would be to his advantage the goods were destroyed, seeing that they had materially deteriorated value.

Now, as regards the arbitration clause, it might certainly be desirable if all the companies excluded this from their policies, but it is necessary for an insured to carefully peruse his policy to see how the clause is worded. The clause on some of the companies' policies makes it a condition that the expenses of the arbitration shall be borne equally by the insured and the company, thus preventing an insured from going to arbitration, as the costs very frequently such arbitration would exceed the amount in dispute. Other companies, however, have a far more satisfactory clause, as it leaves the question of the costs of the arbitration to be decided by the arbitrators, as to who shall pay the same. Consequently, if an insured had a genuine cause of complaint, the entire costs of the arbitration would doubtless have to be paid by the company. On the other hand, the company would be protected from the insured putting forward a fictitious claim by the knowledge that the whole of the expenses might have to be borne by himself.

Lastly, I think it should be taken into consideration that, as a rule, the companies are somewhat compelled to be fairly honest in their settlements, seeing that there is such keen competition for the business that if a company was known to be acting otherwise it would prove most detrimental to that company's welfare.

I should be very pleased to give any information that may be asked from me as to the name of the company with whom I insure, and what procedure is necessary to obtain the most favourable policy.—

Yours truly,

LANG SIMS,
Member of the Committee, P.P.A.,

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

To the Editors.

Gentlemen,—I shall feel obliged if you will grant me space to say that we have published a little book containing the constitution, rules, list of members, and other particulars of this Association, and I shall be pleased to supply members with copies for distribution amongst their brother professional photographers, or to send a copy to any professional photographer who is not yet within our fold.

We have also had reprinted from "Judy" an extremely amusing skit on the advertisements of free portrait swindles, etc., a copy of which I shall be pleased to send to any professional photographer for display, as we think it might be effectively used to suggest to the public the true bearings of the Tarquerey and other frauds of the kind.—I am, etc.,

WM. GROVE, Hon. Secretary.

January 4, 1904.

DRY MOUNTING.

To the Editors.

Gentlemen,—I have just received a circular from the Adhesive Dry Mounting Co., stating they have secured the patent rights, etc., for Great Britain. Can you tell me in what way their process differs from one which appeared in the photo press many years ago, viz.:—To apply diachylon on the back of print, and when desirous of mounting the same lay the print on the mount in the position required and pass a warm flat iron over it?—I am, yours, etc.,

ENQUIRER.

January 5, 1904.

[We know nothing of the Adhesive Dry Mounting Company or of the process for which they have secured patent rights. Will our correspondent kindly send us a copy of the circular, and we will then give him our opinion of the process? In the Journal of June 26th, 1902, we described the Derepas system of dry mounting, which we understood was to be commercially exploited in this country.—Eds. B.J.P.]

Answers to Correspondents.

* * * All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.

* * * Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.

* * * Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.

* * * For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPH REGISTERED:—

J. Palmer Clarke, Central Hotel, Bury St. Edmunds. *Photograph of group of Otter and other Hounds.*

VULCAN.—We are much obliged for the reminder, of which we will take cognisance.

COLLOTYPE.—Of any photographic dealer; or direct of Messrs. Iliffe, St. Bride Street, London, E.C.

INQUIRER.—(1 and 2) You would be running the risk of an action for infringement. Don't play with edged tools. (3) The portrait lens.

H. KEELING.—(1) The volume most likely to suit your purpose is that of Dr. Moritz von Rohr on photographic lenses, of which, unfortunately no English translation exists. (2) The glasses may be obtained of Messrs. Zeiss. Better address their London agency.

COPPER TONING.—PHOTOPHIL says: "I should feel very much obliged by a reference to Mr. Ferguson's Copper Toning process, referred to at top of second column page 965 B.J.P., December

4th, 1903." In reply: The formula for copper toning is given on page 1,078 of the Almanac, and on the previous page there are several other formulae for toning bromide pictures.

BOOK WANTED.—SHUTTER asks: "Would you kindly tell me where I can get a good book on operating and studio work, with illustrations of posing, etc.; also price?" In reply: There are several good works on the subject, a list of which are given on pp. 974-5 of the Almanac, with their prices. Better consult that list. Any of the works can be had through the dealers or booksellers.

FAULTY LIGHTING.—PRINTER says: "I have been trying to photograph a la Rembrandt. There appears to me to be something wrong with the enclosed. I do not seem to have the control of my light properly; would be glad if you could give me some idea of the cause?" In reply: The lighting is certainly faulty. There is evidently too much top-light. Light the sitter more from the side with a strong direct light.

HYPD ELIMINATION.—A. J. STATHAM writes: "I have read Mr. Noton's letter relating his discovery of eliminating hypo from photographic prints in five minutes. Do you consider this method reliable, and is it adapted to plates and films? Why is it that some of our great photographic chemists have not recommended this process?" In reply: Theoretically the method should answer for films as well as prints. The best hypo eliminator in our experience is common H_2O . We know of no "great" photographic chemists in this country.

SPECKY PRINTS.—W. DOWNING writes: "Having experienced considerable trouble with spots on prints, I should like to ask advice on the subject. In the first place, I used water from a tank, and got them, next I tried water from off the main, and then used filter papers, with exactly the same results. The spots appear when washing prints before toning, sometimes twenty or thirty of them?" In reply: So far as one can judge from the example sent the spots seem to be due to the water. In the issue for December 11 there is an article on causes of spots; have you not read that?

PHOTOGRAPHY IN NEW YORK.—ANXIOUS writes: "As I am desirous of going to New York, will you kindly inform me (1) if there are any good openings in the photographic line, and if, with three years' experience in London firms, I should stand a chance of getting a berth? (2) Also, do you know of any American photographic papers similar to the B.J.P., and, if so, are there any sold about London?" In reply: (1) Better stay where you are. (2) A list is given in our Almanac. No doubt the Secretary of the Royal Photographic Society, 66, Russell Square, London, W.C., would allow you to see them.

DEVELOPER.—AMATEUR says: (1) "I have just made up the following pyro-soda developer for Paget plates:—No. 1—Pyrogalllic acid, 4 oz.; sulphuric acid, 5 drops; water to make, 20 ozs. No. 2—Soda carbonate, 2 ozs.; soda sulphite, 2 ozs.; water to make, 20 ozs. Will you kindly inform me whether the above solution should be further diluted, and, if so, how much water should be added? (2) How much solution is necessary to develop one quarter-plate? (3) How long will the solution keep in corked bottles or stoppered bottles?" In reply: (1) The solution should not be diluted. (2) Sufficient to well cover the plate when in the dish you use. (3) Several weeks if the solutions are kept separate.

COPYRIGHT.—W. U. writes: "I gave our local editor a copy for use in paper, and charged him 10s. 6d., sending in my account made out (for reproduction in paper). Now he has sold his block to another party, who is making use of it for post-card selling, which has stopped all my sale for the original copies, and which I was having a good sale for. Now I thought if I copyrighted this at once, and after it is entered at Stationers' Hall, I should be perfectly within my rights to stop the sale of these cards, is this right?" In reply: This is a question we cannot answer with certainty, but we think it probable that you can stop the sale. You should have made the picture copyright before you sold the right to reproduce, and also have stipulated that the

picture should only be reproduced in the paper. We should advise you to consult a solicitor well versed in copyright law.

COLOURING PHOTOGRAPHS.—J. J. S. asks: (1) "Will you kindly give me the title of a good work on miniature painting, tinting photographs, and possibly including finishing enlargements? This is a book published by a firm of artists' colourmen in London." "The Art of Miniature Painting and Colouring Photographs" but it was published a great many years ago, and refers only to colouring silver prints. No doubt there is something much more up to date. (2) Also, if the question is admissible, is there any method of making an enlargement from a photograph on paper or canvas except the plan of dividing into squares, the principle used by engravers?" In reply: (1) The work referred to is published by Newman and Co., Soho Square. "The Art of Photographic Painting," by A. H. Bool, is a more modern work. (2) Enlargements are made on paper by the bromide process, and on paper or canvas by the carbon process.

COPYING-LENS.—C. MARSHALL asks: "(1) May I have your advice the following: I wish to make a lantern slide from some printed matter, which is done in blue ink on white paper, but not very clean paper. I have tried with ordinary plates but cannot get density, and at the same time contrast in the negative, the blue printed matter seems to have nearly the same effect on the plate as the white paper. How should I proceed with above to get a good negative? (2) I understand that a lens with a large number of open or reflecting surfaces is slower than it would be if it could be made solid with only two surfaces. If that is so, I am right in thinking that in using a colour screen or filter close to the lens, I am adding two more surfaces to the lens, which will cause a loss of light, which ought to be allowed for, as well as the loss caused by the colour of filter." In reply: (1) This is somewhat difficult subject that you have to deal with. We should advise you to try orthochromatic plates with a yellow screen. (2) This is, theoretically, correct, but it may be neglected in practice, as the loss of light is so very little.

LIGHTING STUDIO.—CONSTANT READER says: "(1) I am thinking of opening a studio near here, but am in some difficulty about lighting, as I can only get top-light. Is there any kind of reflector I can use to give the desired effect; also, what glass would you advise me to use. I am sending you rough sketch so as to give you some idea of the position and size of building. Would covering the side-walls with some white material help, by using a large mirror as reflector help matters? (2) Do you think I could take sitters satisfactorily at night by gas light, advertised, or would you recommend electric light; if so, could you kindly advise on any good outfit?" In reply: (1) Good portraits can be taken in such a studio as is shown in sketch, but, as it is so short, it will be somewhat difficult work. Better have clear glass, and the side-walls of a light colour. White screens to use as reflectors will be necessary. (2) We do not know the light mentioned. The electric light is preferable to gas for portraiture. See the advertisement Messrs. Adamson in the advertising columns of the Journal.

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* * * The Editor can only be seen by appointment.

* * * We do not undertake to answer letters by post.

EX CATHEDRA.

Metropolitan The well-known firm of metallurgists in Hatton Garden, Messrs. Johnson, Matthey and Co., have, for a quarter of a century past, dealt with large quantities of ore in the extraction of uranium, and the waste has been thrown away, and now probably is buried in countless dustheaps deposited in various parts of London. It is credibly stated that this waste contains appreciable quantities of radium, and as this element, on account of the embargo laid upon the export from Austria of the pitch-blende, from which it has been extracted, is worth something like a quarter of a million sovereigns a pound; it is not difficult to imagine the heart archings consequent upon the discovery of the value of the lost uranium waste. That a newspaper has hidden a thousand pounds just below the surface of the soil somewhere in London, to become the possession of the finder, seems a mere trifle compared with the radium store of wealth beyond the dreams of avarice. We are afraid, however, that the thousand pounds' worth of hidden discs are more likely to be found than the priceless hoard of radium.

Radium at The people of Bath have likewise suffered a radium disappointment. London's store is lost, that of Bath is found; but when found it is discovered to be in such small quantities

as not to pay for extraction. We have learnt how radium converts itself, or a portion of itself, into helium, and as helium has been found in gas issuing from the Bath waters, it was natural to suppose that radium might be there or thereabouts. The Hon. R. J. Strutt, son of Lord Rayleigh, has examined the deposits left by the waters of the hot springs, and has been able to discover the presence of radium; but, unfortunately for the newly-raised hopes of the inhabitants of this ancient city, the cost of extraction would exceed the value of the radium that could be extracted. It is probable that whatever eventually may be found to be the value of this marvel of modern science in photographic practice, so keen is the search for it that sooner or later fresh sources of supply will be discovered, and the latest news in this direction is that we may possibly find our own country to be in possession of the necessary deposits of ore. According to the "Cornish Guardian" we may have it from Coombe Farm, near St. Stephen, in Bramwell; for some examples of ore have been sent to "an eminent scientist on the Continent" who was greatly struck by their sterling value, and since then the surveyors have been making further tests. The Cornish mines have for years past been known to hold uranium which, as our readers are aware, has been the primary source of radium so far.

Photographs in We have received from Germany a considerable amount of literature descriptive of a process of photography in natural colours, which is, to say the least of it, interesting and somewhat curious. The basis of the process is the well-known carbon or pigment process, and paper is prepared with three films, the top containing a blue pigment, the middle one a green, and the lowest a red pigment. This tissue is exposed under an ordinary negative, and then developed in the ordinary way, the result being a print in colours. The explanation of the process is that, assuming we have taken a landscape, the blue sky would act most, and give, therefore, most density in the negative; therefore the least light would reach the compound carbon tissue, so that the underlying green and red films would dissolve away and leave only the blue. The green of the trees would act less, give less density, and allow more light to pass; hence the blue and green films would be rendered insoluble, and the red would wash away, leaving green. Red objects would act least or not at all, and hence the light would pass through all three films, and the red be reproduced. Thus far the official description. It is obvious that there are one or two very serious practical and theoretical objections, which personally we do not see any way out of. In the first place, no red and green pigments can make a yellow; hence a fourth film of yellow would have to be

provided, or this would have to take the place of the green film. Absolute opacity of each individual film is also a sine qua non, or otherwise there would be no pure colour, but only smutty or secondary tints, because, for instance, if the red film were not opaque, the green underlying it would show through. Again, how is white to be reproduced, unless absolute and impenetrable opacity is obtained in the negative? Moreover, it is obvious that correct exposure would be essential, and if a colour-sensitive plate were used, the composition of the positive film would have to be altered. On paper the process reads well, but it will, we are afraid, join the many other processes which have been advanced and found useless.

* * *

Patent Applications in 1903.

The weekly journal issued by the Patent Office shows that the number of patents applied for during the year just ended amounted to no less than 28,818. Our "Patent News" column week by week has shown that photography contributed very liberally towards the above number. For example, no less than forty-five applications for patents in connection with photography were made during the month of December alone. It is not a little interesting to compare the numbers of patents being applied for relating directly to photography at the present time, when it would seem there was little scope left for real invention, and the numbers in the past, when new discoveries and fresh inventions were being continually made. If we take the five years, 1849-54, during which years great improvements were made both in connection with processes and apparatus, including the invention of the wet-collodion process, which, by the way, was not patented, we find that only 32 patents all told were applied for in the five years. In the month of December last, as we have just said, there were 45 applications relating to photography. What a contrast! Seeing this great difference between past and present, one is rather inclined to speculate as to whether the larger proportion of the patents now taken in connection with photography are really valid should they have to be contested in the Law Courts. We have a strong opinion on the subject ourselves. Another point for speculation is what proportion of the photographic patents repay the patentees the costs for the stamps, small though they be. It is surprising that so many persons, when they fancy they have discovered or invented something new, rush to the Patent Office without considering whether the patent when obtained is of any commercial value whatever, valid though it may be. Although so many patents are annually applied for and provisional protection granted, it does not follow that anything like the number will be completed, for they certainly will not. A very large proportion of them will be abandoned at the initial stage, and the complete specification never lodged. At one time provisional specifications used to be published, even if the patent were not completed; now they are not, and one has no means of learning any details of what the provisional protection was granted for.

* * *

Adulterated Chemicals.

A case of considerable interest to users of the "pyro-soda" developer was dealt with, under the Merchandise Marks Act, at the Mansion House Police-court on Friday last. A firm were prosecuted for selling with a false trade description goods called soda crystals. Soda crystals, it may be mentioned, are what is known as the washing soda of commerce, which is carbonate of soda with the water of crystallisation. In the manufacture of the soda crystals it was explained to the court that in order to make the crystals less sticky, so that

they could be crushed and put into the drying machine more conveniently, a very small percentage of sulphate of soda is added. This addition in honest manufacture never exceeded 2 per cent., and in some cases was even less than that. A practice has grown up of late, it was stated, of adulterating soda crystals—carbonate of soda—with sulphate of soda—Glauber's salt. The difference in the price of the two salts is great, the price of soda crystals being some £4 10s. a ton, while the sulphate of soda is but £1 16s. per ton. An analysis showed that the stuff sold by the defendants, instead of containing 98 or 99 per cent. of carbonate of soda, contained only 9 or 10 per cent. of it and not less than 91 per cent. of Glauber's salt in the form of crystals. In the end, as the defendants had pleaded guilty, the Lord Mayor, as the prosecution did not press for a heavy penalty, only imposed a penalty of £20 on each of the six summonses—£30 in all. Now, many photographers who use pyro-soda as a developer use common washing soda; indeed, some plate makers in their formulae give common washing soda as the material to employ, and this is usually obtained from the nearest oilshop. Hence, it is easy to conceive, if a photographer were supplied with "washing soda," such as that referred to above, what the result would be. If he were one who habitually used the pyro-soda developer he would at once know what was wrong. Not so, however, in the case of one used to pyro-ammonia, and who tried the soda developer for, perhaps, the first time: he would at once condemn it as being useless. In the case of a beginner in photography being supplied with such a sample of washing soda, one can well imagine what his trouble would be and his difficulty of getting out of it, or, at least, ascertaining the cause. Washing soda containing 90 per cent. or over, of sulphate of soda, instead of acting as an accelerator in the developer, would practically act as a retarder. Seeing from the evidence adduced at the Mansion House Police-court last week the extent to which soda crystals—the washing soda of the oilshop—are often adulterated, we should advise that only the pure carbonate of soda as supplied by the dealers in photographic materials be employed, and that the oilshop article—for fear of it having been sophisticated by its manufacturers—be eschewed.

* * *

The Iris Diaphragm.

The iris diaphragm no doubt appears to so many photographers of the present day as such an essential and constituent part of a lens that they will scarcely understand that its general employment is, in comparison, quite a modern addition. The old-time photographer was content with a stop placed in front of his lens—a cumbrous short tube, with a partially closed end, with the maximum aperture, smaller diaphragms being flat sheets of metal, pierced with circular openings of diminishing size, and kept in situ by means of the tube-stop pushed against them. Then came a valuable improvement in the portrait type of lens, the diaphragm being inserted in the lens tube, between the anterior and posterior combinations, by means of a bulky arrangement like a shallow box, which again was displaced in favour of the arrangement still in use at the present day—a metal saw-cut in the tube, extending almost to half-way through and protected from the entry of light by two annuli securely fastened interiorly on each side of the slit, and between which the thin metal diaphragm is made to slide. The arrangement, called after its inventor, being known to this day as the Waterhouse diaphragm. An innovation of great convenience with lenses worked at an aperture that would now be considered small was familiarised in this country by the Portable Symmetrical, made by Ross.

the set of Waterhouse stops being replaced by a single revolving disc of metal, pierced with the requisite apertures, and so arranged that as the disc was turned, each aperture was brought in succession exactly in the axis of the lens. This "wheel diaphragm" has been largely displaced by the "iris diaphragm" with regard to the invention of which there may be some controversy. A paragraph in "Nature" of December 31st last, referring to the death of Mr. John Henry Brown, of Hove, says his death "recalls the little-known fact that, as the inventor of the iris diaphragm, he has laid the scientific world under a considerable obligation." A communication from Dr. Hollis of that town is quoted, and speaks of Mr. Brown taking his home-made model to Smith and Beck, the well-known firm of opticians in Cornhill "in the early 'seventies." "Great minds think alike," and here appears to be an instance. We do not doubt for an instant that Mr. Brown's invention was original (we are not told whether it referred to microscopic or photographic lenses, probably the former, as we believe the Messrs. Beck did not manufacture photographic lenses at that time), but that the iris diaphragm had been in existence some years before the time stated is certain. We cannot give, at the moment, a reference to any printed description, but an old and well-known contributor informs us that somewhere about 1865 he was shown by a Liverpool photographer named Vogel a foreign made portrait lens with an iris diaphragm. It would be interesting to ascertain the age and genesis of that lens.

RADIO ACTIVITY.

It is highly probable that many mysterious appearances upon photographic plates which have perplexed many workers will now be satisfactorily accounted for. Again and again have we had inquiries as to the meaning of certain markings which have come unbidden upon the sensitive surface, and too often, we fear, has our surmise as to their origin given little satisfaction to the querist. But now that radio-activity is recognised as such a common quality, and is being investigated by so many students of science, we may hope that many occurrences, for which no good explanation has been forthcoming, will have light thrown upon them.

Nearly thirty years ago, when Mr. Kennett was selling to a few amateurs gelatine emulsion in the form of "pellicle," with which they could coat their own plates, he warned his customers not to keep the unexposed plates in pine boxes, unless the interior of the receptacles were first coated with spirit varnish, for there was some emanation from the wood which spoilt them. Long after this, when the prejudice of the professionals had been overcome, and gelatine plates became necessary to all workers, it was discovered by many that a plate left in a dark back for any long time would become impressed with a complete picture of the wooden shutter in front of it, and of the leather hinge with which it was furnished. We may surely regard these as among the first observations of radio-activity, although at that date the term had not been invented.

But we can go back still further to some experiments recorded by M. Niépce de St. Victor,* which, although not of exactly the same kind, have a distinct bearing upon the subject. He had, of course, no dry plates to play with, and the fact that he obtained evidence of action upon

slow chloride of silver paper makes his experiments the more remarkable. They were devoted almost entirely to the light-giving power of different bodies after they have been insolated—i.e., exposed for some time to the action of the sunlight.

First, he records that if an engraving be exposed for some time to sunlight, and afterwards placed in the dark in contact with chloride paper, an impression of the picture is produced in a very short time on the paper. After this he tried such different substances as white porcelain with black figures, linen, wood, marble, cardboard, etc., and every time he succeeded in getting an image on the paper. He also succeeded in "bottling up light" as he expressed it—that is to say, he insolated a substance, shut it up in a dark tube, sealed up the tube for a week or more, and then, in the dark, placed sensitive paper against its orifice, with the result that he obtained an impression of the opening of the tube in a very short time. It is interesting to note that the substance insolated was a sheet of cardboard, which had been treated with a solution of tartaric acid, or a salt of uranium. This cardboard was rolled up so as to form a lining for the tin tube.

It will be recalled to the memory here that Becquerel, in his far more recent experiments on the radio-activity of the uranium salts, first exposed them to light, and attributed their marking of a photographic plate to this insolation. He subsequently found that uranium needed no such preliminary treatment, but would affect a dry plate, although the salt employed had been made in darkness, and kept from all light access. It is evident that if M. Niépce had had gelatine plates to experiment with he would have anticipated Becquerel in some of the results at which he arrived, with regard to uranium. This is a very interesting point, because the uranium observations led the way to the discovery of radium.

All these early experiments and observations had been half forgotten when, six years ago, just about the time that radium was being recognised as a new element, Dr. W. J. Russell gave to the world the results of a series of remarkable observations on "the action exerted by certain metals and other substances on the photographic plate." It may be thought by those with good memories that a paper only six years old is too familiar a thing for discussion; but in this age of hurry, when one object of interest eclipses another rapidly, there must be many who have forgotten Dr. Russell's experiments and many newcomers into the photographic arena who have never heard of them. To us they seem to possess a new interest in the light of recent and current discoveries.

Dr. Russell used for his experiments both plates and bromide paper, but preferred plates of the rapid kind, because the paper was naturally more sluggish in its action, and he obtained evidence of what we may now call radio-activity from a number of different things, both organic and inorganic. Possibly he was not aware of the former experiments of Niépce, to which we have referred; at any rate, he does not seem to have mentioned them, as he probably would have done if he had known of them.

He made experiments with many metals, placing each, sometimes in actual contact with, and sometimes separated from, the gelatine plate, in darkness for a period ranging from 19 to 118 hours, afterwards developing the plate in the usual manner. He found that magnesium was the most active of those he tried, and he placed the others approximately in the following order:—cadmium, zinc, nickel, aluminium, lead, bismuth, tin, cobalt, antimony. He found, too, that certain alloys were exceedingly active, notably pewter and fusible metal, while, strange to say,

* *Comptes-Rendus*. 1857, et seq.

others, like German silver and brass, are inactive, while aluminium-bronze is only slightly active.

The metal experimented with must have a bright surface, and in employing zinc, Dr. Russell polished it up with emery-cloth or glass-paper in order to bring it into condition. If left in the air for a day or two, it became quite inactive, and the same result was brought about by washing its surface with dilute sulphuric acid. The faintest markings on the metal plate, even the scratches caused by the emery-cloth on the zinc, were faithfully reproduced on the gelatine plate. If the zinc plates were amalgamated with mercury, the action was much intensified, and Dr. Russell was able to show a picture of a skeleton leaf produced in this way by contact in darkness of only two minutes' duration, the leaf being placed between the metal and the gelatine surface.

There were many other interesting experiments made with metals, but we cannot afford space to refer to them. One observation, however, seems to have such a likeness to what we have all been reading lately of the power of radium to transfer its radio-active properties to bodies which were previously quite inert, that we must allude to it. Dr. Russell found that pure alcohol, ether, and chloroform had no effect whatever upon the plate, but that if any one of these liquids were shaken up with some turnings of bright zinc, and were allowed to stand with the zinc immersed for about four days, and the metal turnings were then removed, and the liquid filtered, it would become active. Even if distilled, the volatile fluid so treated with metallic turnings would not altogether lose its property of affecting the gelatine surface. Several liquids could be made active in this way, but others, such as benzene, and petroleum spirit, were quite inert.

Quite as curious were the experiments made with various organic solids, and perhaps the most interesting to photographers were those recorded of printing-ink. Many amateur workers have found to their dismay that an exposed plate wrapped in newspaper, will, when developed, exhibit a very perfect reproduction of the type matter. This is due to the activity of the linseed-oil and of the turpentine with which the ink is prepared. The terpenes are all remarkably active, and so are most of the vegetable oils—with the exception of olive oil, which is almost inactive. Copal, in the form of varnish, is very active; whilst gum arabic is inert.

We are reminded of the behaviour of the X-rays when we read that the emanation from the various bodies and liquids tested by Dr. Russell will pass through paper, celluloid, collodion, gutta-percha, gold-beaters' skin, vegetable and animal parchment, besides a number of other things.

With regard to the action of wood, either in plate-boxes or in dark backs, upon gelatine plates, Dr. Russell's experiments show that most kinds of wood will leave a record if left for even a short time in contact with the plate. And it does not seem to matter much if the wood be new or old. One specimen he showed in which all the grain markings were transferred to a plate from a block of oak, which had been kept in a dry room for about 100 years.

Details of all Dr. Russell's experiments will be found recorded in the proceedings of the Royal Society, and in the light of recent events they will be referred to with renewed interest by many. Whatever be the ultimate explanation of the effects recorded, it must be admitted by all that the gelatine plate is a most sensitive detector of radio-activity—as sensitive perhaps in this way as the telephone has proved to be in the recognition of currents of electricity which would, without its aid, have quite escaped observation.

THE PYRO AND PYRO-SODA DEVELOPER.

A CORRESPONDENT has asked, with regard to our statement that "it is not difficult to remove green fog without injuring the quality of the negative," "how to do it?" We are inclined to reply by an hibernicism, and say, "prevention;" do not use a plate that gives green fog, or, having stock of such plates, do not use ammonia. But as we know many workers are wedded to pyro-ammonia, we may say that a very weak solution—about one per cent. of ferricyanide of potassium applied with a pledget of cotton wool will work wonders; if the stain be very pronounced, it will be desirable to mix a little hypo solution with the ferricyanide, to make a dilute Howard-Farmer solution in fact, taking great care not to hurry the matter by using too strong a solution.

Notwithstanding the well-known drawbacks to pyro as a developer, there is no doubt that a very strong body of workers prefer it and with ammonia, and especially is this the case where lantern slides are in question. We believe it to be the case that the most expert slide-makers in the Liverpool Amateur Society—a society which is pre-eminently successful in lantern work generally—pin their faith to pyro-ammonia as a developer, with magnesium light as an illuminant. Although pyrogallol and its decompositions have been studied by several eminent chemists, there is much that is obscure with regard to the exact chemical nature of its products when applied to an exposed plate. The image consists of a something beyond pure silver, and is dual in character, being partly composed of minute opaque grains of metallic silver, and partly a pyro-decomposition product in the nature of a transparent stain, and it is supposed that it is this latter substance that gives the particular quality that distinguishes a pyro developed negative, and which certainly gives a peculiar richness to lantern slides difficult to mistake by any of the more modern developers. There is another point with regard to the obscure decompositions of pyro which may be mentioned at this stage. It is sometimes asked why pyro should not be made in one-solution form like most of the "quick-starting" developers may be compounded. But, even if kept in well-filled bottles so as to exclude as much air action as possible, the plan is impracticable for a very simple reason. Pyro developers, from the moment they are made, are liable to a change of character, even if atmospheric air be entirely excluded and the colour remain unchanged. A developer mixed, and at once put into a bottle so as to fill it up to the stopper, will, at the end of twenty-four hours, and though unchanged in colour, take a much longer time to develop a plate than it does when first mixed. It acts like a once-used developer, and gradually becomes valueless. There is, however, one exception to this rule, and that is when the "pinnakol salt N" is made to take the place of the ordinary alkali. A one-solution developer may be so made which will keep in good condition for months, and even when greatly discoloured, will be found to give unstained negatives.

We now pass on to the one great objection to pyro as a developer—its excessive readiness to stain the fingers. We do believe that, were it not for this especial characteristic, pyro would be used to the virtual exclusion of every other developing agent. With care it is possible to use it and have but slight stains produced; but it is next to impossible to avoid getting the nails, especially round their base, thoroughly browned, almost as though dipped in iodine solution. Of course, much, if not all, of this latter stain may be avoided by slightly smearing the nails and finger-ends with vaseline, and so repelling the pyro solution; but as so much preparation and waste

of time is involved in doing this, few care to go to so much trouble. In actual practice the best plan to adopt to avoid this staining is the simple one of continually dipping the fingers in clean water before and after contact with the developer, and, as a matter of comfort, occasionally wiping them on a towel. There is a certain amount of absorption or penetration of the cuticle by the pyro solution, and if the hands be saturated, as it were, with water previous to immersion, it is evident that less pyro would be absorbed than would be the case with a perfectly dry skin, and in practice this theoretical idea is found to work. Indeed, it is surprising how many plates can be handled and developed with little or no finger-staining when this simple precaution is taken. As to the laving the fingers with water for a moment or two after pyro solution has touched them, it is obviously desirable, even as a matter of personal comfort, for the alkali alone of the developer has a disagreeable action on the skin when it is subjected to it for any long time. Here, again, we have a preventive, rather than a curative, process. As to curing—i.e., getting rid of the stains with or without the above precautionary measures being taken, there have been scores of remedies propounded; but the simplest and most efficient is the use of solution of bleaching powder—the so-called “chloride of lime”; but to obtain its utmost efficiency, a little hydrochloric acid should be added; the efficiency of action is then greatly exalted. Referring again to the least known addition to pyro for developing purposes, the pinnakol salt, we may say that it is stated that, with its use, staining of the fingers does not take place. Should this prove correct, we predict a great popularity for this at present little-known addition to *materia photographica*. We will conclude by an amplification of our formula for a pyro-soda developer, by giving details for compounding stock solutions. The pyro solution, usually termed No. 1, may be made by dissolving an ounce of pyro in 20 per cent. of sulphite of soda, adding about a drachm of citric acid, and making the bulk up to a pint. This gives a 5 per cent. solution. The alkali solution (No. 2) may conveniently be made by the Winchester quart at a time, and is practically permanent in well-stoppered bottles. This quantity, when made as we will explain, is only a little more than is required for an ounce of pyro. Half a pound each of carbonate of soda crystals and of sulphite of soda, are dissolved (most conveniently in hot water), and the bottle filled up to the shoulder, the measure being then at a rough calculation about 80 ounces, thus giving a solution with 10 per cent. of alkali. If, through hardness of the water, a precipitate occurs, it will fall to the bottom in about a day, and filtering be avoided. To compound a developer (just before use), the pyro and carbonate of soda solutions should be mixed in the proportion of 1 and 3, and then water equal in bulk to the combined solutions added. Bromide may be added or not, according to the plate in use. This will give a developer with 3 grains of pyro, 18 grains of soda, and 30 grains of sulphite to the ounce—a useful, workable, easily-mixed formula, applicable to a wide range of plates.

By the death of Mr. Joseph Bell, which occurred on the 5th inst., at Liverpool, there has passed away the head of two well-known Liverpool firms. As the proprietor of the business of Bell and Son, french polishers, and that of Brown, Barnes, and Bell, photographers, Bold Street, the late Mr. Bell enjoyed the esteem of a wide circle of friends and patrons, the collection of photographs at the Bold Street house embracing nearly all the leading people of Liverpool and district for over a generation.—“Liverpool Mercury.”

MAINLY ABOUT FOLK.

By THE AMATEUR OPTICIAN.

It is pleasant to be able to report a fair amount of business at this season of the year. I cannot say anything about the Christmas card as such, but I do know that the amateur goes in more largely than ever for prints from his own negatives, which he mounts, for the most part, in a very tasteful manner, aided in this direction by the mount manufacturers, of course. It is not possible to ignore some of these productions—the very evident artistic ability displayed, skilfully and carefully-chosen subjects admirably suited to the purpose, in size, form, and colour, these appear to be the rule. It is curious to note how often these little photographic bits appear from altogether unexpected quarters. I have sold plates and paper for some years to an amateur without by any chance ever seeing a sample of his work; nobody knows anything about him; he belongs to no society; and whether he is an expert or a mere waster is a big uncertainty; when suddenly he turns up with a few negatives for enlargement, and I see something which gives unalloyed pleasure. I begin now to look out at Christmas time for surprises of this kind, for there are many modest, silent, unassuming young fellows about with cameras who have a real genius for the art.

Some time ago, in these notes, I mentioned the fact that dry batteries for electric bells, etc., can be rejuvenated by making perforations in the zinc casing, and soaking in a solution of chloride of ammonium or zinc. The matter is referred to again because it is interesting to mention the fact that a set of these batteries, treated as described five months ago, at time of writing, are working vigorously, and show not the smallest sign of giving out. By the way, a big firm of cash chemists are selling thousands of those pocket flash-lamps which are useful, *inter alia*, not only to the man who has been working late and finds it difficult to discover the number of his house and the exact spot in which to insert his latch-key, but also to the photographer in search of a novelty. My customers tell me they use these for a variety of purposes; one as a convenient illuminant in exposing lantern plates; another, when photographing an engineering model, found one of these lamps very useful to throw a beam of light over the dark portions of the same during the exposure of the plate; while a third, having tied up his lamp in a piece of red tissue paper, by the illumination thus provided developed some plates.

Mr. Martin Duncan's article on X-rays serves a very useful purpose; at the same time, you may talk about the delights of radiography, and the experimental interests of the electrical phenomena of Hertz rays, and wireless telegraphy, etc., till all is cerulean, but it is only on very rare occasions that you will find the client willing to part with £40 or £50, which would be about the price of a set of apparatus ready-made, suitable for experiment and demonstration. There are plenty of amateurs who enthuse on such matters provided they are not put to any personal inconvenience or called upon to pay for the pleasure. The enthusiasm which impels a man to sacrifice his “bike,” limit his wardrobe, or at the least weed out his collection of apparatus, which in itself is a painful process, in order to find the requisite specie for further outlay, is, unfortunately, rare. In times “lang syne” I pinched myself all round in order to be able to own a particular set of lenses; a time when, as now, for that matter, you could spend £50 on the optical part of your apparatus, and not see very much for your money. But certain lenses by certain makers were the rule in our particular society, and there was also the requisite enthusiasm, and the encouraging results. But for pure fascina-

tion and the impelling influence which makes a man do odd things in order to get on with his hobby, give me electrical work, frictional apparatus and coil-making (in itself an absorbing pursuit), and the class of work which keeps one in the wake, no matter how far behind, of Professor Oliver Lodge, Testa, and Marconi. What about that grand old amateur, James Bowman Lindsay? It is amazing what he accomplished between, say, the years 1830 and 1860, on a beggarly salary of £50 a year! We read that "all his life he must have pinched himself to the utmost limits in order to purchase materials for his numerous experiments. He worked and worked alone, on the borders of starvation, in one room—all he could afford." Experiments in electric lighting, wireless telegraphy, and, doubtless, all the work incidental to the period when the "Rhumkorff coil" was comparatively new.

"Some of Lindsay's experiments" (I read) "were made in the presence of two friends, one of whom says that Lindsay would station them on one side of the Tay, requesting them to watch carefully the magnetic needle he had placed in position, and to note how it moved. He would then insert his plates in the water on their side of the river, and crossing over to the opposite side, would complete his arrangements. His battery, containing twenty-four Bunsen cells, would be set in action. Later on Lindsay would return and question them eagerly as to the behaviour of the needle. The different movements to the right and left would be noted, and, on comparing them with the messages he had sent from the other side he was perfectly satisfied he had accomplished telegraphy without continuous wires. He would then return to his little room as happy as possible. It is comforting to know that the studious Lindsay, with all his poverty, got some satisfaction and joy in this life. Nowadays we can purchase batteries and wire, and all electrical appliances, at a moderate cost, and every detail ready for immediate service. Not so in Lindsay's day. He had to make up his cells, and possibly to coat and otherwise insulate his wires." He had to make his own intensity coils, one of which, we read, measured $4\frac{1}{2}$ ft. long, and contained five miles of wire. The author continues: "Think of it! Think of the cost, and where the money was to come from. Think of the patience of the man with primitive and limited appliances. The modern experimenter in electricity has no difficulties compared with those combated by Lindsay. Besides, in Lindsay's case, more wire, more acids, more metals, meant less food, less new clothes, less comforts of all kinds."

I have just overhauled a set of three whole-plate double dark slides which, last summer, performed in an erratic way, that is to say, one or other on occasions, when presumably the light was particularly strong, turned out a plate "foggy" here and there, by reason of entrance of the light at some part which certainly should have been secure. Glancing along the edges where the two halves of the slide come together, it was clear that at certain places there was space sufficient to allow of the entrance of a piece of thin note-paper. The slides were doctored up as follows:—Firstly, mark with a pencil the parts where the slides were mechanically imperfect; next make a little thin glue of the best quality, to which should be added a few grains of powdered bichromate of potash; apply to the parts marked, the slide being open upon the bench, a thin coating of the hot glue, and before this has time to set, sift over it some fine sawdust, which, settling down and drying hard, fills up the uneven surface. By means of a rasp and sandpaper bring the surface up level or otherwise make a perfect fit with the opposing half.

The uncertainty with regard to the letter "h" is always amusing. A smart young man invariably asks for hamidol or hi-konogen; another usually calls "hypo" "ipo"! I have, I may say, a reputation amongst a circle of friends as an authority upon minor ailments and remedies. It is, therefore, a very ordinary circumstance, when packing up some dry plates, to have to listen to various details concerning the state of health of Tom, Dick, or Harry. An exceedingly pleasant lady customer of mine, who has a habit now and then of misplacing the "h," was in the other day, and, when I inquired after little Mary, she said, "Not at all well, Mr. O., just now, she has been over-heating herself." This was a bit of a puzzle. Did she mean over-eating? I concluded so, and sympathised in the usual manner. I have one "igh and 'orty" customer, who generally asks for para-amid-o-phenol, which reminds me of a certain pharmacist in the North, a small man with a big side on him. The gentleman was opening a debate on "Cocaine," which he pronounced—as of course he had a perfect right to do—"Ko-ka-i-nec." The constant repetition of the word in the course of a discussion covering an hour or so, was a weariness to the flesh, the only relieving feature being that the gentleman now and then called it "Ko-ka-hi-ne"! At such times a touch of joy would pass over the faces of the younger of the members present, and much would be forgiven. In my apprenticeship days a colleague distinguished himself in a similar way. He was a member of the local Amateur Dramatic Society, and had been cast for a part—two lines—in the production then being rehearsed. He was up early and late, practising his lines before the glass. I cannot remember the exact words, but he had to walk on as a footman, and announce the arrival of something or other with an "h" to it, or rather, to be exact, a word to which an aspirate can easily be applied. We, who knew our friend's little failing, watched the performance on the great night with consuming interest. The fatal moment arrived. The side door O.P., or wherever it is, opened, and in stalked, with the "hair of a hemperor," our amateur. All the weeks of preparation had gone for nothing: "My lord, Sir Hedward waits below," brought a part of the house down with screams of delight, oft repeated and never forgotten.

EVERYONE who has seen pretty Miss Marie Studholme, of the Gaiety Theatre, and everyone who has seen her portraits (says a contemporary) have been compelled to admire her pretty teeth. Someone has admired them so much that they were used in an advertisement, and now someone has apologised for so doing, the apology appearing in the "Standard" as follows:—"I do hereby humbly and sincerely apologise to Miss Marie Studholme for having wrongfully and without her authority used her portrait for advertising purposes, in a manner calculated to induce persons to erroneously believe that certain of her front teeth are missing and have been replaced by false ones, and I admit that the advertisement so issued by me is libellous, and I authorise the said Marie Studholme to insert this apology, at my expense, in such public newspaper or newspapers as she may select."

"SCIENCE" states that the following Bill has been introduced into the United States House of Representatives and referred to the committee on coinage, weights, and measures:—"Be it enacted by the Senate and the House of Representatives of the United States of America in Congress assembled, that on and after the first day of January, nineteen hundred and five, all the Departments of the Government of the United States, in the transaction of all business requiring the use of weight and measurement, except in completing the survey of public lands, shall employ and use only the weights and measures of the metric system; and on and after the first day of January, nineteen hundred and six, the weights and measures of the metric system shall be the legal standard weights and measures of and in the United States."

THE FUNCTIONS OF TRICOLOUR FILTERS.

Paper read before the Optical Society, December 17th.

PART. I.

ALTHOUGH a great deal of theoretical work has been advanced upon the subject of the filter curves of tricolour filters employed for taking the negatives of tricolour photographs, there seems to be still a considerable difference of opinion on the subject. Examination of the filters at present on the market seems to point to the fact that too little attention is given to the point of the overlapping in the construction of such filters. The object of this paper is, therefore, to consider the effects of the overlapping and to show how this will affect the final colour reproduction.

We are not here dealing with the limits of photographic action, either at the red end of the spectrum (which is practically always limited by the sensitiveness of the plate), or at the violet end; neither are we dealing with the shape of the curves of photographic action, or the luminosity of the various spectrum colours. In passing, we should note that the curve of photographic action never corresponds with the visual effect, and the range of gradation which even the best dry plate will record is less than the eye can perceive.

One effect of this compression of the scale of gradation is to make the curve of photographic action steeper than the visual at the places where the filters absorb, and this, combined with the fact that the dyes generally used in making the filters have themselves abrupt absorptions, tends to prevent any gradual shading off at the limits of the filter records. This steepness is, moreover, enhanced in making the necessary chromated gelatine reliefs for transparency and paper work. We are not now attempting to put forward any final definition as to what tricolour filters should do, but merely suggesting a first step in their adjustment.

We consider that there is ample justification for our doing this, if only from the performance of filters now on the market. Some workers have thought that the curves of photographic action given by the tricolour filters should bear some direct relation to the curves of the colour sensations. They would, therefore, have excessive overlap, and we think we shall be able to show that any such filters will give too great a degradation of the reproduction colours. The only writer, as far as we know, who lays any stress on the amount of overlap, is Professor Miethe, who regulates its amount by a somewhat rule-of-thumb method.

In our tests upon the various filters we have examined we have preferred to use a fairly pure spectrum rather than trust to the, perhaps, doubtful effects of the impure colours of any colour sensitometer. The use of the spectrum was further necessitated by our wishing to measure the region of the overlapping. We consider that if any process of colour photography will give a fair reproduction of a spectrum, then it will reproduce any more complex colours well, since it reproduces their components, and we have taken this as the severest test we can apply. We believe this view is also held by Mr. F. E. Ives. Let us, here, carefully distinguish between the colour sensation curves, generally called "Maxwell's curves," and colour mixture curves. Maxwell's curves are not, as has sometimes been stated, curves obtained by matching each part of the spectrum by three pure monochromatic lights—these may be more properly called colour mixture curves (and were drawn by Maxwell)—but those usually known as "Maxwell's curves" give for every point of the spectrum the relative amounts of the three sensations which are stimulated in the eye, and which together make up the visual effect produced.

Some experimenters have taken the colour mixture curves, and others the colour sensation curves, as the basis of their

theoretical filters and inks. Whatever may eventually be found to be the best practical curves for the filters and their printing colours, we think we may state the two following fundamental points:—

First.—That since in any photographic process one prints from the parts of the negative where the light has not acted, or in proportion as the light has not acted, each printing colour should consist of white light, less the colours recorded through the filter.

Second.—That the regions where the photographic records overlap should accord in hue with the printing colours of the red and blue negatives. It is with this latter point we chiefly wish to deal in this paper.

It would be well, in passing, to examine a few of the definitions and tests that have been proposed by the various experimentalists in this subject. Sir W. Abney* states that the filters should follow the sensation curves and that the printing colours should be the exact complementaries of these, although in a paper before the Royal Photographic Society† he discusses the use of inks, and, hence, filters that have abrupt absorptions.

He proposes as a test for the filters, a colour sensitometer, in which the colours have been measured in terms of three monochromatic primaries; these are graded in sets so that each set contains a relatively equal amount of its own primary. A screen and plate are said to be adjusted when a photograph of its graded sensitometer gives uniform densities.

Now, we consider any colour sensitometer method such as this likely to give misleading results, because it would answer with filters passing only narrow bands, whereas, as Mr. Ives has pointed out, such filters would not render the colours whose regions of maximum luminosity happen to coincide with the colours not recorded. Moreover, the adjustment of filters by such a method would give no indication as to the form of their curves of action, and it would appear that the intention is for them to be adjusted to the sensation curves.

Mr. F. E. Ives, in the third Traill Taylor Memorial lecture, states:—"That the distribution of photographic action should correspond to Maxwell's colour mixture curves," and that the printing colours should be antichromatic to these.

Mr. E. Sanger Shepherd, in the Cantor lectures of 1900, after discussing the use of Maxwell's colour mixture curves, states that it is better for the filter records to follow Sir W. Abney's sensation curves, and proposes a sensitometer similar to that previously described as a test.

Mr. Howard Farmer states that it is best in practice to simply divide the spectrum into three bands, having no overlap, the junctions being at about the D line and a little beyond the F line in the blue.

Dr. Miethe, of Charlottenburg, has proposed the use of filters similar to those of Mr. Farmer, having no overlap, and dividing the spectrum at about 6,000 and 5,000, but states that these would give worthless results unless used in such a manner that an artificial overlap is produced by giving a second and shorter exposure with the next filter on the same plate. For instance, for the red record, he gives exposures through both red and green filters in the ratio of perhaps 15 to 1.

It will be seen from the above authorities that there is a great discordance of opinion as to what three-colour filters should do, and it will, therefore, be interesting to consider in detail how each spectrum colour may be reproduced by the tricolour process.

We may divide the spectrum as far as its photographic reproduction is concerned, into five regions, that is without taking into account any gradual shading off of the filter records at their limits. These regions are, firstly, those where only

* "Instruction in Photography." † "Journal of Photography."

red, green, or violet are recorded through their respective filters, and which are reproduced by the superposition of the printing colours in pairs. And, secondly, those which are recorded through the red and green, and through the green and violet filters, and which are reproduced by the printing colours of the violet and red records alone.

Let us suppose in Fig. 3* that our red filter and plate records from the beginning of the visible red I. (λ 6,900) up to III. (λ 5,820) at the end of the yellow, and, as from this negative we shall print upon the regions not recorded, let us print with a colour which consists of the summation of all the colours from III. (λ 5,820) to the violet end of the spectrum (λ 3,970). The hue of the colour obtained by combining all these wave lengths will be a greenish-blue.

Suppose, further, that our green record is from the beginning of the yellow II. (λ 6,070) to the end of the blue-green IV. (λ = 4,920), and that from this is printed on the parts not recorded, i.e., on the red region I. to II. and the violet region IV. to V., a colour consisting of the sum of the colours from I. to II. and from V. to VI., this will be a crimson.

Again, we will suppose the violet record extends from IV. (λ 5,020), the beginning of the blue-green, to the end of the violet VI. λ 3,970; the printing colour for this will consist of the remainder of the spectrum colours, viz., from the beginning of the red I. to IV., this is a yellow.

Let us now superpose the three prints and consider the nature of the reproduction colours. From I. to II. we have superposed the crimson and yellow, and we have to note what part of the incident white light will be transmitted. The yellow pigment will absorb the violet to which the crimson is transparent, and the crimson will absorb the green and yellow to which the yellow pigment is transparent; the common transparency will, therefore, be the region I. to II. Therefore, this region is reproduced by a uniform hue which is due to the sum of its own colours. This colour is a slightly impure red.

By reference to the sensation curves, Fig. 2*, it will be seen that not only the red, but a little of the green sensation is stimulated by the shorter of the included wave lengths, but, in spite of this, it is a sufficiently good red for the purpose, because it is as pure as any red one is likely to have to reproduce.

The second region II. to III. will have printed on it only the yellow pigment which transmits all the colours up to IV. λ = 5,020, and, on referring to the sensation curves, it will be observed that the spectrum yellow which stimulates only two sensations, the red and the green, is being reproduced by a colour, the components of which stimulate not merely the red and green, but also a little of the blue sensation, so that the spectrum yellow is reproduced with the addition, not of real white, but the sensation of white.

The yellow and greenish-blue pigments are superposed from III. to IV., and their common transparency corresponds to the same region, which is a green of slightly less purity than its central part. The greenish-blue, which reproduces the overlapping part IV. to V., stimulates the red sensation rather more than do the colours of the corresponding part of the pure spectrum. Finally, the region V. to VI., on which is superposed the crimson and greenish-blue pigments with a common transparency to the colours of the same region.

We might have, by integrating the areas of the curves cut off by the dividing lines in Fig. 2*, found the percentage composition of the reproduction colours in terms of the sensations, had we thought it worth the while. It will be noticed that we have drawn no distinction between the blue and violet of the spectrum; pure violet is a colour which one has practically never to copy. It is thus seen that in reproducing a spectrum

we do so with slightly degraded colours, and, as Dr. Clay has pointed out, this effect is least noticeable when the degradation is with white.

But we now wish to point out that this is immaterial, for when we come to consider the reproduction of the colours one meets with in nature and in pigments, this degradation with white in nearly all cases ceases to exist. Take, for instance, the reproduction of a yellow pigment. All yellow pigments transmit or reflect the red, yellow, and green of the spectrum, and some even a little violet, that is to say, they are already equivalent to a spectrum yellow diluted with white, and are, therefore, as impure as the colour with which they are imitated.

There are few greens to be met with whose spectra do not extend over a greater range than from λ 5,820 to λ 5,020, and so in their reproduction by the above system there is no addition to their impurity. One might cite many cases, but the whole point turns on the fact that although one may turn to the spectrum as a test, one does not in practice have to reproduce pure spectrum colours.

Considered from the point of view of the aforementioned treatment, the tricolour process by negative synthesis would appear to depend only indirectly upon the tricolour theory of vision, for the colours are approximately at least imitated independently of the mechanism of vision. It appears from the foregoing that the region which is recorded through both the green and the red filters is reproduced in the printing colour of the violet record, viz., a yellow; and that the region recorded through both the green and violet filters is reproduced by the printing colour of the red record, generally a blue.

Now, as one has, at present, to use reproduction colours which seldom give us what we require, we suggest that the amount which the red and green records fully overlap should be restricted to the region that corresponds most nearly in hue with the printing yellow to be used. Similarly, the completely overlapping region of the green and violet records should be confined to the part most nearly matching the blue or greenish-blue printing colour. We consider the overlapping should never exceed this, and, on the other hand, should never fall far short of it.

The gradual overlaps required by filters, based upon colour sensation curves, or intended to follow colour mixture curves, are seldom or never realised in practice. They are things which are talked about but seldom produced. Mr. Ives is the only person, as far as we know, who claims to have successfully used filters whose records correspond to colour mixture curves. We must give deference to Mr. Ives' statements, as he is a practical as well as theoretical worker. But some photochromoscope filters of his which we have examined only give a very crude approximation to colour mixture curves, and their excessive overlap is, we have found, fatal to their use for three-colour printing.

There is another point which seems to have been lost sight of altogether, and is, moreover, an objection which has not as much significance if the filters have fairly abrupt absorptions. In all molecular phenomena, i.e., in magnetism and electric response to stimulus to living or non-living bodies, in photographic action, etc., there is a period of ineffective stimulus, e.g., in the case of a photographic plate there is a certain minimum amount of light action below which no deposit of silver occurs.

Suppose now that by a certain exposure to a spectrum with suitable filter and plate, one obtained a silver deposit whose density corresponded to, say, the red colour mixture curve; if we gave any other exposure, then the shape of the curve ought to remain the same (except, perhaps, with great over exposure, when in any case all parts would tend to reach their maximum limit of density). But this would not be so, on

* The figures illustrating this paper will be reproduced in next week's JOURNAL.

reducing the exposure, the less dense parts would lose their density too rapidly and soon become clear glass while there was still a good deposit in the densest part. Fig. 4 shows what ought to occur on varying the exposure from the original, and Fig. 5* what does actually occur.

This shows that colour mixture and sensation curve filters will only work as they are intended to do when all parts of the subject to be copied have the same brightness. It is probably due to the maxima only having acted in some parts of the picture that the previous example shown was not worse than it is. Of course, this argument applies to all filters only in greatly varying degree, but filters having marked maxima will act differently in copying light or dark colours.

In view of the rapid growth of the application of tricolour, especially to photomechanical processes, it is a matter of commercial importance as well as of theoretical interest to know what one wants, even very approximately, in the construction of the filters and the selection of inks. So confusing is the present state of affairs that few tricolour operators in the process trade have any idea of what they require, and they are guided by rule of thumb considerations only.

PART II.

We have examined several sets of commercial and recommended filters, by reproducing a fairly pure spectrum with them. The regions of the spectrum recorded through them, and also the approximate distribution of the colours in the reproductions, are given in the two tables accompanying this paper.

The reproductions of the spectrum we are about to show were made with superposed gelatine reliefs, dyed with erythrosine, brilliant yellow, and fast green (blue shade). The peculiarities of the reproductions made by means of the various filters are as follows:—

* See note on page 48.

TABLE I.—SHOWING THE REGIONS OF THE SPECTRUM RECORDED THROUGH CERTAIN TRI-COLOUR FILTERS.

FILTERS.	RED RECORD.	GREEN RECORD.	VIOLET RECORD.
Ives (Kromskop) ...	6,520 to 5,250 (maximum effect 6,480 to 5,800)	6,300 to 4,700 (maximum effect 5,700 to 5,250)	5,050 to 3,800 (maximum effect 4,950 to 4,500)
Farmer and Simmons ...	6,500 to 5,700 ...	5,850 to 4,550 (with a minimum 5,300 to 4,900)	No. 1, 4,500 into ultra-violet; No. 2, 4,850 to 4,350
Sanger Shepherd ...	6,340 to 5,710 ...	5,900 to 4,950 ...	4,820 to 3,800
Lumière ...	6,640 to 5,860 ...	5,420 to 4,800 ...	4,730 into ultra-violet
Lumière N.A. Co. ...	6,580 to 5,760 ...	5,800 to 4,660 (maximum effect 5,800 to 4,900), also slight effect in ultra-violet 3,890 and beyond.	4,700 into ultra-violet
Klein (for collodion emulsion)	6,470 to 5,470 ...	5,900 to 4,950 ...	Chief effect—5,100 to 4,500, tailing off to 3,800; Slight effect—6,000 to 5,830

TABLE II.—SHOWING APPROXIMATELY THE REGIONS OF THE SPECTRUM WHICH ARE REPRODUCED IN THE COLOURS INDICATED.

Filters.	Unrecorded Red (reproduced as Black).	Red.	Yellow.	Green.	Blue or Greenish-Blue.	Blue-Violet.	Black.	White.
Ives ...	6,900 to 6,520	6,520 to 5,800	5,800 to 5,300	5,300 to 5,000	5,000 to 4,750	4,750 to 3,800	...	...
Farmer & } No. 1 ...	6,900 to 6,500	6,500 to 5,850	5,850 to 5,700	5,700 to 4,500	4,500 to 4,550	4,550 & beyond	...	...
Simmons } No. 2 ...	6,900 to 6,500	6,500 to 5,850	5,850 to 5,700	5,700 to 4,850	4,850 to 4,550	4,550 to 4,350	4,350 to 4,000	...
Sanger Shepherd ...	6,900 to 6,340	6,340 to 5,900	5,900 to 5,710	5,710 to 4,950	...	4,820 to 3,800	4,950 to 4,820	...
Lumière ...	6,900 to 6,640	6,640 to 5,860	...	5,420 to 4,800	...	4,730 & beyond	5,860 to 5,420	...
Lumière N.A. Co. ...	6,900 to 6,580	6,580 to 5,800	5,800 to 5,760	5,760 to 4,700	3,890 to 3,550	4,700 to 3,890	4,800 to 4,730	...
Klein ...	6,900 to 6,470	6,470 to 6,000	5,830 to 5,470	5,470 to 5,100	5,100 to 4,950	4,950 to 3,800	4,900 to 4,780	5,000 to 5,830

NOTE.—For comparison with the figures in this table, it may be interesting to note the positions of the various colours in the spectrum. From the beginning of the visible, about λ 6,900, to λ 6,200, is a pure red. From this point an orange tint is gradually assumed until it becomes a distinct yellow at λ 5,900 to λ 5,780. The green region lies between this and λ 4,900, there being a gradual change from a yellow-green to a blue-green. From λ 4,900 to λ 4,600 is a deep blue, and from λ 4,600 to the limit of visibility, about λ 4,000, a violet.

Red filter contains potassium bichromate, eosin, and ammonia, and it is used with a Lumière B plate.

With these filters the part that is reproduced yellow is in the yellow-green; there is the degradation of the blue-green noted above, and with the second blue filter the extreme end of the violet is reproduced as black; but as its luminosity is low, it probably is not of much consequence.

Sanger Shepherd's Filters for the Spectrum Plate.—The photographic records with these filters end somewhat abruptly. The red is not recorded quite as far as with the other filters; this is due to the peculiarities of the plate used. The band reproduced as yellow is too broad, extending from the truer yellow into the green at λ 5,710, while in the blue there is a narrow band of black.

Filters from Messrs. Lumière, of Lyons.—the red, green, and blue filters are used with the Lumière B, A, and extra rapid plates respectively. They give three isolated bands of red, green, and blue-violet only, of fairly correct hue for the positions they occupy, but the intermediate parts are reproduced as black, as they are not recorded at all. The ultra-violet is reproduced as blue-violet.

Filters from the Lumière N.A. Co.—Used with the same plates as the last. The reproduction with these is fairly good, except that all the colours are shifted a little towards the blue end. The narrow band of yellow is in the yellow-green, and the green extends into the blue. The slight transparency of the green filter to ultra-violet causes a region there to be reproduced blue.

Klein's Filters for Collodion Emulsion.—These are used with Albert's collodion emulsion. For the red filter the emulsion is sensitised with Penrose's "C" sensitiser, and for the green filters with Albert's "A" sensitiser. The most peculiar point about these filters is that the blue one consists of a dye that absorbs green only, and as the sensibility of the "A" sensitised emulsion extends into the yellow, this colour is slightly recorded through the blue filter, and being also recorded through the other two is reproduced as white. The part that is reproduced as yellow is the less refrangible half of the green. The remainder of the spectrum is more correct.

It occurred to the authors that it ought not to be difficult to make a set of filters that on a good panchromatic plate would give a reproduction as good or better than any of these. We, therefore, dyed up a set of dry filters with methylene blue, naphthol green and scarlet, and these, when roughly adjusted, gave on a plate dyed with Miethe's ethyl red the following spectrum records:—

Red filter	...	...	...	6,500 to 5,850
Green filter	...	...	...	5,900 to 4,650
Blue filter	...	...	...	5,000 to 3,600

We found that these gave a fairly good, but not by any means perfect, reproduction of the spectrum. The overlapping portions being here restricted approximately to the hues of the yellow and blue printing colours, and there being no stray portions of light coming in where they are not wanted.

The last set of records that we have to show emphasise two points already mentioned. The filters are methylene blue, naphthol green, and scarlet R.R., used on a Lumière C plate. The red filter was adjusted visually and well illustrates the facility of such a method, for, as will be seen, its photographic record shows that it is transparent to light beyond the visible violet. The green filter has been under-exposed, and shows as a consequence the degradation of the green with red due to a band of insensibility in the plate and a black band in the yellow.

The degradation of greens is a matter of great importance in tricolour work. It is of constant occurrence, and there are several causes tending in the same direction.

1. Excessive overlap between the red and green filters, whereby an insufficient amount of blue occurs in the print.

2. The comparative insensibility of most orthochromatic plates to blue-green, which results in an excess of red being printed on them. This is really a case of the filter record having maxima, a point we have discussed.

3. The want of transparency to green, of most of the blue printing colours, and their slight transparency to red.

To summarise our suggestions:—

1. Printing colours should be transparent to the colours not recorded by their respective filters, and are not to be merely complementaries (except that the blue printing colour must not transmit the extreme red which is never recorded).

2. Complete overlapping regions to accord in hue with yellow and blue printing colours.

3. Records to be without maxima (or minima) over the regions where complete record is required.

A. J. BULL and A. C. JOLLEY.

PHOTOGRAPHIC MUSEUMS.

OUR age is remarkable for the great zeal shown in collecting anything—the products of nature, art, and industry into museums, all that the human mind has thought and invented into libraries and archives. Only photography had been forgotten, for it is too young an art; but it does the greatest service to science, art, and industry. Its productions have been very often exposed in a great many exhibitions, but the photographs shown there for a short time are afterwards dispersed over all the world, and nobody has thought of preserving the artistic and other interesting photographs for posterity.

An Englishman, Mr. W. Jerome Harrison, was the first who meant that a great many works of Daguerre's art merited a better fate than to perish unknown, and were worthy of being preserved for the profit of the men of our own age and future generations. Mr. Harrison read, therefore, at the Photographic Congress of Chicago, 1893, a paper, in which he exposed the necessity for all nations to create international collections, with the possibility and intention of exchanging photographs with each other. The paper was heard with great enthusiasm by the members of the Congress, who chose an international commission for the study of the question, but nobody heard anything of it afterwards, which is usually the case with resolutions at international congresses.

Happily for this important matter, a member of the international commission, a Professor of Arts, Léon Vidal, known as an authority in the photographic world of Paris, had understood the great value of such an international collection, not only for professional photographers and amateurs, but also for every science and art, for history, and public life. Mr. Vidal possessed also all the qualities necessary for the execution of such a task with success; in one word, he was the right man in the right place.

Mr. Léon Vidal was right in thinking that such a problem could not be solved only by meetings of isolated friends of photography, but by corporations, who could alone possess the authority required. He addressed himself, therefore, in 1894, to more than thirty scientific, technical, artistic, and photographic societies, who conceived entirely the great use of this collection for the cause they represented, and they founded the Association du Musée des Photographies Documentaires, to which the booksellers gave asylum in their club-house (Boulevard St. Germain), and nominated Mr. Léon Vidal as president. This enterprise had an unexpected success. Editors, amateurs, and professionals, men of science and art, gave variable gifts, and now, after ten years, the museum

possesses 80,000 photographic documents (December, 1903). It is international, and accepts gifts from all friends of photography in other countries, which are examined by a commission, and if found worthy are incorporated in the collection and mentioned in the catalogue. The institution is very well organised, and every new addition is catalogued immediately after reception. The principle followed by the compilation of the catalogue is the same as that of public libraries, with some modifications for such matters as philosophy, philology, etc., which are represented by a great many books in libraries, but offer little interest for photographers.

Such collections can do the greatest services to photography in preserving its best and most interesting products for posterity, and also to science, art, and history, by keeping these important documents, which may be useful for scientific studies in the future. An example of the importance of photography for the history of our time is the instantaneous photographs of an amateur, made at the Buffalo Exhibition, where the scene of the assassination of President MacKinley is depicted exactly.

The Musée des Photographies Documentaires is also an indispensable addition to all public libraries and archives, for these institutions possess no iconographical catalogue, and it is impossible to find there any particular illustration contained in a volume without a special catalogue, whereas, in the photography archives it will be found immediately. Such an institution is also of the greatest use to editors, printers, and publishers of illustrated journals, who will find there precious materials for their publications.

The greatest difficulty in preserving the products of photography consists in the bad quality of the paper which is used, and which is destroyed after a few years by the humidity of the atmosphere. But the museum of Mr. Léon Vidal employs paraffin, by a special process, to enable them to resist for a long time all exterior influences. The rooms of the Paris Museum des Photographies Documentaires are now, through the unexpected increase of the collections, insufficient, and the direction has therefore asked the President of the Municipal Council of Paris to give to this Institute some rooms in the Petit Palais in the Champs Elysées; the negotiation will soon be closed, and when the museum has sufficient rooms, it will be one of the greatest service to science, art, and photography. In England, whence the idea issued by the paper of Mr. Harrison, Sir Benjamin Stone founded in the year 1897 the National Photographic Record Association, which has collected views of ancient houses and historical monuments of London, such as the Tower, Westminster Abbey, the Houses of Parliament, and which deposited, in the year 1900, its collection in the British Museum for the use of the public. This association is not international, as that of Paris, but only destined for photography concerning the British Isles. It possesses now more than 3,000 documents, and will be of great use to students and historians. The association is connected with a great many other photographic societies in England, as Chorley, Croydon, Darwin, Hertfordshire, Leicestershire, Liverpool, Nottingham, Paisley, Redhill, Rutland, Somerset, and has written a paper to these societies suggesting the method to be followed in photographing all the remarkable monuments of the respective districts.

In Belgium, a Musée Belge des Photographies Documentaires has been founded in 1901, with the aid of the Photo. Club Belge, under the presidency of Mr. Ernest de Potter, very well known in photographic society at Brussels, on the same principle as the museum of Mr. Léon Vidal.

In Switzerland, at Geneva, has been founded the Musée Suisse des Photographies Documentaires, in the same year, under the presidency of Dr. Demôle, which has also adopted

the same organisation as the institute of Paris, and has, with a very little expense, collected now about 15,000 interesting photographic documents. The museum, for the first three years a private enterprise, is to be the property of the town of Geneva, where a new Museum of Arts is being built, which will be opened this year, and where some rooms are destined for the photographic museum. The Canton of Vaud possesses also a photographic museum at Lausanne, with Mr. Paul Vionnet as conservator. Germany and Austria, although photography has taken there a very brilliant development, have been a long time indifferent to this movement, but now their interest has been awakened by the photographic press. Different photographic reviews have described the museums of London, Paris, Geneva, and Brussels, and a committee has been founded for the purpose of the creation of similar institutions in Germany and Austria.

The most important countries of Europe are thus persuaded of the necessity of the photographic museums, or archives, and the other countries will soon follow this example. The first part of Mr. Jerome Harrison's proposal at the Photographic Congress at Chicago in 1893, "the creation of international collections," now, after twelve years, will be realised; but the second and most important part remains yet to be realised, that is, "the international exchange of these collections."

Mr. Léon Vidal thinks that this other task of the different photographic museums is only to be solved, if all these archives now founded, or to be founded, are organised on the same principle, for the question of the photographic museums is an international one.

ERNEST MORGERNSTERN.

ASTRONOMY IN THE HIGH SCHOOL.

[From "Popular Astronomy."]

The late article on "The Small Telescope in the High School" by the senior editor of "Popular Astronomy" are very suggestive. They have led me to formulate the following short confession of astronomical faith as regards practical teaching in elementary astronomy.

In my judgment we who are teachers of beginners should hold fast to two ideals. We should lead and inspire our students to be watchers of the heavens, friends and lovers of the stars. We should maintain symmetry and proportion in dealing with the wealth of material offered by the oldest of the sciences.

As a guide in realising these ideals, we may well take the work of astronomers in the large, making, however, no attempt to use their fine tools or obtain their high degree of accuracy.

Now, astronomers study the heavens with two widely different objects in view. The "bright orbs" overhead, like powerful genii of the lamp, are invoked to further simple human undertakings. The stars help us to find latitude, longitude, and time. On the other hand, the whole heavenly array, sun, moon, stars, nebulae, planets, comets, and meteors, are watched and studied not that they may help us, but that we may find out about them.

A glance at the different investigations connected with these two main objects will show that the fundamental problems of the astronomer have usually their humble counterpart within reach of our students. They cannot regulate standard clocks to a small fraction of a second, nor make definitive determinations of latitude. But they can compare their watches with a sun-dial and from the shadow of a gnomon find how many degrees it stands north of the equator. They are able to take no part in the cataloguing and charting which fix star-places for use at observatories. But they can become familiar with the constellations and call the bright stars by name. To unravel the tangled web of real and apparent motion, to predict not only the position of bodies in their orbits but the form and position of the shifting orbits themselves—these things are beyond the reach of beginners. But they can measure the sun's altitude at noon and its azimuth at

setting, and track the course of the planets as they wind in and out among the constellations. While it is a thing too hard for them even to grasp the meaning of the methods employed in astro-physical study at the Lick and Yerkes Observatories, they may watch spots on the sun, identify lunar markings, and note Algol's shifting light.

I should therefore conclude that for substance of doctrine the following list of subjects should stand as fundamental in any scheme for the practical study of elementary astronomy.

1. The Constellations.
2. Diurnal Paths of Sun, Moon, and Stars.
3. Paths of Moon and Planets among the Stars.
4. Latitude and Time.
5. Use of Opera-Glass or Small Telescope.

There is a mistaken notion that such a scheme as this is simple and easy. I thought so once myself. Enthusiasm and love of one's work are powerful enchanters. And yet, as I look back calmly and coolly on my painstaking efforts for more than a score of years to work this course out with real boys and girls in High School, Academy, and College, I am ready to recant. The work involved is about the hardest that a teacher can undertake. None but those who have held star-watches on many nights of many years know how difficult it is to co-ordinate time, phenomena, and pupil. No cunning mathematical formula in the theory of probabilities will enable us to predict for any given evening the actual configuration between stars, students, and clouds. We are practically denied both workshop and tools. In this present dark age of elementary astronomical teaching, High School instructors might about as well demand to have the stars themselves brought down to the schoolroom as to ask for an astronomical laboratory. They usually obtain only by toil of soul and sorrow of heart so much as a north and south line and a place to see the sky. Ah, if so many trees did not grow in the wrong places, if only a meridian line could be bought and set up (or rather down) as telescopes are!

It falls to our lot, also, to contend with foes within as well as without. Our very liberties bring temptation, since as yet there is no core of instruction recognised everywhere as essential, it is, on the one hand, only too easy to neglect continuity and detail and lead our students into by-paths here and there, where things curious rather than fundamental take their time and attention. Especially is this so, if we have worked out a neat method of reduction or devised some little instrument that is to be brought into use. On the other hand, we are beset by the temptation to turn away from the little, simple things, and by a process of forcing, carry our students through what we are pleased to call real astronomical work. The thing sounds well, looks well perhaps in print; but can be attained only by ignoring proportion in our teaching, neglecting the foundations of astronomical knowledge, and leaving students in the end fitted to do well neither elementary nor advanced work.

It is seldom the part of wisdom to shut our eyes to real dangers in the path before us. But from my own point of view, the conclusion of the whole matter is this. It were better to fail in teaching elementary astronomy according to practical methods rather than win apparent success in the old ways, long since discarded in other sciences.

MARY E. BYRD.

Smith College Observatory, Northampton, Mass.

THE Board of Education, in co-operation with the Council of the Society of Arts, intend during the present year to hold, in the Victoria and Albert Museum, South Kensington, an exhibition of Engravings produced by mechanical means, such as photogravure and other photographic processes, as a sequel to the exhibition of engraving and etching held during last summer; and, as great advancements have been made in printing in colours since the Exhibition of Modern Illustration in 1901, specimens of colour-printing will be included. A committee, of which Sir William Abney, F.R.S., will act as chairman, has been formed to advise the Board in carrying out the exhibition. All communications should be addressed to the secretary, Exhibition of Mechanical Engraving, Board of Education, South Kensington.

FIFTY YEARS AGO.

[From the "Liverpool Photographic Journal" (now the "British Journal of Photography"), January 14th, 1854.]

THE Liverpool Photographic Society, in putting forth a Journal of their own, rest their claims to public support upon the widely extending interest in the several branches of photographic art—the progress that is being made by the practical members of their society and other photographers elsewhere. The admirers of the art naturally desire to have more particulars, and the practical operators more full and precise records of the suggestions, experiments, successes in various parts of the world, than can possibly be afforded by a newspaper devoted to general information. The "Liverpool Photographic Journal," though furnished with the proceedings of the Liverpool Society from the commencement, has not been able to find room for them, a part only of the May meeting being given in the September number. The Glasgow photographers obtain their information of our proceedings through the medium of American newspapers!

An Exhibition of Photographs has been proposed to take place during the visit of the British Association to Liverpool. In conjunction with this, the Liverpool Photographic Society have offered premiums for the best specimens of the art produced by their members. A premium has also been offered by the British Association for the best photograph of the moon—for which it is expected resident photographers will compete. The award of the premium offered by our society will be influenced, if not decided, by the opinions of the British Association; but it is desirable that public taste should be brought to bear upon it, and to cultivate the appreciation of the beauties of the photographic art—the quality most valuable, most to be admired—the society propose this publication, in which not only all the papers read at the meeting will be published, but the discussions upon them, in the course of which individual observations and suggestions occur of the highest importance, though they may not be appreciated at the moment in consequence of some other matter being the absorbing point of interest.

The Liverpool Society have therefore deemed it expedient to publish a Journal of their own, commencing with the report of the meeting in the new year. But, that the records preserved may be complete, a résumé will be given of what has already been done by the society, with such papers as may be considered interesting to those which have been read at previous meetings. The proceedings of the London Society and of independent operators at home and abroad will be given, with everything that can be obtained to furnish our readers with a complete account of the state and progress of the art in all its various branches.

Various forms of camera adapted to photographic operations have been exhibited by Mr. Mackinlay, Mr. Wood, Mr. Atkinson, and others, members of the society, of which full descriptions will be given. A set of rooms have been engaged for reading and operations, and furnished with many of the works—Continental and English—esteemed the best authorities on the several branches of photography, and a camera of the best description, with screens, baths, and every requisite for the practice of the art.

Valuable contributions have been made to this society. Three Dr. Edwards, Mr. Sanford has presented a number of very fine photographs. Mr. G. R. Berry has presented some specimens of lithography and photographic engravings on steel. Mr. Mackinlay, Mr. Forrest, and Mr. McInnes have been devoting their attention very successfully to making the means of the collodion process portable; and the latter gentleman has developed a method of moving the collodion film from the glass without injury to the photograph—in some instances even improving the appearance. Mr. G. R. Berry has perfected a paper process, in which he can print a beautiful colour by gaslight, of which the members of the society will have a full opportunity of judging, through the liberality of another member, Mr. John Morecroft, who has sent a number of negatives taken with wonderful success and judgment by Buckle's process, of which impressions are to be printed by Mr. G. R. Berry for the purpose of distribution to the society—two prints to each member. Mr. G. R. Berry gratuitously contributes his labour in printing these exquisite photographs for the society, in which all members will receive the full value of their subscription.

Mr. Bell has produced some very minute daguerreotypes for

ereoscope. Mr. Frank Howard has been endeavouring to persuade us to confine our attention to facts, without attempting to compete with the Fine Arts; and has also assisted to put us in possession of those principles of chiar-oscuro which have been, and are, recognised as essential in works of the Fine Arts, in case we should reject his advice as to the limitation of efforts to truth and scientific illustration.

Dr. Edwards has exemplified the use of photography in preserving life-size representations of rare specimens of natural history by collodion photographs of the "torpedo nobiliana" recently caught off these shores; and by various microscopic details, preserved on collodion, with the assistance of Mr. Barker, and exhibited with unquestionable accuracy.

Another instance of its utility has been shown in the interesting series of photographic reports of the progress of the Crystal Palace, erected at Sydenham, which Mr. Archer, the Liverpool agent of the Crystal Palace Company, has displayed before the society on two occasions. Every week Mr. Delamotte takes a photograph of various parts of the works, which are then printed and sent to the directors of the company, as reports of the progress, in which no mistake, falsification, or cooking can occur or be practised.

The architects are aware of the value of photography for these and similar purposes, and the Liverpool Architectural and Archaeological Society has invited a member of our society to read a paper on the practice of the art as applicable to their wants.

The authorities of the British Museum are applying photography to preserving and distributing records of the treasures in their charge. The curator of the Derby Museum may do the same.

It has also been suggested by one of our members that photography could be applied in assistance of physiognomy and ethnology, by preserving records of the natives of the various countries with which we have commercial intercourse, and who are daily visiting this port in such numbers and variety as to afford the most favourable opportunities for such contributions to science.

The success of the Kearton Exhibition of Nature photographs at the Modern Gallery, Bond Street, has been so great that Messrs. Kearton have decided to continue the exhibition of their pictures until February 13th.

A CATALOGUE of several hundred pages reaches us from the well-known Indian firm of dealers in photographic apparatus and materials, Messrs. Babajee Sakharan and Co., Esuf Buildings, Bombay. It is all compiled and contains a great deal of useful practical information.

THE year 1905 being the tenth anniversary of Röntgen's discovery of the X-rays, it is proposed to commemorate the occasion by holding in Berlin a Röntgen congress, together with a Röntgen exhibition. Information regarding the arrangements will be obtainable from Prof. Eberlein or Dr. Immelmann, of Berlin.

At the Westminster Police Court, on January 12th, William Morrison Pouch, 47, artist and photographer, of Ebury Street, Pimlico, was, on warrant, charged before Mr. Horace Smith with obtaining £21 by false pretences from Edward Fuller Cripps. Prisoner, recently of Exhill, has, it was alleged, extensively advertised for pupils to learn all branches of photography. It is alleged that he has obtained large sums of money for premiums though he had done practically no photographic business. The sworn information of Detective Chatt was that he had carried on the system at various places in the provinces for the last seven years, and Detective-Sergeant Smith stated that after arrest he detailed to prisoner a list of persons from whom he had obtained sums of from £100 to £25, the aggregate amount approximating £1,000. The defendant, in reply, said he did not see how they could make out any false pretences, as in return for the money he gave time to pupils and taught them. The witness took exception to his statement, pointing out that some of the complainants were not pupils but entered his employment believing his assertions about the business. The witness added that the prisoner was entirely without means. He had only a few coppers when apprehended. The servants of the studio had had no money for months, and several young men had lost the whole of their capital. Owing to the large amounts involved, the police asked for legal aid. Mr. Horace Smith said he could certify for that, and remanded the prisoner in custody.

OVER-PRODUCTIVENESS IN PHOTOGRAPHY.

"Do you suppose," said an artist of repute the other day, chatting with a photographic friend over coffee and cigars at a hotel not far from Burlington House, "that if an oil painting were as easy to produce as a photograph, and the supply of one were as plentiful as the other, the former would long maintain its supremacy among connoisseurs? No, leaving aside the question of colour, and the painter's larger degree of control, it is certain that many of the pictorial photographs we see at present would instantly win equality with the average painting if it were not for the stigma placed upon them by their facility of execution and the over-productiveness of photographers."

The foregoing liberal-minded pronouncement is interesting and suggestive. It is probably true that the almost universal use of the camera, and the consequently large amount of mediocre work scattered broadcast everywhere, is detrimental, in a sense, to the artistic status of photography. The sun picture has been made too common. We seldom hear anyone speak of the least pretentious pencil sketch with that semi-patronising and indulgent tone often used in discussing the camera. Worst of all, should the latter happen to be a pictorial triumph, the ordinary inexpert critic will most likely express his satisfaction that it is "so unlike a photograph!" a verdict apt to make its unfortunate recipient grind his teeth in impotent rage.

A well-known New Gallery exhibitor was recently heard to venture the opinion that there was no possibility of pictorial photography ever ranking in general esteem with the recognised fine arts, until some kind genius should invent a fresh process, better than any now in use, and having the saving virtue of exceeding difficulty. "When we have an art," quoth he, "which only a few will be able to acquire successfully, a future of undreamed greatness will lie before us."

Somewhat the same idea, but viewed in a more commercial light, was evidently in the mind of a certain professional of the old school, who was regretfully comparing the palmy days of Daguerreotype and wet collodion with these evil times of cutting prices and small profits. In his view, it was all because the gelatine process was so criminally easy. If the studio owners of the bygone period had known what the introduction of the dry plate would mean to them, the inventor's existence, he averred, would have come to a speedy and painless end.

It is never any use crying over spilt milk, however. As Tennyson says somewhere, we must

"Set ourselves to face the hour,
But dream not that the hour will last."

The days of no competition are probably as unlikely to reappear as the oft-quoted Mastodon; the only line open for the improvement of photographic prospects lies, apparently, in an attempt to educate the public taste to a better appreciation of the artistic aspect of camera work. Now, undeniably, as has been suggested, one way of doing this would seem to be to limit the supply of pictorial photographs, to make them at least less prodigally abundant.

We see photographers divided into two sections, broadly speaking: those who are content with what is simply a photograph, mechanically produced for matter-of-fact purposes, and the much smaller number who are satisfied with nothing less than what they regard as a picture. It is only natural that the former, looking at things in a frankly business aspect, should favour a large production and a multiplication of copies, but surely we might expect a different ideal from their more thoughtful and art-loving brethren.

Why cannot the pictorial photographer, by a wise self-repression, materially check his output, resolving firmly, for instance, that there shall be no further copies of a successful work, except in the way of reproductions? He is perpetually in high argument with the artist, who rejects the claims of photography to rank as an art, capable of expressing creative intention, yet he immediately proceeds to do the very thing which, perhaps, before all others, has led to such an attitude of hostility. We do not hear of the artist painting a dozen copies of a favourite picture, or of the sculptor allowing as many replicas of his best achievements. The artist of the camera would be well advised to take the hint. Indeed, if it were not a hard saying, savouring of flagrant heresy, we would urge the pictorial worker, his medal picture once achieved and its permanency undoubted, to hesitate not a moment, but—oh daring and awful suggestion—to smash the negative. Any after prints would then have to be made from a copy.

failing, deliberately, to be quite as good as the original, which would thus preserve an undivided and unique prestige.

Still speaking from the pictorial standpoint, and without the least wish to dogmatise, is it not possible that we do too many pictures? The truly artistic temperament prefers a lesser quantity and a higher quality. Why need we feel ashamed or dissatisfied if we have but one frame to show for a six months' work, if only that one is a masterpiece in its way, worth twenty others put together? Cannot we learn to have a better ambition than the mere filling up of wall space? Could we not school ourselves to know and believe that one tiny print may be more worthy of notice and enthusiastic praise than the whole remainder of entries in an exhibition?

We have said "one tiny print" just for the sake of emphasis; but is it not a fact that there is a decided tendency among us to worship mere size? We will often exhibit an imposing enlargement from a negative which would hardly meet with our approval in its original dimensions, as if there were a special virtue in added inches. And how condescendingly the small print is sometimes spoken of, as if some guilty flaw lurked within, needing apology and condonation. Yet several of the finest paintings extant are extremely diminutive. There is a certain splendid allegorical conception of Raphael's in the National Gallery which is almost priceless, while Meissonier's exquisite little gems are admittedly his best.

It is not intended to suggest for a moment that the photographer should do less work, or spoil a lesser quantity of plates and paper. That would not be the way to gain and keep a perfect mastery of his tools. Rather would we urge him where he now exposes one plate to expose fifty, where he prints one proof to reject a dozen, before he allows himself to be satisfied. But we would strenuously impress on his inmost consciousness the need of showing, exhibiting, and distributing less. So shall his pictures take a greater and more honourable place in the world of Art, and in that popular favour which, fickle and arbitrary though it be, accurately reflects, on the whole, a sober and truthful judgment in matters of taste and culture.

A. LOCKETT.

New Apparatus, &c.

The Mawson Plates. Manufactured and sold by Messrs. Mawson and Swan, Mosley Street, Newcastle-on-Tyne.

We have received from Messrs. Mawson and Swan samples of three new series of plates for trial and a specimen colour filter for use with their A and B series of orthochromatic plates. To those familiar with the various brands of dry plates there can be no doubt that great progress has been made by manufacturers within the past two years in point of speed of emulsions. The extra rapid plate of former years has been surpassed, and we find that Messrs. Mawson and Swan have not been slow in meeting the wants of the photographer by producing a plate of exceptional sensitiveness. The "Celeritus" Plate: This new series is of extreme rapidity, and in these dull winter days we found they gave good results even with very brief exposures. The quality of the emulsion is excellent, being fine in grain, clean, and capable of withstanding a developer with a large proportion of alkali. For studio work in dull winter weather, and for sitters of the restless and nervous types, this series will be found most useful. For difficult hand-camera work it should also be of great value. The "Felixi" Plate: This series is issued at popular prices, but although cheap it will bear comparison with some of the highly sensitive plates now on the market. The emulsion is surprisingly good, and though very rapid, of peculiarly fine grain and quite free from any trace of fog. We tested its resistance by reducing the exposure and forcing the development, and found that the shadows remained clear, notwithstanding the addition of an abnormal quantity of accelerator to the developing solution. As the plates are liberally coated and withstand such harsh treatment, we believe they will be much appreciated by Messrs. Mawson and Swan's clientèle, both professional and amateur. The "Ortho B" Plate: This orthochromatic series has remarkable characteristics. As in another orthochromatic plate of English manufacture which we have recently used, we also find in this such truth of monochromatic rendering of colour, extending even to the red, that we infer the use of an improved

colour sensitiser. Although Messrs. Mawson and Swan remark their circular that the plate is sensitive to the whole of the visible spectrum, excepting a strip in the red between the lines A and D, we look upon this exception as one made in the interests of scientific accuracy rather than as a warning of practical importance. In our trials with the colour filter issued by them for use with these plates we found good rendering of three selected shades of red, ranging from the orange type to crimson, whilst pale blue was represented by a deeper tone than bright yellow. As the plate combines high speed with colour sensitiveness, it is deserving of special attention. It thus brought within the range of ordinary work, notwithstanding the use of the screen. In conclusion, we feel we ought to express our satisfaction with the quality of the screen, which is a necessary adjunct to the plate if correct translation of colour is desired. It is not only well adjusted to the colour sensitiveness of the emulsion, but it is highly commendable for the quality of the glass surfaces. Photographers are too apt to disregard this important point. Money is spent on the purchase of expensive lenses of excellent defining power, but the advantage is frequently nullified by the bad quality of the glass of which the colour screen is made. The price charged by Messrs. Mawson and Swan for these screens is very moderate, but if we except the specially worked article, as sent out by our best opticians, the screen we have before us is one of the best we have examined for flatness of surface.

The Farrington Picture Postcard Frames Sold by W. Butcher and Sons, Camera House, Farrington Avenue.

Messrs. Butcher are introducing a series of cardboard frames for holding picture postcards. Detachable struts may be inserted in the backs of the frames in two directions, so that the card may be viewed either in an oblong or vertical shape. Nine sets of designs are issued.



the opening measuring $4\frac{1}{2}$ by $3\frac{1}{4}$. The specimen set submitted to us is in excellent taste, and the idea being so good and apposite we have no doubt picture-postcard collectors will appreciate these neat little decorative adjuncts. The illustration gives an impression of the totality of effect obtainable.

The editors of "Camera Notes," published at 9, Nelson Villa, Bath, ask us to state that a free copy of that publication will be sent to any professional or amateur photographer on application.

New Books.

"Winter Pictured," by Rudolf Eickemeyer, jun. Price, 2 dollars. New York: Published by R. H. Russell.

If we remember aright Mr. Eickemeyer first attracted attention in English photographic circles by the exhibition of a print from a negative of a wintry landscape, in which snow and shadow constituted the principal themes. His very successful technical treatment of the subject led to considerable imitation, so that for a time you rarely saw a public photographic exhibition on the walls of which the Eickemeyer influence and sentiment were not evidenced. The large and handsome volume before us is a reminder that whilst Mr. Eickemeyer's imitators have either ceased to imitate him or have disappeared from the exhibition world altogether, he himself has steadfastly clung to the early ideal, of which it is plain he wishes us to consider the book, in one sort, the manifested realisation. These fifty or more winter landscapes, with suitable quotations from the poets printed underneath them, offer a valuable lesson to the photographer who would use his camera, lens, and plate with definiteness and consecutiveness of purpose. Mr. Eickemeyer set himself the task of illustrating by photographic means a series of aspects or phases of nature, and the result is a very beautiful collection of views full of subtlety, delicacy, and withal truth of rendering. We used the word "sentiment." It is obvious to us that Mr. Eickemeyer is in such sympathy with his subject—so keenly feels, as it were, the effects he sets himself to photograph—that he has no difficulty in conveying a like impression to the students of these photographs. They are so splendidly natural and "real looking," the children say, that one may be pardoned for shivering as one turns over the leaves. The accompanying text is judiciously chosen; the book is thoroughly well printed and turned out, and it should find its way into the possession of every lover of good photography.

Photographer's Catalogue. Published by Messrs. Langflier, Ltd., 23a, Old Bond Street, W

This Catalogue is perhaps not the best way of describing the elegant and artistic production before us; and it cannot properly be termed a price-list, for actually it is neither the one nor the other, although its mission is obviously of the two-fold character hinted at. Messrs. Langflier call themselves "artists in portraiture," and the volume contains numerous reproductions in colour and monochrome of the charming portrait work which has brought them fame and success. The blocks are superb in quality, the printing faultless, and we have nothing but high praise for the entire turn-out of the book. We wish all photographers possessed the taste and enterprise of Messrs. Langflier. The following extracts from the book should prove of general interest:—

"Amateur Theatricals.

"In order to meet the demands of amateur theatricals, we have made provision on a very high scale, and one of the features of our establishment is a stage with a regular proscenium, constructed especially for the use of ladies and gentlemen who take part in amateur theatricals, and who have hitherto been at a disadvantage in lacking the proper surroundings for photographing them in character. Here, however, we have a complete stage, with elegantly enriched proscenium, and all the usual accessories of a theatre. The stage is 'raked' in a regular theatre, and it is capable of accommodating companies of thirty-five or more in number for photographing in one group, while the scenes are brilliantly illuminated by electricity both from spotlights and 'fies,' as well as by a globular reflector, which is one of the largest ever used in a photographic gallery. Amateur dramatic societies will here find an opportunity for securing souvenir photographs of their various performances, as every resource of our establishment is placed at their disposal.

"Van der Weyde" Negatives.

"Our clients will be interested in learning that we have become possessed, through purchase, of 40,000 or more of the celebrated negatives of the well-known Regent Street photographer, Mr. Van der Weyde."

WE have received the thirty-first annual issue of "Willing's Press Guide," published by Messrs. James Willing, jun., 125, Strand, London, W.C.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Jan.	Name of Society.	Subject.
15.....	Aberdeen Photographic Assoc.	Humorous Picture Slide Competition.
15.....	West London Photo. Society ...	{ A French Fishing Village and its Photographic Possibilities. Messrs. F. G. R. Wright and E. H. Carpenter. Carbon Printing. Autotype Company. Chess Match.
15.....	Watford Photographic Union ...	{ Hand Camera Photography. Mr. E. Wallis.
16.....	Ashton-under-Lyne Photo. Soc.	Annual General Meeting.
18.....	Ilford and District Photo. Soc.	{ Here and there in Great Britain. Mr. J. T. French.
18.....	Bowes Pk. and District Ph. Soc.	Gum-Bichromate Printing. Demon- stration. Dr. Richmond.
18.....	South London Photo. Society...	Annual Meeting.
18.....	Glasgow & W. of Scotland P.A.	Toning of Bromides. Mr. F. Atkinson.
19.....	Croydon Nat. His. & Sc. Soc. ...	{ Some Lantern Slide Methods. Mr. S. Rawkins.
21.....	Hull Photographic Society.....	Annual Meeting.
21.....	London and Prov. Photo. Assoc.	{ Photographic Lens Making. Illus- trated. Messrs. Taylor, Taylor, and Hobson.
21.....	Liverpool Amateur Photo. Asso.	Photographic Dodges and Muckshifts. Members.
21.....	Southport Photographic Soc.	{ A Holiday in Scotland. Illustrated. Mr. E. N. Weaver.
21.....	Watford Camera Club	
21.....	Bath Y.M.C.A. Camera Club ..	

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

JAN. 7th.—Mr. R. Beckett in the chair. Dr. von Rohr's veran, an instrument for correcting the apparent distortion of short-focus lenses was exhibited. Mr. Mackie read a letter in the BRITISH JOURNAL OF PHOTOGRAPHY, in which the writer advocated the use of barium chloride as a hypo eliminator, claiming a great saving of water, with permanency of result. Mr. Mackie had grave doubts about the method, and Mr. Haddon said that the writer had ignored the fact that the insoluble precipitate was formed not only on the print, but within the paper, and although it could be got rid of on the surface by swabbing, the precipitate would remain in the paper, and must lead to disaster. Mr. Haddon and the Chairman were of opinion that thorough fixation in fresh hypo, and fresh water, would give more permanent results than any other method. The addition of ammonia to the fixing bath was discussed, but Mr. Haddon pointed out that such addition, whilst useful for albumen prints, was not required with P.O.P., because it softened the gelatine, rendering a hardening bath. This led to a discussion on the difference between alum and formaldehyde for hardening prints—taken part in by Messrs. Haddon, Kindon, Mackie, and Drage.

CAMERA CLUB.

THE club met on Thursday, last week, for the first time since the Christmas recess, to hear a lecture by Mr. C. H. Bothamley on "Walled Towns in England." Although not a strictly photographic subject, this lecture formed a capital illustration of the useful way in which a camera may be employed in the hands of an observant and cultured investigator. Mr. Bothamley has a strong leaning towards antiquarian research, and in former lectures given at the club he has dealt with such subjects as the castles and the fortified houses of Britain. Each picture which he shows has been taken with the purpose of illustrating some particular feature of a building; some hole in a wall which gives the key to a problem, or some change of texture or material which is the line of separation between two different periods. It is not the least charm of the lecturer's method that he speaks without notes and in quite a conversational manner.

He said that there are in this country comparatively few remains belonging to the Roman occupation, so far as walled towns are concerned. Such towns were thus defended generally some time after the Norman Conquest, when the defence of the community became a more important factor than that of the individual. This became still more developed as the feudal system gradually died away. We have comparatively few fortified towns belonging to the Norman period. If we wanted to study Roman methods of defence we must turn to the pages of Caesar, of Tacitus, and must look for illustrations to the sculptures on Trajan's Column. The Romans fortified largely with earth

mounds—wood and trees, stones, earth, and sods. Of course little trace remained of such perishable things.

In the West of England, near Weston-super-Mare, there was the remains of a walled camp. At Colchester there were also remains of the wall which at one time enclosed the town. This wall was distinctly of Roman type, for it exhibited alternate layers of flint and red bricks or tiles, together with the intensely hard mortar which characterised Roman workmanship. It owed its defensive value entirely to its great thickness and strength. This wall was intersected with a tower, which some vandal had crowned with a pointed thatched roof, while a modern window had been pierced at one side. This terrible anachronism was equivalent to meeting Julius Caesar in Pall Mall adorned with a silk hat and an eyeglass. Colchester is the most complete Roman town which we now have; the only one of real importance.

A glance at the earthen walls of Wareham, in Dorsetshire, served to illustrate the way in which the Britons, after the departure of the Romans, still used Roman methods of defence without their skill in the employment of stone. These mounds were most probably crowned at one time with a wooden stockade.

The lecturer then proceeded to show a series of most interesting examples of walls from the towns of Yarmouth and King's Lynn. The latter town is the only one which retains its ditch in a still wet condition. Next Southampton was dealt with. This town was fortified from very early times because of its proximity to the Channel. Oxford next came under review, and a number of fine pictures which well illustrated the elaborate fortifications of Conway followed.

York is another town where the walls have been carefully preserved, and in some excellent photographs Mr. Bothamley showed how they were connected with the city gates. At one of these gates the portcullis can still be seen, with the machinery in a chamber above by which it was raised and lowered. Berwick-on-Tweed was the last town the walls of which the lecturer described. Here we had a later style of work, showing the influence wrought by the introduction of artillery. The gates, instead of being showy structures intended to impress the minds of those who came to attack, were inconspicuous—mere tunnels through the walls. Much money was lavished on the defences of Berwick during the reign of Elizabeth, for it was at that time one of the principal ports in the kingdom. In concluding his lecture Mr. Bothamley said that it was a matter of great interest to him to trace the gradual evolution of various means of defence through the medium of these walled towns, and he trusted that his hearers would have found it equally interesting.

After a few words from Mr. Middleton, who occupied the chair, the meeting closed with a hearty vote of thanks to the lecturer.

STEREOSCOPIC CLUB.

JAN. 11.—Mr. C. J. Williams, referring to the comments of "Free Lance" in the *BRITISH JOURNAL OF PHOTOGRAPHY*, last month, on his remarks upon the backing of plates being hardly worth the mess and trouble as a preventive of halation, said that had he been more fully reported "Free Lance" would have known the kind of backing medium he had used. Of course, there were no advocates for a backing that was not in optical contact with the glass, and the medium he had used in his experiments was glycerine and lampblack and Canada balsam and lampblack, and what he did say was that, after backing one half of many stereoscopic plates—leaving the other side unbacked—and exposing these plates to interiors with in most cases the extremes of light and shade, that in the finished negatives no improvement was perceptible in the backed over the unbacked end of the plate.

The case cited by "Free Lance," where his friend rigged up special arrangements in a studio for comparative experiments, was, in his own opinion, no test at all. The black velvet was represented by clear glass in the negative, because it reflected practically no light, and the window was the only thing to develop for. As soon as this was out in the development there was nothing else to develop for, and the thing was at an end. Then, again, in wet collodion, too, the development would be completed in a few seconds, with the image on the surface—not in the film, as with gelatine bromide—and in such circumstances far less chance for halation. He did not say that backing plates was absolutely worthless. What he intended to convey was that, with the good quality of plates procurable at

the present time for ordinary subjects, backing was not worth the trouble, and that, even in the most severe cases, he believed double or triple coated plates were far better than any single-coated plate with any kind of backing.

The Hon. Secretary said that when any member wished to be reported verbatim he ought to write his remarks on paper. Of course in a discussion it was not convenient, nor was it necessary, even if the report did not always embrace the whole of what transpired at some photographic meetings, it was, at any rate, not a loss to the readers of photographic papers. He did not see the object of reporting a meeting when the members had not anything of general interest to communicate. Somebody said once that the regular monthly reports of meetings helped to keep a society together," and the best he could say for such a society was that it was sorry for it. Mr. B. Bond thought that the old practice of reading papers at photographic meetings had become a thing of the past from the fact that so much of the commercial element was introduced into the proceedings by many firms sending their representatives to advertise their goods in the form of a "paper" or "lecture," that very many firms were willing at any time to respond to the call of the honorary secretary for something to show at the next meeting. He was not sure that the practice was altogether badly carried too far.

Mr. W. I. Chadwick exhibited a number of stereoscopic transparencies by stereoscopes conveniently arranged, with suitable lights on the table behind the stereoscopes. All the pictures were coloured or tinted, but so modestly coloured that many members did not notice the colouring until, after handling the slides, the colour was observed on the ground glass at the back of the slides.

Mr. Chadwick dissected two of these slides to show the colouring and next proceeded to colour the ground-glass backing for a transparency he had printed during the afternoon. The transparency is held in the left hand, with the film side in front—towards the observer. The ground glass is now laid in front, with the ground side out. The subject of the picture was thatched cottages in Devonshire. First some burnt sienna oil colour squeezed out of a tube applied by a piece of cotton rag stretched over the finger to the corners of the cottages in dabs or smudges. Then some green oil colour applied in a similar manner to the trees; the foreground, being a white road, was darkened by a few dabs of ivory black, both of the ground glass being treated in a similar manner for the pictures, the transparency behind the ground glass being the ground for applying the oil colours, and, as was shown, no particular care seemed to be necessary, for it did not take Mr. Chadwick longer to do this than it will take the reader to read this.

The ground glass was next removed to a pad of old newspaper on the table, and, as was said, all this mess has now to be removed and in the cleaning of the surplus colour sufficient can be rubbed into the ground surface to give the effect. It will be difficult with a piece of cotton rag to remove all the colour, but if the colour has got on the wrong place—"overshot the mark"—it can be instantly removed by a drop of ether applied by a clean piece of rag. The ground glass is now applied to the back of the slide, a paper mount and cover glass in front, and the slide is ready for binding in the ordinary way. Mr. Chadwick coloured two slides and made them ready for binding in about twelve to fourteen minutes. It is sometimes difficult to get rid of the "snowiness" in stereoscopic slides, say, an ivy-covered cottage—but by adopting this very simple method what would otherwise be a very inferior slide is very much improved. Of course, when the slide is much under-exposed the best plan is to make another, and to allow the colouring or tinting to be sufficient for the high lights, and not to show them as "coloured" slides, but to let the observer find that out for himself—which, when properly done, they do not often do. Several members exhibited stereoscopic transparencies, etc.

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

A MEETING of the General Committee was held at 51, Baker Street, on Friday, January 8, 1904. Present:—Messrs. H. Walter Barnard, F. A. Bridge, Alfred Ellis, W. Grove, Martin Jacobette, P. Lankes, Louis Langier, A. Mackie, Edgar Scamell, Lang Sims, and T. Turner. Mr. Alfred Ellis, president, in the chair. The hon. secretary reported the gift to the association of a bound copy of the *British*

Journal Almanac from the Editor, and was directed to return thanks for the same. Applications were considered from members requiring advice or assistance in legal and other matters connected with business, and they were of such a nature that no particulars can be given of them without disclosing matters which in the applicant's interests it would be undesirable to disclose for the moment. The President presented a pair of specially cut dies for striking a medal or badge for the use of the association, and a very hearty vote of thanks was accorded for the gift. Mr. T. C. Turner, hon. secretary of the Hull branch, made an exhaustive report of the action that had been taken in Hull to combat the "Oxo" free enlargement scheme, and stated that the Hull branch, which practically included all the photographers in Hull, had been successful in causing the specimens to be withdrawn from every shop window in Hull, and that they had enlisted the sympathies of the strict Grocers' Association, who had on their own account protested the Liebig Company against the system of advertising adopted. On the proposal of Mr. Martin Jacolotte, the hon. secretary was instructed to write a letter to the Hull Branch complimenting them on their energy, and congratulating them upon their success.

Arrangements were made for meetings of the "Derby Exhibition" and the "Examination of Assistants" sub-committees. Mr. J. C. Turner, at the solicitation of the president, agreed to open a discussion at the next members' meeting, to be held at the Royal Photographic Society, 66, Russell Square, W.C., on Friday, February 12th.

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.—HULL DISTRICT BRANCH.

At a meeting held January 6th, Mr. W. Barry in the chair, the Hon. Secretary reported upon the action taken by the branch at the close of last year in opposing the "Oxo Free Enlargement" scheme, and said that the members had every reason to congratulate themselves on their campaign, for not only had the specimen portraits absolutely vanished from their own district, but the effect of the opposition in Hull seemed to be far reaching, and probably photographers in other parts of the country would be benefited.

The members were under a deep obligation to the Editor of the *BRITISH JOURNAL OF PHOTOGRAPHY*, for it was obvious that the publication of the report of the October meeting, and the circulation of copies among the provision dealers, directly, and largely, contributed to the satisfactory ending of the trouble.

As decided upon by the last meeting, a copy of the *BRITISH JOURNAL* had been sent to the "Hull Retail Grocers' Association," and the reply received from the Secretary was as follows:—

HULL RETAIL GROCERS' ASSOCIATION.

1, Pottergate, Hull, November 19th, 1903.

DEAR SIR,—Your letter of the 11th inst., addressed to the President of this Association, was laid before a general meeting of members held Tuesday evening last, and I am requested to say that we deprecate most strongly the methods adopted by the Liebig Company in connection with the sale of Oxo. As an Association, we have all along opposed the system of present giving, which is certainly not according to the methods of trading advocated by members of this Association. You will therefore readily understand that we strongly resent any attempt on the part of manufacturers to resuscitate a system of trading, which, to say the least, does not add to the dignity of the trade. We are sending a letter of protest to the Liebig Company on the matter.—Yours truly,

J. ATKINSON, Secretary.

It would be probable that this protest, coming from an influential trade Association, would have no small effect upon the proprietors of "Oxo," and would doubtless induce the managers to re-consider their policy of interfering with the business of photographers. The Chairman proposed:—

"That a letter of cordial thanks be sent to the 'Hull Retail Grocers' Association' for its sympathetic attitude towards Hull professional photographers, for its opposition to the so-called 'free' enlargement advertisements, and for its letter of protest to the Liebig Company."

This was seconded by Mr. Boak (Driffild), and carried unanimously. Mr. Barry read the "Modern Society" advertisement of "Bromide Enlargements, surpassing anything in photographic enlargements that has ever been offered by any newspaper. A distinct departure in modern journalism."

In correspondence between himself and the Newspaper Manager, the latter wrote: "I assure you they are well worth the money (4s. 6d.);

moreover, one of our folks has been over the works and seen the machinery at work. Everything is done automatically, except the touching up." The letter concludes: "I write this explanation to prove that there is not the faintest suspicion of a swindle in it, or we should not accept the advertisement." Mr. Barry said that this proved that the "automatically" produced enlargement was not a newspaper enterprise, in spite of the advertised description, but it was a pity that pages of the Press were given up to advertisers, who, if successful, would gradually reduce the professional photographer to the position of a mere negative producer, and flood the country with cheap and nasty enlargements which might be made artistically and well for a little more money by the men who originated the portraits. The meeting then proceeded to discuss a plan for combatting the move in the direction of "sixpenny" photography.

Commercial & Legal Intelligence

At the Sheffield County Court, on January 8th, before his Honour Judge Mansel-Jones, the Provincial Advertising Company, 64, Westbar, Sheffield, sued C. Lindon, photographer, 173a, High Street, Ryde, Isle of Wight, for £1 12s., the balance of a year's rent in an advertisement cabinet; and W. J. Delicati, farmer, of Newport Street, Ryde, for £2 2s. Judgment for the plaintiffs in each case.

W. L. PARKINSON, Ltd.—This company has been registered with a capital of £2,000, in £1 shares. Object—To adopt an agreement with W. L. Parkinson the liquidator thereof, to take over the business carried on by the said old company, at 62, Dale Street, Liverpool, and to carry on the business of photographic mount manufacturers and merchants, manufacturers of and dealers in photographic materials and goods, printers, lithographers, photographers, stationers, makers of electrical and optical goods, instruments, lanterns, and lantern accessories, etc. No initial public issue. The first directors are W. L. Parkinson and W. J. Cumpsty. Registered office, 62, Dale Street, Liverpool.

BRITISH PHOTO PAPER COMPANY, Ltd.—The above named company had been registered with a capital of £5,000, in £1 shares (2,000 Preference). Object—To adopt an agreement with B. J. Hall, R. Hubble, and O. Andersch, for the acquisition of the business of manufacturers of and dealers in sensitised paper and other materials used in photography, and to carry on the same and the business of photographers and lithographers, printers, manufacturers of and dealers in photographic paper, apparatus, chemicals, and other requisites, etc. No initial public issue. The first directors (to number not less than two nor more than five) are B. J. Halk (chairman), R. Hubble, and O. Andersch. Qualification, £500. Remuneration not more than three guineas per board or general meeting, divisible (subject to any agreement). Registered office, Guilford Street, York Road, Lambeth, S.E.

RE CHARLES JOSEPH JONES, photographer, 75, Essex Road, Islington, N.—The first meeting of the creditors interested hereunder took place at the London Bankruptcy Court on the 13th inst., under the presidency of Mr. Chapman, Official Receiver. It appeared that the debtor commenced business as a photographer in 1892, at 75, Essex Road, Islington. He had at the time a capital of £30 of his own. The fitting up of the premises only cost £3 or £4, to make them suitable for his business. He carried on business successfully until about two years ago, when, owing to his inability to attend to it through illness, his trade fell off, and for some time past the expenses had actually exceeded the profits of the business. In addition to that he was obliged to draw heavier than usual from the business owing to the illness of himself and family. About three months ago he was pressed by creditors, and it was then that he realised that he was in financial difficulties. He was sued by the petitioning creditor, who obtained judgment against him for £119, and as a result debtor consulted his solicitor, with the result that on November 23rd last he called his creditors together and made an offer of 10s. in the £, payable by bills. The offer was accepted by most of the creditors, but owing to some of them standing out the matter fell through. Prior to the private meeting he executed a deed of assignment in favour of Mr. Cooper, of 271, Upper Street, Islington, N., a large creditor, but nothing was done under the deed of assignment, and it was not even registered. A statement of affairs was presented to that meeting show-

ing liabilities amounting to £700 and assets estimated to produce £100. Debtor alleged his failure to have been caused through losses on trading through illness and bad trading generally during the past two years. The summary of accounts showed gross liabilities amounting to £744 19s. 11d., of which £54 was due to fully secured creditors, the value of the securities being valued at £62, thus showing a surplus of £8, which is carried out as an asset. The unsecured liabilities were returned at £661 8s. 4d., and the assets, which consisted of trade fixtures, fittings, etc., valued at £15, and surplus from securities in the hands of fully secured creditors. Eight pounds was claimed by preferential creditors, so that there were no free assets, and the deficiency amounted to £661 8s. 4d. After the Official Receiver had dealt with a number of proofs of debt, he stated that debtor had no offer of composition to lay before the meeting; therefore he had been adjudicated bankrupt. After some discussion it was resolved to leave the estate in the hands of the Official Receiver for summary administration in the usual manner.

News and Notes.

ROYAL Photographic Society.—At the Lantern Meeting, on Tuesday, January 19th, at 66, Russell Square, at 8 p.m., the subject will be, "Camera Notes on Natural History," by Mr. Douglas English, B.A.

MESSRS. LAMBERT WESTON AND SON, photographers, of 23, Sandgate Road, Folkestone, are shortly opening a London branch of their business at New Bond Street, W.

MESSRS. JOHN WISDEN AND CO., of 21, Cranbourne Street, Leicester Square, London, W., have favoured us with a copy of John Wisden's Cricketer's Almanac for 1904. Extending to some 500 pages, it is full of matter of deep interest to all lovers of England's national game.

The Camera Club.—It is a matter of satisfaction to the honorary secretary, and will doubtless also be to the members, that he has been able to commence the year well, inasmuch as our next eleven lecture evenings have been arranged for, and will show that, in variety and interest of the subjects introduced, such a selection has probably seldom before been submitted to the members. The title of the lecture on Monday, January 18th, "The Romance of Swordsmanship," speaks very nearly for itself. Mr. Egerton Castle is well known as an author and playwright and is one of the greatest authorities upon the subject. He promises to show a variety of weapons used at different periods, and not only to show them, but also to demonstrate the manner in which they were used. Through our member, Mr. Haydn Harrison, and the courtesy of Mr. Bellfield, the chief representative of the Westinghouse Electrical Company, we are able to announce a lecture upon one of the most recent inventions—the "Mercury Vapour Lamp"—which we understand is capable of producing a greater amount of actinic rays than any light that has hitherto been discovered. This should prove a subject of great interest to scientists and also photographers. It is granted on all sides that our knowledge of electricity is most elementary. It is probable, therefore, that the photographs of electrical phenomena taken by Dr. Rodman will be a great attraction to us all, more especially to those who are interested in this subject. Twenty-four years' experience in Fiji as a Government official, and now as Receiver-General and Assistant-Colonial Secretary, have made the Hon. W. L. Allardyce, C.M.G., a great authority on the history of the Island and its inhabitants, as well as of their manners and customs. These he will describe, and also tell us of the renowned fire-walking ordeals. His lecture will be illustrated by slides. On February 1st, Mr. Nelson K. Cherrill will introduce a newly-invented form of printing frame, giving very great and hitherto unattained advantages in securing control in photographic printing. Without at the present time entering into any description of his invention, we may say that, inasmuch as the Berlin Patent Office has accepted his specification without a single modification or objection, it is certain that the invention is new, it being well known that the research made by the German authorities before granting a patent is of a most exhaustive character, and of far greater value, as a guarantee of its originality, than can be claimed for a patent granted in our own country.—"Camera Club Journal."

Correspondence.

* * Correspondents should never write on both sides of the paper. Notice is taken of communications unless the names and addresses of the writers are given.

* * We do not undertake responsibility for the opinions expressed by correspondents.

PHOTOGRAPHIC WASHING.

To the Editors.

Gentlemen,—I have just read the letter from Mr. John Noton of your issue of the 1st. It appears to me to embody some slight error and to call for some explanation. Ba 2 (S₂O₃) is not the formula for barium sulphate which is BaSO₄, nor of barium thiosulphate, which is BaS₂O₃. If barium chloride solution be added to sodium thiosulphate the barium thiosulphate is perfectly soluble in water, and any precipitate is due to sodium sulphate or sulphite present. Does Mr. Noton's fixing bath contain sulphite?

I can see no way by which barium chloride can assist the elimination of hypo, and should be interested in an explanation from Mr. Noton as to the cause of his precipitate on the film surface.—I enclose my card, and remain, yours sincerely,

January 9th, 1904.

To the Editors.

Gentlemen,—The thanks of your readers are due to Mr. Noton for his interesting application of barium chloride for "hypo" decomposition. I perceive an error in his chemical equation, which should read Na₂S₂O₃ . 5Aq + BaCl₂ = 2NaCl + barium hyposulphite BaS₂O₃ . H₂O + Aq.

The acidulous radical of sodium thiosulphate, and the basylous radical of barium are bivalents, consequently they satisfy each other. This is, however, only a detail, and my purpose in trespassing on your space is to point out the danger of the practically insoluble barium hyposulphite in the film, which is not so easily swabbed off as imagined.

A better substitute for the purpose would be any of the safe, powerful oxidising agents, as the percarbonates and periodates of potassium which would convert the sodium thiosulphate into the harmless soluble sodium sulphate, and not merely effect an interchange of acidulous radicals. For negatives, I strongly recommend the bichromate salts, preferably potassium bichromate, which, besides effecting the complete oxidation of the hyposulphite of sodium into the sulphate, clears slight organic stains, and has a perfect hardening effect on the negative. 5 per cent. solution slightly acidified is a convenient strength, and two minutes the normal duration to effect the operation.—I am, gentlemen, yours obediently,

FRED. W. EDWARDS.

Swadlincote, Burton-on-Trent.

To the Editors.

Gentlemen,—Obviously, from the date, the letter in your issue of the 1st inst., on the above subject by Mr. John Noton, was written after the usual Christmas festivities, therefore we may excuse certain obscurities in style, but this will hardly excuse chemical errors.

In the first place Mr. Noton gives us an equation which shows the formation of barium hyposulphite, and then proceeds to tell us that the result of this equation is the formation of barium sulphate, besides both sides of his equation do not balance. It is some years since I learned chemistry, but I have not yet forgotten the elements nor elementary principles. Perhaps your correspondent will explain what becomes of the other molecule of Na, and how barium sulphate is formed from Ba 2 (S₂O₃), and where he gets his 2 (S₂O₃) from.

However, what I want to know is what he means by "photos;" are these negatives, or prints, or what, and what becomes of the hypo in the image-bearing film? Besides, gentlemen, I always thought that there was some hyposulphite of silver left in the film, and if I am right what becomes of the silver? Does it form silver chloride; if so are the "photos" going to be permanent?

Will Mr. Noton kindly enlighten my ignorance.—I am, yours, etc.,

January 9th, 1904.

CHEMISTS.

To the Editors.

Gentlemen,—In common, no doubt with many of your readers, I have been expecting some remarks upon the hypo-eliminating process

of Mr. Noton, as published in your issue of January 1st. To begin with his equation, which is open to some criticism, shows the formation of barium thiosulphate (hyposulphate), and *not* sulphate, and it seems very unlikely that this latter salt should be formed under the conditions given. Perhaps Mr. Noton, or some other expert, will throw a little light upon this problem.—I am, yours, etc.,
Ipswich, January 11th, 1904. J. C. WIGGIN.

ORTHOCHROMATIC PHOTOGRAPHY.

To the Editors.

Gentlemen,—My attention has been directed to a notice in the last issue of your valuable paper, inviting "every person interested in orthochromatic photography" to study a lecture by Messrs. Newton and Bull, and as I expect wide publicity for their statements, which refer to the speed of various orthochromatic plates and emulsions, I feel compelled to take exception to at least those parts of the lecture, which personally concern the collodion emulsion and sensitiser "C."

Having introduced this sensitiser, the base of which has been discovered by Prof. Dr. Valenta, I have been in a position to make numerous spectroscopic and general speed tests, and as my acquaintance with this preparation is a long and intimate one I trust the lecturers will consider this protest as coming from the right quarter.

The figures I chiefly object to are:—

Collodion emulsion without sensitiser speed number, 14,000.

Collodion emulsion with sensitiser "A"—speed number, 21.

Collodion emulsion with sensitiser "C"—speed number, 480.

Now every operator whom I had the pleasure to teach the use of these preparations for trichromatic work and every teacher of collodion emulsion processes here and abroad, with the exception of the lecturers, will confirm my statement that sensitiser "C" produces practically the same speed as "A" sensitiser, and if Ag. No.3 bath is used before exposure gives a considerably higher speed. Direct 3 colour half-tone work, a now commercial process would be an impossibility if the blue plate required twenty times the exposure of the previous one, the ratio of exposure being 1:0.5:1½ or 2 for yellow, red and blue respectively.

I have submitted my objections to the lecturers shortly after reading the paper, and enclosed speed tests made with Chapman Jones sensitometer*, and expect that a misprint is responsible for the speed number 480. And further that Messrs. Bull and Newton will correct their statements, which have caused considerable comment.

If they however refuse to acknowledge the correctness of my tests I am prepared to submit the preparation to an independent authority, and to back my statements with the experience of a considerable number of scientific and practical men.

Thanking you in anticipation for the insertion of this letter, which may open a desirable discussion on the speed of orthochromatic emulsions.—I am, dear Sir, yours obediently,

HENRY OSCAR KLEIN.

9, Upper Brighton Terrace, Surbiton,
January 8th, 1904.

PHOTOGRAPHIC JUDGING.

To the Editors.

Gentlemen,—As a keen observer of technical and artistic photography, may I be allowed to point out that which I consider not fair on the part of the judges at photographic exhibitions and the like. I have visited a good few photographic exhibitions in my time, and as an expert in every branch of photography I have made it my duty after the awards have been made to go round and compare those pictures that have not secured an award with those that have secured a medal or certificate, and to my surprise what have I found not only in one case but many? For instance, Class 1 landscape or seascape. In the first place I have found a technically good and artistically well-arranged seascape, which was by far well deserving of the medal or certificate had been passed unheeded. Then we come to a landscape, the arranging of which clearly denotes that of the amateur pure and simple, not only has the picture this fault but we can clearly see by the picture that there has been carelessness in the manipulation of the finished print, such as air bells on the surface, and being unevenly developed in the shadows, this kind of

picture is awarded a medal, while the picture such as that above described we might as well say is not classified. Why judges betray themselves by making awards to such pictures I cannot understand be it favouritism, recommendation, or otherwise, it certainly does not reflect much credit on the part of the judges. But I am almost certain that in a great many cases that if the judging were left entirely to the judges there would not be many good medals wasted on bad pictures that we see at exhibitions. Moreover, by making awards to such pictures we can never expect to promote artistic photography or make a picture-maker out of the one or those who gain a medal or certificate on account of being a So-and-so in our society. Not only that, but it is apt to do the amateur more harm than good, for in time to come it is almost certain to fill him up with enthusiastic or imaginary ideas, and being a medallist without the slightest knowledge of a technically good picture, would no doubt make an application for a situation. Consequently on being asked to make a dozen prints from a cabinet negative or 15 x 12 negative on bromide or platinum the man would be almost certain to put his foot in it by not being able to make two prints alike, therefore it is to be hoped that those who have the honour of being judges will consider the harm they do by not awarding the medals to those who are deserving of them.—Yours, etc.,
January 5th, 1904.

GIVE CREDIT WHERE DUE.

JAN SZCZEPANIK.

To the Editors.

Gentlemen,—I think the note in your issue of January 8th does Herr Szczepanik a great injustice, and it is only fair to point out that I have myself been able to examine very minutely Herr Szczepanik's inventions, and, having also come personally into contact with him, I must say your paragraph gives an impression of him and of his work which is totally undeserved. He is a most unassuming man, and, so far as I can judge, has claimed no more than he has accomplished or can accomplish. He is a man of considerable scientific attainments, especially in optics, mechanics, and electricity; and the apparatus designed by him which I have had the opportunity of examining shows great originality and inventiveness. His weaving process, which I have seen in operation in Bradford, has met with the approval of Professor Beaumont and prominent practical manufacturers in Bradford, and it has been working there successfully for some months past. As to his process of colour-photography, I may say that I have seen and handled his extremely ingenious camera, by which he secures three images with one lens on one plate at one exposure, and have made numerous exposures with his special paper, by which brilliant coloured images are secured by a process of exposure which is no more difficult than printing a piece of P.O.P., and of which I have a number of excellent results. Dr. Neuhäus's opinion is rather vitiated by the fact that he has a rival process of his own to exploit, but which, so far as I have seen, yields nothing like such brilliant results as Szczepanik's. The latter has been highly complimented by Herr Worel, whose own process has figured considerably in the Continental photographic Press of late. Szczepanik's process has also secured the good opinion of Baron von Hübner, whose reputation as an authority on three-colour photography is beyond question. In the face of these facts, the statements which you publish are maliciously unjust, and can only have been disseminated by some one maliciously endeavouring to injure the reputation of the inventor. I cannot speak so positively about his telestroscope, but I questioned him about it, and gathered that models were in existence in Vienna, but that it had to be laid aside during the development of his other inventions which had greater commercial applications, and also on account of his having to perform three years' military service by the conscription laws of his native country. The sale of the plant for his weaving process refers, I have heard, to a duplicate plant set up in Germany, and the failure is due to some company-promoting operations of a character not unknown in this country. So far as the plant in Vienna and in Bradford is concerned, I have the best reasons for knowing that both are in active operation. I am holding no brief for Szczepanik, but feel that these facts, which are known to me, ought to be stated, in fairness to a man who is earnestly trying to widen the applications of photography.—Yours very truly,

WILLIAM GAMBLE.

January 11th, 1904.

* And precisely same emulsion and sensitiser they experimented with.

Answers to Correspondents.

- ** All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.**
- ** Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.**
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PHOTOGRAPHS REGISTERED:—

- H. E. SAWYER, 28, Broadway, Maidstone. Photograph of the late Rev. S. Joy
Photograph of the late J. P. Plomley
- E. HULTON & CO., Limited, Withy Grove, Manchester. Photograph of Miss C. Pankhurst.
- G. A. HALE, 25, The Borough, Farnham, Surrey. Photograph of the Bishop of Winchester.
- J. G. GOGGHE.—Better address Messrs. Kodak, Ltd., 43, Clerkenwell Road, London, E.C.

REDUCING.—STOPIA asks: "Will you, please, tell me of something—non-poisonous—which can be applied locally, to reduce the density or hardness of (1) Negatives; (2) Silver prints; (3) Name books on retouching other than the following:—Hewitt's, Johnston's, Bruce's, Drinkwater's, Young's, Photo Miniature." In reply: (1) Try a solution of persulphate of ammonia. (2) Silver prints are not worth the trouble of reducing. It is much less trouble to make fresh prints. Reduced prints are never satisfactory. (3) We do not know of any more.

PHOTOGRAPHS OF METAL.—C. E. BATES writes: "I herewith enclose a copy of directions for placing photographs on watch cases, etc. I have followed them out minutely but have not been altogether successful. Will you tell me if directions are correct, or, if not, can you tell me the correct and best way to do it?" In reply: In the abstract the directions seem fairly correct. If you refer to page 451 of our volume for 1901 you will find an article giving full working details for producing photographs on jewellery, etc. Better consult that, and we have little doubt you will find the cause of your failure.

PLATINUM TONING.—B. 2 says: "(1) I am trying a new sample of C.C. matte, which the makers say when toned in platinum only is quite permanent. Please say if this will be as permanent as if toned with gold first, as is usually done? (2) Will soft water (i.e., rain water) from a cistern dissolve the hypo out of prints and plates quicker than tap water, hard, and containing much lime? In reply: (1) Yes; quite as permanent. (2) Practically there is little, if any, difference. If you have a good supply of clean rain water you might use that in preference to the other.

STUDIO LIGHTING.—T. M. says: "I have got a conservatory I am about to turn into a studio. It is a single slant, glass roof right along and wall both sides. Length, 24ft.; width, 6ft. I have, of course, only a top light, and should be glad to know what blinds I should require, how to arrange same, etc. What light would be required to block out?" In reply: Without seeing the studio, or knowing anything of the height of the walls, we can give no information that would be of practical use. As you are a professional photographer, you are surely better able to see how to turn the studio to account than we, who have not seen it, possibly can.

ENLARGING.—AMATEUR IN EARNEST says: "Could you kindly give me the dimensions to make an enlarger similar to enclosed sketch to enlarge from cabinet to 15in. by 12in. (1) Length from small end to large end (outside). (2) Distance of lens from carrier. (3) Distance from lens to large end. (4) Size of largest end (inside). I can easily make it providing I get the

measurements." In reply: It is impossible to answer these questions as the focus of the lens to be used is not given. However, if you refer to page 1159 of the Almanac you will find a table that gives the distances required for any degree of enlargement, with any focus lens.

EMPLOYMENT.—J. D. (Aberdeen) says: "I am a young man who, three years ago, chose photography as my craft. In addition to my work in the studio, I am studying art and chemistry, in order that I may become a capable member of my profession. I am without money or influence, and from the advertisements in the various photographic papers, the prospects for future welfare do not seem at all bright, even though I should acquire considerable skill. Having written a young friend in New York asking him to make inquiries regarding the wages given to a young man there, he writes saying he has learned that an improver can earn, according to ability, from 8 to 10 dollars per week. A skilful man from 25 to 50 dollars per week. Will you kindly tell me if my friend's information is reliable? If not, what are the facts of the case, and, in your opinion, how do the prospects, all things being equal, compare in America, or any other country, with those at home?" In reply: Personally we do not know very much about the salaries paid in America, but we think your friend has over, rather than under, estimated them, though living is more expensive in the States than it is here, which, of course, makes a difference. We cannot say anything further.

FLASHLIGHT PHOTOGRAPHY.—D. M. S. writes: "I have got the chance of taking a flashlight photo of a dress rehearsal at one of the large London theatres, and I want to make the best of this opportunity. I should be deeply indebted to you if you would help me by answering the following questions. I will first mention what I have in the way of apparatus:—1-1 camera, triple extension. Lenses: Ross 8 by 5 Rapid Symmetrical; E. Suter, Aplanat A. No. 3, 12 by 10; both above are old lenses. Also a Goerz Double Anastigmat, 6in. focus. I understand this lens can be used for 1-1 plate. Questions:—(1) Which of the above lenses is the best to use? (2) If none of them suitable, what is the best lens to use, and where can it be hired? (3) What kind of flashlamp or apparatus is the best, cheapest, and most satisfactory? (4) How much magnesium powder would be required for any apparatus you may recommend? (5) Where is the best position in the theatre to take the photo from and place the flashlights. (6) How many lamps would be required? (7) What are the best plates to use? (8) Does it do to use any of the stage lighting, provided, of course, no naked light is seen by the camera? (9) Are there any firms where flashlamps or apparatus can be hired? If so, where?" In reply: (1) The Suter lens, as, being for 12 by 10, it will cover the whole plate better with its full aperture than the others. (2) Messrs. Sands and Hunter let apparatus on hire, but we think the one you have will answer. (3) Better consult the advertisement columns of the Almanac. There are many good forms advertised there. (4) It all depends upon the size of the stage. (5) Where the actors in their positions on the stage are best illuminated. The camera should, of course, be in the auditorium. (6) This must, of course, depend upon their power. (7) Any good rapid plates; and they should be backed. (8) Yes. (9) Possibly Sands and Hunter. As you appear to have had no experience in this direction, we should advise you to make some preliminary exposures in the theatre before attempting to take the group. We do not reply by post.

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** The Editor can only be seen by appointment.
** We do not undertake to answer letters by post.

EX CATHEDRA.

Novel Radiations. According to *Nature*, among the numerous special kinds of radiation recently discovered, not the least interesting are the *n*-rays of M. Blondlot. These rays, which were first discovered in the radiations from incandescent bodies, pass readily through glass, aluminium, black paper, and other bodies, but are arrested by lead or by moistened paper. The most convenient way to examine them is by means of their action upon feebly-illuminated incandescent bodies, the luminosity being increased when the Blondlot rays fall upon them. In a more recent paper M. Blondlot has found that bodies in a state of strain, such as tempered steel and unannealed glass, give off these rays spontaneously and continuously at ordinary temperatures. He anticipates that this effect may prove to be of the utmost importance in the case of nerves, for, though the interior anatomy of the body may be indicated, as far as the bones and some other structures are concerned, by the Röntgen rays, no external indications of nerves have hitherto been observed, and new studies of physiology and medicine are thus opened up. Whether or not these indications will be capable of being recorded by photography we are not yet in a position to state.

The Microscope as Optical Lantern. Many workers with the microscope, desirous of showing its revelations to the uninformed public, are often in despair at their apparent stupidity and inability to make proper

use of their eyes with regard to the instrument, and no doubt this is one of the causes that have made photography popular; but Mr. Walter Bagshaw, in *Nature Study*, has gone a step further, and, in lieu of actually producing the photograph, allows his audience to see the projection, either upon a piece of ground-glass or upon a special cardboard screen—upon a small scale goes without saying. One of the advantages of this mode of exposition is the possibility, which naturally does not exist in the ordinary photograph, of showing the objects in motion. He recommends very simple means for carrying out his plans. The microscope is placed in a horizontal position, and the image thrown upon a piece of white cardboard propped up with a few books. The microscope mirror is to be moved on one side, and the lamp and bull's-eye condenser placed so as to send parallel beams upon the slide. A disc of light will be seen on the cardboard, but will probably appear brighter in some parts than in others. Then just as a lantern light needs centring to get an even disc, so the bull's-eye and lamp may need a little to and fro alteration till the light on the disc is even and uniform. Centring the object and focussing are then all that is needed. He finds that if the sub-stage condenser and higher powers be used a sheet of ground-glass between light and sub-stage condenser will often make a wonderful difference in securing even illumination. He remarks that he has often shown an insect's head 12in. in diameter, and has heard microscopists express wonder that they have never thought of this simple method of exhibiting their slides.

Astronomical Photographs. Anyone who has been fortunate enough to hear a lecture from Sir Robert Ball will know well enough that he is a most lively occupant of the rostrum. He has lately been lecturing at Edinburgh, and one of the Scotch newspapers is moved to speak of his gifts as being racy, vivid, interesting, and instructive. From the same source we learn, with true gratification, that Sir Robert pays due regard to the part which photography has taken in advancing the work of the astronomer. Indeed he goes somewhat further than we ourselves should have ventured, for he said that photography has caused as great an advance in astronomy as did the invention of the telescope. This is high praise, indeed, but this is not all. He is also reported to have said that "the philosophical theory of Kant on the one hand and the mathematical theory of Laplace on the other—made almost contemporaneously in the eighteenth century, but quite independently—had been confirmed in the most striking way by the discoveries resulting from photographs of the heavens." Anyone who is so well equipped to give popular expositions on telescopic researches as is Sir Robert Ball has reason to bless photography for the beautiful illustrations it affords in the shape

of lantern pictures. How different are these to the terrible round spots on a surface of blue which had to suffice for the lecturers' needs in the old days. Sir Robert must himself remember the time not very long since when he had to depend for his illustrations on these things, for there was nothing better. But he carried it all off and hid the deficiencies of his pictures by some little joke at their expense which the audience keenly relished. In the same spirit poor Artemus Ward would cover the villanies of some of his own lecture illustrations. Everyone will remember how he said—"That is a horse, I have had a special message from the artist to say that it is a horse." But let not these considerations tempt the average lecturer to show bad pictures; it requires a genius to make the public swallow them.

* * *

The Radium Cult.

That radium has taken the world by storm is an undoubted fact; it is scarcely possible to take up a periodical of any kind, scientific or popular, without finding in its columns something remarkable about this wonderful substance. And well may this be so, for it is at once interesting to the general public from its visible singular properties, and to the man of science for its apparent upsetting of almost the very groundwork of modern conceptions of matter. It is not surprising, therefore, to learn that a new journal is to be started devoted to this subject alone; its birthplace is, suitably, Paris, and its name is to be *Le Radium*. It will appear monthly, and is to give the fullest and latest particulars concerning the development of M. Curie's mysterious discovery. The first number is to contain a special article giving full particulars of the scope of the journal and the possibilities of the wonderful substance that gives the title to the publication. This new periodical will be a desirable one from many points of view, not the least being the authentic nature that should attach to any of its own pronouncements, there being so many absurd and impossible stories about it already in circulation. We shall, in all probability, have trustworthy accounts of its photographic possibilities, our knowledge in that direction being at present rather hazy. As an example of the sort of thing that will pass through the alembic of the editorial mind may be instanced the statement published that Mr. E. H. Gage, of San Francisco, claims to have perfected a simple method of extracting radium from ore, and to have invented a small battery which, with one charge of a preparation of radium, will run a motor-car for three hundred miles; and again, of a different complexion from this the statement that Professor A. H. Phillips, Demonstrator of Physics and Mineralogy at Princetown University, has completed a series of experiments with minerals collected in the State of Utah, and that he declares he has succeeded in obtaining from twenty-five pounds of currolite a sample of radium, though not so powerful as the European production, its strength being 1,500, while that obtained from European ores is 7,000. Professor Phillips's samples, however, are, he states, sufficient for many practical purposes.

* * *

The Electric Lantern.

Now that the lantern season is upon us it may be well to refer to an important consideration with regard to the use with this popular instrument of the electric arc light. Every town of any importance has now its electric mains, and it is so usual to find private houses illuminated with glow lamps that one takes it quite as a matter of course. Public halls and lecture rooms are now commonly illuminated in the same way, and in many instances the necessary special leads have been connected with the main for the provision

of an arc light for the lantern. No better kind of illumination can be found for lantern use, provided that the carbon holder or regulator is of a good pattern, and that the operator knows his business. But there is one important condition of success, and that is, the current supplied must be of the continuous, not the alternating kind. Unfortunately for lantern workers the alternating current system is much more common than the other, because for general illumination it is all that can be desired, while it is more economical in first outlay. But it gives a poor kind of arc light at the best. It can be known at a glance in some of our thoroughfares by its faltering movement, its violet tinge, and the loud hum which it emits. These drawbacks become accentuated when the light is used for lantern projection, the variation in its intensity being most annoying, the violet band across the sheet irritating to the eye, and the loud hum on one note most distressing to the ear. If, therefore, our advice were asked with reference to the installation of the electric light for lantern use where the alternating current only is available, we should at once say "don't." A limelight of only average quality is much better in every way. But let it be distinctly understood that we have no sort of prejudice against the electric arc—in fact we prefer it to any other illuminant for the lantern, but it must owe its radiance to a continuous current machine, or still better, to a secondary battery. In certain cases we have known even the best light to show a little palpitation which has been traced to the action of the gas engine, which drove the dynamo machine. But when the current comes from a battery it is absolutely steady. We know well enough that this result cannot be brought about if the operator does not pay attention to the space distance between his carbons, and if the carbons themselves are of poor quality; but given these things and the light is the best procurable. It is an easy error to fall into to imagine that an electric arc light must afford more radiance than any other illuminants, and the assumption is to a certain extent true. But with the alternating current much of the available light is hidden between the carbons. With the other current one carbon becomes intensely luminous and it is possible to so turn it towards the lens that the whole radiance is thrown out towards the sheet. Unless these conditions can be secured the lime light is preferable for lantern use.

PROGRESS IN RESPECT OF PHOTOGRAPHIC PERMANENCY.

It is interesting in any art or science, and often instructive, to now and again refer back and see what was done in the long ago and compare it with what is being done at the present time. In nothing, perhaps, does this apply more than in photography, although it is but little over sixty years old. Only those of our older readers—and we are pleased to say they are many—who can hark back to the state of photography during the fifties and sixties and compare it with what now exists, can to the full realise the advantages the present-day workers, whether they be professional or amateur, possess over those of the earlier days of the art. Not only does this apply to processes and increased facilities for working them, but also to apparatus of every description. At the present time we obtain our plates ready for exposure in the camera instead of having to prepare them ourselves at the time they had to be used, whether in the studio or the field. Now we buy our paper ready for the printing frames, instead of having to sensitise it ourselves, even if not to salt or albumenise it. At the present time, owing to the improvements in lenses, there is no fear of getting curved marginal lines in our pictures, and our apparatus

generally is of the most portable kind and most convenient in use.

It is not our present intention to dilate on the troubles the earlier workers encountered, or the inconveniences under which they, perforce, had to work, but the fact remains that good work was done in those days, and much of it would put to shame some that is being turned out at the present time, more particularly when it is considered that at the period alluded to there was no retouching to assist the portraitist. But we need not enlarge further on this topic as our object in this article is to inquire whether the results, in every-day work, now are both as regards negatives and prints much, if any, superior, as regards stability, to those of the long ago, considering, at the same time, the better theoretical knowledge we now possess in this connection? Or, to put the question another way, are the results produced to-day as stable as those produced in the early days of the art, and if not, why not?

The first negatives made were on paper—calotypes. The paper was prepared with iodide of silver, developed with gallic acid, and fixed with hyposulphite of soda. Hundreds of these negatives are now in existence which are as good as when they were at first taken, notwithstanding that they are sixty or more years old, so are many of the prints made from them by what is practically the same process. If we take up an old family album containing portraits taken, say, during the *carte-de-visite* period we shall find, no doubt, some of the prints, which, of course, are on albumen paper, in a more or less faded condition; but we shall also find very many that are in an excellent state of preservation, and some as good, or nearly so, as at first, notwithstanding that they are forty or so years old. If we go through a more modern album, containing prints made within the last decade or so we shall, as a rule, find much the same state of affairs as in the older collection—some have changed badly, whilst others have not. It must be understood here that we do not include platinotypes or carbon pictures, but refer solely to silver prints. Now, as the fading action is a progressive one, we can well speculate on the state the pictures in the modern album will be found in by the time they reach the age of those in the older collection. The interesting point for consideration is whether this earlier fading in the modern work is due to the processes employed or to the manipulations, for there is no question that at the present time we know more about the theoretical part of the subject than we ever did before, but are we turning that knowledge to the practical account we might do?

From the early "fifties" till some thirty years later the collodion process was the only one used in practice for negatives, and the negatives then made show no signs of fading. In fact, we do not remember ever having seen a collodion negative that has in the slightest degree faded or become spotty from contact with damp paper. This is more than can be said with regard to gelatine negatives. So far as one can see there is no reason why gelatine negatives cannot be made in every respect as stable as collodion ones, but the fact remains that a very large proportion of them have not proved themselves to be so, as most photographers are aware. But is that simply a want of care in their production? If it is it does not redound to the credit of their producers.

At the present time the bromide paper is the one solely used for enlargements when they are made by a silver process, but many of those which have been made but a few years—even months in some instances—are already showing signs of decay by passing into the "sere and yellow" stage, though many of the early ones—those

made in the early days of the process—are as good as they were when they were first produced. This should show that it is not the process itself that is at fault, but the method of working it. In the early days of the art, and before the advent of bromide papers, all silver enlargements on paper were made on iodised paper by a method analogous to the old calotype process, and they have proved themselves to be exceedingly permanent, as have done the old calotype negatives.

Seeing that so large a number of silver pictures—negatives and positives—show such early signs of deterioration, while so many of those produced several decades ago remain intact, it becomes important to inquire whether we have in processes, or in the manipulation of them, profited to the extent we should from our present knowledge of the theoretical part of the subject of which at one time the earlier workers knew but very little about. At some future time we may recur to this subject and deal with the conditions prevailing in the processes of old and where they differ from those obtaining in the processes and methods of the present time.

SOME POINTS CONNECTED WITH LANDSCAPE THREE-COLOUR PHOTOGRAPHY.

[Being the Sixth Traill Taylor Memorial Lecture.]

I FEEL to-night that I am following illustrious lecturers, and can scarcely hope to arouse the same interest in the subject I have chosen as they aroused in theirs. However, the subject I have chosen is one which is of importance at the present day, and I make no apology for talking about it. Three-colour photography is a most interesting research, opening vistas in the future [which have most subjects of applied science], and I may say it calls for a study of pure science, which is difficult in parts, since it has to take into account physiological phenomena.

The main principles of three-colour photography are well known, but I doubt much whether anybody who has not studied it and tried it under varying conditions of light has ever fully realised how much remains to be done to simplify it, and make it thoroughly practicable in the hands of the practical photographer. It may be said, I think, with some truth, that up to the present time the main work done by it has been still-life, and the copying of pictures. It has been but little applied to portraiture (though under proper conditions this is not more difficult to undertake than still-life), or landscape work. It is in this last that difficulties arise which have not been encountered in other lines of photography. We have in it the old difficulties of wet-plate photography due to varying light and shade during exposure, and where three exposures are made for one picture the chances are that the conditions are not quite the same during each exposure. Then there are the subtle nuances of atmospheric effect which have to be rendered, together with the delicate and ever varying tint of the sky. The colours have to be very exact in order to please, and at the same time an artistic effect is much to be desired. The question arises—Can this be done?

The answer to this is that it can be done if the greatest scientific exactitude is exercised in every particular. In the first place it must be determined as to the light in which a picture has to be viewed. If it be for a print, there is no possible question about it that it must be good day-light, and if we choose day-light, it should be that mixture of sky-light and sunlight which is to be found in cloud-light, and which generally illuminates our rooms, when windows afford the entry for the light. We will therefore take it that for viewing a picture, the light to be used must be daylight of this

quality. It may appear that we are beginning at the wrong end of the subject; but this is not so. Because, before we can know how to produce prints, we must know what negatives are suitable, and before we know this we must know whether we can produce prints from them which will give the required accuracy. The only real test of the three negatives is when the prints are first produced in black and white, and the colour subsequently given to them. If a print is to be gauged on the depth of colour it takes, according to the fancy of the amateur printer, it must very seldom be correct, except by a lucky chance. When the shades are given by opacities through which the coloured lights have to penetrate, then there is likely to be truth in the result.

This points to the true test for colour negatives being the method of triple projection as devised by Ives, and I may say the more I have studied the subject the more I am convinced, that if a picture is produced correctly by this method, it is certainly a better guide for producing correct pictures than any other method. It is from this point of view that I have been working, and I think it will be found by others, as well as myself, that certain preliminary considerations are necessary.

I wish to introduce the subject by a simple experiment. I cannot do better than commence by throwing on a small screen the image of a coloured object, which must be correct, since it is formed by three spectrum colours. In the apparatus before you there is the power of throwing a patch of white or coloured light upon a screen. It is white when the whole spectrum

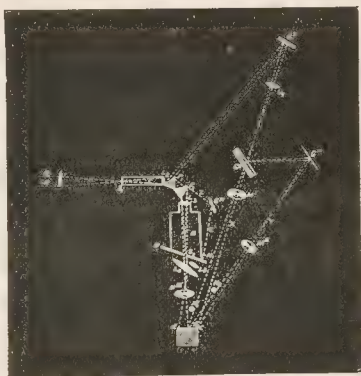


FIG. 1.

is combined, and it is coloured when a small portion of the spectrum passes through a slit at the front. In fact, we have an image of one surface of the prism thrown on the screen by the lens in front. If on the prism I were to throw an image of any object, through the slit of the spectroscope, which I have shown can be done readily, and is of use in photographing in monochromatic light such an object as the sun, we get on the screen an image in one colour according to the position of the slit in the spectrum. If, instead of throwing an image of the sun, we place a lantern slide with coloured glasses against the surface of the prism, we have an image of the slide. When we pass a slit through the spectrum we get the glasses shown in monochrome, some being bright or dark, according to the absorption of these glasses. If I place three slits in the spectrum, one in the red, one in the green, and one in the blue, which rays when combined form white light, we still have the same colours as before, but less bright, owing to a large part of the spectrum being cut off. If the

large lens is replaced by three lenses placed opposite the three slits we have three images of the small glass discs, one in red, one in green, and one in blue; and it is these three sets of images which is the aim of three-colour photography to reproduce. We can choose our correct colours, which are best represented by the sensation colours, from the white of sunlight by the mixture of the three, and so reproduce the colours of the glasses.

We first have to produce the three negatives which would produce the transparencies like those I have shown you, but unbacked by colour, for the colour is added afterwards. To do this, it is evident we must use screens or coloured media to cut off all unnecessary colours. To use the spectrum itself is, owing to the varied sensitiveness of the plates, almost impracticable. But the simplest way of doing this is to take coloured pigments and photograph them, under certain conditions. It is necessary to know how much of each of the three standard colours is necessary to make, when mixed, the colours of the pigments. Owing to the different brightnesses of the colours and the difference in composition it is better to arrange that all the colours for which (say) a red screen is sought, to have the same amount of red in them when photographed. If the negative shows equal densities when photographed through a red screen, it will show that the screen is correct; if not equal, the screen must be altered till it does. The screens must be selected by daylight exposure. In a paper I read before the Royal Photographic Society I showed how it was possible to prepare rotating coloured sectors which should be available for selection of screens for all kinds of plates. There is one difficulty in the sectors, and that is the method by which the luminosity and colour composition of the papers is arrived at. I wish to show you what I believe is a new plan by which not only the luminosity of the paper is arrived at, but also its composition in terms of the three colours used for projection. It is a very simple plan indeed, for it also tells us the spectrum colour which, mixed with white, is the colour of the screen. In the first place it is necessary to know the % composition of every spectrum colour in terms of the three spectrum colours which we have selected already, and if we know this we can readily find the components of the pigment colour in terms of these three projection colours. The diagram before you shows such % composition in terms of the colours which most nearly excite the three sensations.

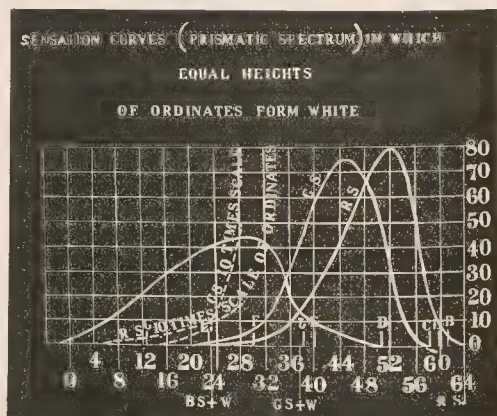


FIG. 2.

In the original diagram of % composition in terms of the three sensations there is only one sensation which is excited by one colour, and that is the red; the other colours excite two, and even three, sensations in a more or less degree, but from this diagram I have calculated what the % is when the colours alone are used, and we get the diagram before us. I have left out the violet, for it is composed of red and blue, and has no place as a simple colour. This diagram is one of the starting points; the other is the luminosity of the spectrum with the inherent white deducted from its several parts. Suppose we wish to know all about this emerald-green paper, we proceed as follows:—

A colour patch of white-light is thrown on the screen, and in the path of the beam is placed a bundle of plain glass, which deflects part of it at an angle of 45 deg., and the rest passes through. The deflected beam is again reflected by a silvered mirror on to the screen, so that the patch formed by it is superposed over that formed by the direct beam. A rod in the path causes two strips of light to be placed side by side. In one of the strips of light is placed the coloured paper, and in the other white paper. A slit is placed in the spectrum to allow only one colour to fall on the two papers, and a rotating sector placed in one of the beams equalises the brightness, the relative brightness of the two white beams having previously been equalised.

By noting the apertures of the screens we find how much the coloured paper reflects in comparison with that reflected from the white paper, and so we proceed with all the different rays.

Knowing the luminosity of the rays in the spectrum of white-light, we are able to make a luminous value of the colour. We know the % composition of each ray, as already said, and we add all the red % together, and the green % and the blue %. We know that in white-light there is so much red, green, and blue. We take, say, the colour which will all be used up in making white and deduct the % of the two colours from what has been found, and we get a % remainder of two colours. We look at the diagram and find what colour has that % and it is that colour which matches the colour of the paper with the white light in it.

But we have also found the luminosity value of the colour of the paper, and, calling that of white 100, we have now the true luminosity of the colour of the paper. Again, as before said, we have the % composition of the colour of the paper in terms of the three colours, and that gives us all we want in making the sensitometer.

I will not go further into the matter of making the sensitometer, since that is fully described in the paper I have alluded to. The novelty lies in the calculation.

The sectors before you have been prepared in this way, and the screens for any brand of plate can be found on the principles I have enumerated, for one rotating sector contains equal amounts of red, another of green, and the third of blue. The photographs of these rotating sectors should show the rings all of equal density when the screens are correct.

Be it remarked that the exposures need not be through only one medium at a time. For instance, the screen for the red may be the exposure through red for a certain time, and through orange for a certain time, and this will make the simple colour to be judged.

Having found the screens, we have next to find the relative exposure to be given. I have here three screens which I have used. They were prepared by Mr. Sanger Shepherd with his sensitiser, and they are good for the Cadett spectrum plates. Roughly, for a Cadett spectrum plate the exposures through three screens were: red 4, green 2, blue 1. When a fresh batch of plates is taken into use, a plate is placed in a dark

slide with the screens in front, but in contact with this plate is placed a scale of gradation through which the light has to pass as well as through the three screens. A rotating cardboard sector is placed in front so that four times the light is admitted to the red, twice to the green, and three is admitted to the blue. The light used is the light coming through a small aperture in the wall of a dark-room, and it is light reflected either from the sun or from bright cloud light.

The exposures take place together, and the gradation enables one to find out any difference that exists in the supposed correct times of exposure. It may be noted that by placing three slits in front of the three screens, several exposures may be made on the same plate as a check. The densities of the negatives taken under the three screens can be measured, or prints taken and compared.

If the exposures were relatively 4, 2, 1, the densities of the negatives should all be the same. Having got these relative exposures, they should be rigidly adhered to, and the batch of plates tried. This method of testing may be carried out even after the plates have been used in the field when the relative times are correct.

We now come to the transparencies, and there is not much to say regarding them. They were taken in my case not by contact, as they are reductions, and they should not be too opaque, but like a good lantern slide, and be full of detail. If the relative exposures of the negatives have been correct, they should without any alteration or manipulation give an accurate colour picture on the screen. Now it has happened with myself that I have not been able before exposure exactly to gauge the colour sensitiveness of a particular batch of plates, and in the case in my mind the green received about $\frac{1}{4}$ too much exposure, according to the test I have shown. The green negative was therefore too dense, and the transparency slightly too light. A correction was made in the transparency by giving the green $\frac{1}{4}$ more exposure, with the result that the picture in colour was correct. It may be as well to say that the transparencies should be taken separately, so that the central rays of a lens are used, and the light should be the same for each. The results of some of these we shall see shortly in the triple lantern.

In cases where the slides can be of the same size as the original the prints may be made on bichromated gelatine, as in Sanger Shepherd's process, and dyed with suitable dyes so that their continuity may be good.

So far, with the exception of the method of Professor Woods, who used specially ruled tracery, it has been impracticable to reproduce on the screen or in the photochromoscope the images coloured with spectral light; but I propose to show you that this can be done in a fairly simple manner.

The slits in the spectroscopie are still in the positions which allow the three rays to pass which form by their mixture white-light. Suppose we place in the position occupied by the patches three condensers which are identical with those of the triple lantern. Then it is possible by spectrum lenses to produce a disc of white-light on a more distant screen. This is only possible by diverting the red and blue rays to one side by right-angle prisms, and reflecting them on to the outside condensers as in the diagram. When this disc is formed we can place in the proper places the transparencies made from the three-colour negatives, and, after focussing and adjusting, the three will blend together and we shall have the photograph in colour produced by spectral rays. Unfortunately, we do not get such a body of light as we do with the lantern, and in order to make a bright picture it has to be made fairly small.

There is one curious feature, however, about this. We may still have exactly the same proportions of the three colours and join the transparency at a greater distance, so that the picture

becomes larger, and it will at once be seen that the picture becomes less luminous and the image becomes green.

This is exactly what happens in moonlight. The white-light is reflected sunlight, and yet it appears green in the latter light. When all rays are much reduced in intensity the colour of the red just disappears, and that is the case in moonlight and in the transparency.

Every one has not this apparatus, and, indeed, for lantern projection on a large scale this method is at present impracticable, and so we fall back on a simple three-colour lens lantern, which suffices for all ordinary purposes. I have used simple lenses in its construction, as will be seen in the diagram. The lenses themselves cost but a few shillings, and the whole apparatus can be made by any one who desires it, in a simple way. The principles on which it is based are, of course, Ives'. It is used with the electric light, and by means of bundles of plain mirrors (which in this case are microscopic glass bound together), the beam coming through the condenser of an electric lantern is diverted right and left, and also proceeds centrally. Those to the right and left are caught by silvered mirrors, and the three parallel beams proceed to three secondary condensers in a line in front of which the transparencies can be placed, and the rays collected from thence by three other spectacle lenses which form their images on the screen, and which can be blended together. Behind the secondary condensers are placed respectively coloured absorbing media, such as glasses which transmit light which approximately the same as the colours which represent the three-colour sensations. The colours seen on the screen and the resulting colour may or may not be white-light. Now we come to an important part of the matter. The three colours can be so mixed that they do form white-light, which is of the same purity as that quality of daylight which I have already alluded to. This is done by throwing alongside the disc white daylight which can be reflected from an aperture leading from the outside of the laboratory, and the necessary alterations made by changing the number of the glasses till the mixture of red, blue, and green absolutely match. The final very fine adjustment can be made by placing in contact with one or other of the coloured glasses a piece of plain glass.

I may say that this takes some time to do, and, as daylight is fleeting, I have matched the light of day by my colour patch apparatus, and from this apparatus placed a patch of light of the right whiteness alongside the disc of light coming from the triple lantern. Such a disc of light is now before you, and it will be seen what a different colour it has to that of the arc light.

(Demonstrations were then given).

It will be noticed of course that if transparencies are illuminated with the three colours which make the white of the arc light, the nuances of colour in the landscape will be different. I felt that it would be interesting if the triple lantern pictures could be compared with the Sanger Shepherd process; and Mr. Sanger Shepherd kindly undertook to prepare from some of my negatives a set of lantern slides. I am of course not going into the process, as it is well known; but I may say that I was astonished at the results, which compare admirably with the slides I have shown you. We have, then, three distinct methods of testing the quality of the results, and if I may say so, I have a fourth, for on several occasions when I took colour pictures I sketched them in water-colours, and the results are satisfactory to myself and show a similarity in colour which is striking.

SIR W. DE W. ABNEY, C.B.; F.R.S.; D.C.I.

A NEW COLLODION EMULSION. I.

BARON VON HÜBL, in the current number of "Das Atelier des Photographen," gives the following method of preparing an emulsion suitable for process work, and he points out that the ordinary collodion emulsion, which possesses but a very low sensitiveness, is generally sensitised with a silver salt which increases the colour-sensitising action of any dye. The most generally used dyes are the silver salts of the eosine group, and these have the advantage of combining the action of the silver with that of the dye, without any tendency to fog. Dr. E. Albert uses these silver compounds in ammoniacal solution, either as an addition to the emulsion or for bathing the plate. Another method of colour-sensitising is to bathe the plate in a plain solution of dye, and then just before exposure to bathe in a very dilute silver nitrate solution. Hübl points out that, although faultless results can be obtained by these methods, the very presence of a soluble silver salt is the cause of innumerable troubles, such as comets, red fog, general fog, etc., and the character of the negatives leaves something to be desired, as they tend to hardness, and soot and whitewash are too often met with.

An emulsion would be free from all these troubles if it were possible to make one without soluble silver salts, and which should possess sufficient sensitiveness to be applicable to process work, and which could be sensitised by the addition of silver free dye solutions. Numerous experiments towards this end were made by Hübl in conjunction with Herr G. Winter, and although their experiments have not reached a final solution of the problem, they have arrived at a fairly satisfactory result which promises well. A dye can only sensitise when it stains the silver bromide itself, and every circumstance which increases this action, increases the sensitising and, on the contrary, everything that prevents this, lowers the colour sensitiveness.* Soluble bromides in the emulsion either reduce or prevent the coloration of the silver bromide molecules, and therefore all emulsions which have been prepared with excess of soluble bromide cannot be highly colour-sensitised. If the small trace of excess of bromide is removed by the addition of a small quantity of a silver salt, the dye colours the silver bromide, and the sensitiveness to a particular spectrum region appears. If a further addition of silver is made, it does not as a rule increase the action, but lowers it. It is only with those dyes which give an insoluble silver compound that an excess of silver gives an increased action, as then a more intense coloration of the silver bromide grain is caused.

Soluble chlorides in an emulsion, unlike bromides, exert no influence on the colour-sensitising, and therefore a bromide emulsion which contains some silver chloride is very suitable for the preparation of colour-sensitive plates, as there can be no excess of bromide, for this would be decomposed with the silver chloride and form silver bromide plus free soluble chloride. In order to prepare an emulsion with chloride of silver, it is only necessary to replace some of the bromide with chloride, and as long as the former is not in excess it seems immaterial how much of the latter is. In the presence of ammonia fine-grained and creamy pure bromide emulsions can be easily formed which may be diluted without trouble, but if an acid is present coarse-grained bromide of silver is readily formed. Ammoniacal emulsions are thus less likely to fog, and as Luppo-Cramer† has pointed out, a considerable quantity of ammonia may be added to a washed emulsion without fog being caused.

It is well known that ammonia causes a rapid ripening of

* Jahrbuch für Photographie, Eder's 1903, p. 128.

† Photogr. Corresp. 1903.

the bromide of silver, and the emulsion which, when examined by transmitted light, is first red and fine-grained, becomes grey and then blue and violet and distinctly crystalline in character, but this does not necessarily mean increase of speed, but too frequently fog. The ripening process, at any rate with collodion emulsion, only takes place with ammonia if free bromide is present, and if to a washed emulsion ammonia is added, the bromide remains red and the collodion becomes thin and is finally destroyed. As the silver bromide remains also unchanged in the presence of soluble chlorides, the experiments were directed towards the preparation of a chloro-bromide emulsion with ammonio-nitrate of silver, and actually a very fine-grained and tolerably sensitive emulsion was thus obtained, which contained silver chloride dissolved in ammonia, and excess of soluble chloride, and whilst it possesses the sensitiveness of an emulsion with silver excess, there is not the slightest tendency to fog.

The addition of a soluble silver salt does not increase the sensitiveness. If the sensitiveness of this emulsion is due to the silver chloride dissolved in ammonia, the addition of an acid would reduce the sensitiveness, but an addition of acetic acid has no effect, and therefore it would appear as though the bromide of silver was in a more highly sensitive state. To prepare the emulsion, three solutions should be made:—

(a) In a bottle, of 1,500 cc. capacity, make 700 cc. of 4 per cent. collodion, using two-thirds alcohol and one-third ether as the solvent.

(b) The silver solution is made by adding to 50 g. of melted silver nitrate, 50 cc. of ammonia sp. gr. 0.91, and if the solution is not quite clear a little more ammonia must be added. Then 100 cc. of 95 per cent. alcohol should be added, and when cooled down, if there is any silver thrown out of the solution, a little water, from 3 to 10 cc., should be added till the crystals are dissolved. This solution should not be filtered.

(c) The bromide solution: 27 g. of dry ammonium bromide should be accurately weighed and placed in a flask and covered with 40 cc. of distilled water, and heated till dissolved. Then add 100 cc. of alcohol, and 15 cc. of alcoholic solution of lithium chloride* and the flask placed in hot water to prevent the salt depositing.

The cold silver solution is now to be added, in the dark room, to the collodion, and well shaken; some will separate out, but this is of no moment. Then the hot bromide solution is added in about fifteen portions to the silvered collodion, and the whole well shaken after each addition; the bromide flask should be rinsed out with alcohol and water, and this added to the collodion. The emulsion must now be vigorously shaken for about three minutes, and then allowed to stand for two or four hours. This does not increase the speed, but the collodion becomes thinner and is easier to use. In order to test the emulsion, a drop or two should be placed on a sheet of glass, a little alcohol and ether added, and rubbed with the finger; and it should, when examined by white light, appear red and not grey, which shows that it is coarse-grained and that the bromide solution has been added in too large quantities at a time. It is advisable to test the emulsion to see that there is excess of chloride, and for this purpose 4 to 5 cc. of emulsion should be placed in a test tube, and 10 drops of nitric acid and 10 cc. of water added, and the whole well shaken and filtered into another test tube and a few drops of silver nitrate solution added. There should be a copious cloudy white precipitate. The emulsion is, after standing the stated time, to be precipitated with water by adding in small portions 300 cc. of water, shaking well after each addition, and then the mixture should be poured into a

flask containing about 3,000 cc. of ordinary water. After shaking or stirring, the separated emulsion should be allowed to settle and the water decanted off, and this operation repeated five or six times, and then the emulsion collected on a linen filter and freed by squeezing from as much water as possible, and then damped with alcohol and pressed again and again. The sandy yellow emulsion must not be allowed to dry, but whilst still damp dissolved in from 350 to 450 cc. of alcohol and 400 to 550 cc. of ether, and then when dissolved filtered by pressure through wash-leather previously washed with alcohol and ether. The quantity of alcohol and ether used to dissolve the emulsion has considerable influence on the character of the emulsion, for the brilliancy and vigour of the negative increases with the concentration and richness in silver. The freshly dissolved emulsion frequently works at first somewhat foggy, but after a few days gives absolutely clean negatives. It is about twice the sensitiveness of a wet collodion plate, and has a gradation totally different, agreeing more nearly with that of the platinotype paper.

Increased contrast can be obtained with the emulsion by the addition of a chromate and 5 cc. of a 1 per cent. aqueous ammonium bichromate solution should be added to 15 cc. of alcohol, and of this mixture from 0.5 to 3 cc. be added to every 1,000 cc. of emulsion. But this must be done with care, for the addition of 1.5 cc. reduces the sensitiveness to one-half, and that of 3 cc. reduces the speed to one-sixth. An addition of eosine acts in the same way without reducing the speed, however.

THE MICRO-PLANAR LENS.

AFTER Mr. Pigg's paper appeared in this journal on October 30th, 1903, I sent you a letter which you printed the following week. I stated in that letter seven points on which Mr. Pigg's paper was defective, and as to which further information was required. Two only of these may be mentioned now. The first was the photomicrographs produced by him with his two lenses were not of the same size to enable a fair comparison to be made; and the second was he did not specify the exact focal length of the microscope objective he used, nor did he name the maker. This has been followed by a paper by Mr. Walmsley in the JOURNAL of the 8th inst., which is illustrated by some photomicrographs, which are of the same size, thus obviating the first of the above objections stated by me; but as to the second objection we are no "forrarder," but rather the reverse. As to the second objection, he says he used a 75 mm. micro-planar by Zeiss equal to 3 ins. focus; and as to the micro-objective he used a 3 in. objective by Beck, which he says he is the happy possessor of. "I do not believe," he says, "a finer 3 in. exists, although it was made more than twenty-five years ago. It is converted for photomicrography," he says, "by Wenham's method, the insertion of a double convex lens of some 6 in. focus in the extreme rear of the mounting." He proceeds to give some other details about the two lenses he used, the Zeiss and the Beck, which do not concern us here. What does concern us is that he specifically states under Fig. 5, "Photomicrographed with Beck's No. 3 in. Microscope Objective." Now, it may be at once admitted that at the time Mr. Wenham suggested the insertion behind the micro-objective of a non-achromatic lens to correct it for the chemical focus, micro-objectives at that time could be had which could be used without such adventitious aid. It is, however, no longer the case now. To the placing of this single lens behind the micro-objective there are two objections. The first is that it destroys to a considerable extent, even in a low power, the fine corrections which the maker gives the objective. A very special illustration of this may be cited, viz., that of the great Lick

* To make this 10 g. lithium chloride should be dissolved in 10 cc. of water, and 90 cc. of alcohol added, and the solution filtered.

telescope with an object glass of 36 in. diameter. It was found necessary to make a lens of 30 in. diameter to place in front of the objective to convert it for the chemical focus. This lens had the effect of shortening the focus by 6 ft., and at the same time caused such bad definition that when photographing the moon they have to shut down the aperture to 8 in. The second and most serious thing, however, about the addition of this 6 in. focus lens, and one which Mr. Walmsley seems in utter ignorance of, is the fact that he has by this additional lens converted his Beck 3 in. objective into a 2 in. one, and on his photomicrographs, therefore, no reliance can be placed on making any comparison with a micro-planar of 3 in. focus. Mr. Walmsley does not even know the focal length of his added lens; he only says it is of some 6 in. focus. Mr. Walmsley is believed to be one who has written a good deal about photomicrography for some years past. He has quite recently published a book which he calls the "ABC of Photomicrography," and yet it is perfectly plain from the above that he has, as regards the above lens, at any rate, the ABC of that art science yet to learn.

I have not got a Beck 3 in. objective, although I have occasionally seen them; but I have had very many 3 in. and 2 in. objectives by Wray through my hands. I have at present in my own cabinet both a 3 in. and a 2 in. by that maker. To make the above statement as to effect of adding a 6 in. focus to a 3 in. yet more clear, I measured the magnifying power of my 3 in. Wray in the microscope itself, and, as probably your readers may not know how this is done, I shall describe it here. My Wray 3 in. is made for the long 10 in. tube—that is, 10 in. from the shoulder of the objective to the level of the eye-lens of the eyepiece. Placing, then, on the stage of the microscope a Zeiss micrometer divided into mm. the object glass, the 3 in., was screwed into the tube, and then a Leitz eyepiece micrometer, also divided into mm., was placed in the upper end of the tube, first of all removing the field lens of that eyepiece. In this way the magnified image of one mm. on the stage micrometer was projected on to the eyepiece micrometer without the reducing action of the field lens, and it was found that one mm. on the stage covered 3.5 mm. of that in the eyepiece—that is to say, the divisions of the two micrometers being equal, the magnification required only to be read off without any calculation, and the object-glass thus by itself alone magnified $3\frac{1}{2}$ times. I had previously prepared a 6 in. focus biconvex lens, just the same thing it is supposed Mr. Walmsley uses, and dropped it into the micro-tube resting on the object-glass. Again the magnification was read off, and it was found to be 5.25; or with this additional lens the 3 in. object-glass became at once a 2 in. one. These facts are beyond dispute.

As the whole of Mr. Walmsley's paper proceeds on the assumption that he was using a true 3 in. objective in opposition to a 3 in. micro-planar, while all the time, although he did not know it, he was using a 2 in. objective the whole of his paper, and the deductions he draws from it, and his illustrations, fall to the ground, and the paper must be held to be *pro non scripto*, as it proceeds upon an essential error.

I have no wish to criticise either the photomicrographs of Mr. Pigg or Mr. Walmsley in detail. The information they have given does not enable that to be done.

Neither my Wray 3 in. nor the 2 in. require any lens placed behind them to get the chemical focus. They both give good, crisp negatives without such addition; and they are not alone in this respect. Many of the modern objectives by reputable makers work in the same way without adventitious aid.

Notwithstanding the papers of Messrs. Pigg and Walmsley, I feel sure the micro-planars stand on too high a platform to be affected by what they have done.

If I should say that no better lenses exist than my 3 in. and 2 in. Wrays I should state what is neither true nor honest, as I have seen and handled many quite as good, perhaps better. Besides, it would be bragging, and that is a thing which we do not practice ourselves, nor like to see it in others, in this grey, grey town in the far, far north. W. F.

FIFTY YEARS AGO.

[From the *Liverpool Photographic Journal*, now *THE BRITISH JOURNAL OF PHOTOGRAPHY*, January, 1854.]

RESUME OF THE OPERATIONS OF THE LIVERPOOL PHOTOGRAPHIC SOCIETY FROM THE COMMENCEMENT.

This Society was founded on Tuesday, March 22nd, 1853, at a meeting called together by advertisement, and at which Mr. J. A. Picton was called to the chair. Mr. Samuel Holme, then Mayor of Liverpool, was elected President; and the vice-presidents, treasurer, joint secretaries, and Council, were appointed.

The third meeting of the Society took place on May 3rd, at which, after the election of members, Mr. Mackinlay exhibited a folding camera and box, suitable for taking views in open country, and read a paper describing it.

Mr. Knott read a paper, "Practical Notes on Glass Positives." Dr. Edwards and Mr. W. Barker exhibited some microscopical collodion specimens, and gave explanatory remarks on the mode of taking microscopical objects, and the adaptation of the camera to that purpose, the arrangement of which was also shown.

The fourth sessional meeting was held on June 2nd, when Mr. Frank Howard read a paper upon "Photography in Connexion with the Fine Arts," which led to an animated discussion on the part of the practical members, Mr. Firth and Mr. Burgess, Mr. Newlands and Mr. Corey. Mr. C. Bell exhibited and described "A Plan for Taking Stereoscopic Views in the Open Country." Mr. Chadburn exhibited some beautiful photographic views in Venice.

At the fifth meeting, on July 5th, Mr. Forrest exhibited a camera slide frame, the inside of which was made of glass, with the view to prevent the sensitive plate being affected by the absorption of the chemicals into the wood.

Mr. T. A. Humphries exhibited one of Mr. Mayall's Crayon Photographs, and the Chairman mentioned a suggestion by Mr. Frank Howard, that the art of photography should be applied in assistance of the sciences of physiognomy and ethnology, by taking photographs of individuals of the various foreigners who visited this port; and Mr. Mackinlay exhibited some specimens of photographic printing without nitrate of silver, by which ladies may be enabled to produce copies of lace, crochet work, etc., in the most pleasing shades and colours, without danger of staining their fingers. He then described the modes of operation, and the chemicals used for the production of the various tints.

The sixth sessional meeting was held on August 2nd. Mr. Wood, of the establishment of Abraham and Co., of Liverpool, exhibited a very complete "Portable apparatus for taking views in open country."

Mr. Burgess exhibited an American camera, with Knight's and other improvements, and described some modifications he had personally found useful. Mr. Frank Howard read a paper on the "Artistic Distribution of Light and Shade."

At the seventh meeting, September 2nd, Mr. Foard read a paper, "Notes on the Daguerreotype," followed by a discussion on the relative merits of the daguerreotype and collodion process. After which Mr. J. A. P. McBride read a paper on "Photography in Connexion with the Fine Arts," on which some discussion also took place.

On October 4th the eighth meeting was held. Mr. G. R.

erry read "A Digest of Mr. Fox Talbot's Patents." Mr. Kinson exhibited a stereoscope camera. Mr. J. A. Forrest exhibited and described a folding camera for taking views in open air by the collodion process, in a very portable form; and Mr. Keith exhibited specimens of positives taken on coloured glass by the collodion process.

Mr. Burgess exhibited a camera, sent by Mr. Wilkinson, intended at Paris, to carry two lenses, so as to take the two views of the stereoscope at one time and on the same plate. It was called a quintoscope.

On October 24th the Society was invited to inspect the photographic reports of the progress of the Crystal Palace, now erecting in Sydenham. Mr. T. C. Archer, the agent for the Crystal Palace Company, had kindly consented to exhibit these photographs, taken by Mr. Delamotte, amounting in number to nearly fifty, at the rooms of the Photographic Society in Lord Street. On this occasion Mr. Atkinson exhibited some large photographs of Egyptian architecture, and negatives taken on albumenised paper.

The ninth sessional meeting was held on November 1st, and was principally devoted to the consideration of the paper processes in photography.

Mr. John Morecroft exhibited a great number of negatives, taken with nearly uniform success by Buckle's process, and positives printed from them for the stereoscope as arranged by Professor Wheatstone. From these negatives a selection has been made, of which Mr. G. R. Berry has kindly offered to print positives, of which each member of this Society will be entitled to two. They are eight inches by seven, and of the most exquisite beauty—combining sharpness with aerial perspective to an extent very rarely seen.

Mr. Keith exhibited the calotype process, in which he had been very successful.

Mr. G. R. Berry then described a course of proceeding with paper, which he had just discovered, of much more simple character than any hitherto described, which was perfectly effective, both for taking photographs by the camera and for printing; and the latter might be done by gaslight even better than by daylight.—[It will be seen by the report of the January meeting which appears at full length in this Journal, that Mr. G. R. Berry has modified his formulæ in a very slight degree. This process will be printed the positives from Mr. John Morecroft's negatives, for presentation to the members.]

At this meeting Dr. Edwards exhibited some beautiful photographs, taken on collodion, of a rare species of electric torpedo, *Torpedo nobiliana*, recently caught at the mouth of the Dee. They were positive and negative, and of back and front of the fish.

Mr. Mackinlay exhibited some specimens of views taken by the collodion process, in which he had secured the greatest density in the blacks, in combination with the full development of the half-tones, by the use of vegetable naphtha. He also described some advantages he had obtained in printing by wash of sea-water over the paper to commence with. Another wash, composed of tartrate of antimony, salt, or sal ammoniac and water, he had found remarkably good.

He had also discovered that a weak negative, by printing through blue glass, would produce very effective positives.

He had also observed that pictures taken very rapidly by the camera required to be subjected a long time in the developing solution; but that a much shorter time was required developing when the action of the camera was slower.

Mr. J. A. Forrest mentioned that Mr. McInnes had devoted a great deal of time to perfecting a portable apparatus for taking collodion negatives, and had also discovered a means of removing the collodion film—upon which a photograph had been taken—from the glass, so as to obviate the necessity

of carrying so many plates of glass—of which the weight and liability to breakage formed the principal objection or difficulty in making the collodion process convenient for carrying about.

Mr. Firth said that he had been successful in taking photographs on collodion floated on waxed paper, which would obviate the necessity of carrying more than one plate of glass, or the removal of the film from the glass, which he thought would be very hazardous to the photograph.

Mr. Burgess said he had taken photographs on collodion floated on gutta serena, which he had no doubt would supersede either paper or glass.

The tenth meeting took place on December 6th, when the Chairman congratulated the Society upon the great accession to their numbers—their register showing one hundred and thirty-five members. The next session would commence on March 18th, when he had no doubt the Society would be still more increased, as each member enrolled in the interim would be entitled to the prints from Mr. John Morecroft's photographs.

Mr. Mackinlay exhibited a large folding camera, constructed for the paper process, in which considerable improvements had been effected upon the first that he had exhibited on May 3rd.

A discussion then followed upon the relative advantages of the collodion and paper processes, in which Mr. Forrest, Mr. Burgess, Mr. Mackinlay, and Mr. Chadburn took part.

Mr. Frank Howard mentioned the difficulty which existed in procuring suitable paper for any of the paper processes, except that of Mr. Berry, and expressed his opinion that the photographers in general were disposed to look too much for sharpness; and he exhibited a drawing to show the defects of too much hardness or distinctness in the individual objects.

On December 15th the members were invited to inspect some very large photographs, taken on albumenised paper by Mr. Sanford, which were brought down from London, and exhibited by Dr. Edwards, who, on behalf of Mr. Sanford, presented a set of prints from them to the Society.

On Friday, February 26th, Lord Kelvin presents the certificates and prizes at the annual prize distribution and conversazione of members and students, at the Northampton Institute, St. John Street Road, London, E.C.

THE HON. Secretary of the Longton and District Photographic Society writes: "My attention has just been drawn to a printer's error in our exhibition prospectus and entry form. It there states that entries close on Tuesday, January 25th, whereas it should read Tuesday, January 26th. For the information of intending exhibitors, may I ask your kind notice and correction."

"PICTURE Titles for Painters and Photographers, Chosen from the Literature of Great Britain and America," is the title of a forthcoming book by Mr. Alfred Lys Baldry. The prospectus states that it will be found of the very greatest value to painters, sculptors, photographers, and others. The many quotations it contains not only supply titles for pictures already completed, but suggest subjects for future work. The book is so arranged that suitable titles can be found with the greatest possible ease in the shortest possible time.

MR. GEORGE HARRIS, a gentleman describing himself as an artist, and living in Trefoil Road, Wandsworth Common, was summoned, on Wednesday last week, at Wimbledon Petty Sessions, by the Conservators of Wimbledon Common, for cutting down three large pieces of holly. George Cox, a keeper, said that he found the defendant in the woods on Sunday morning, January 3rd, with the holly lying in front of him. The defendant told him that he was sorry if he had done wrong. The defendant pleaded that he had cut down the holly to get a better view, as he wanted to obtain some snap-shots. He was fined 40s.

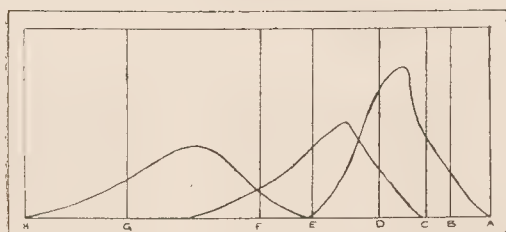


Fig. 1.

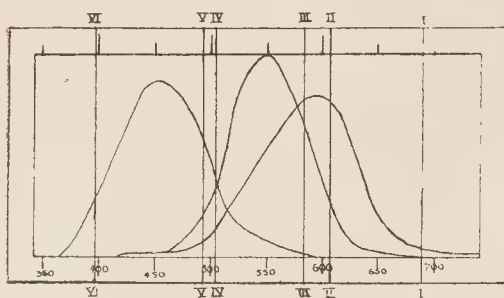


Fig. 2.

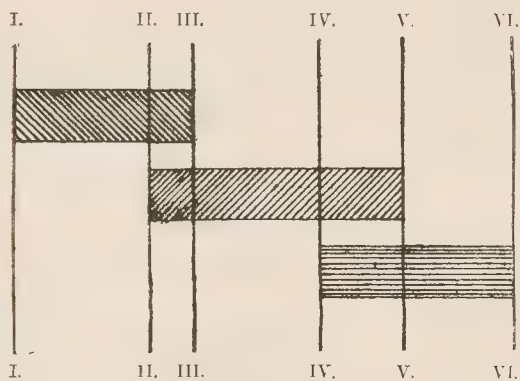


Fig. 3.

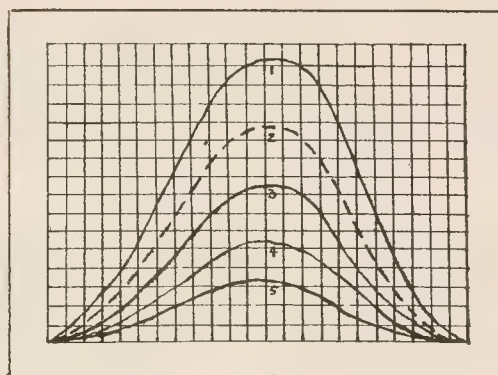


Fig. 4.

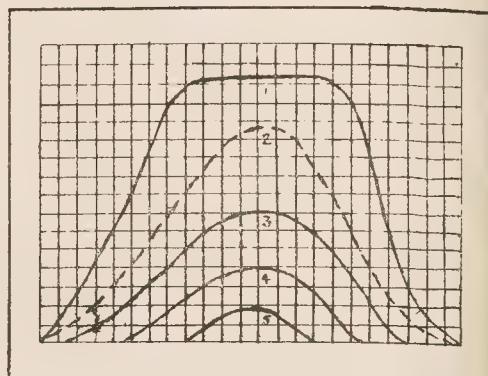
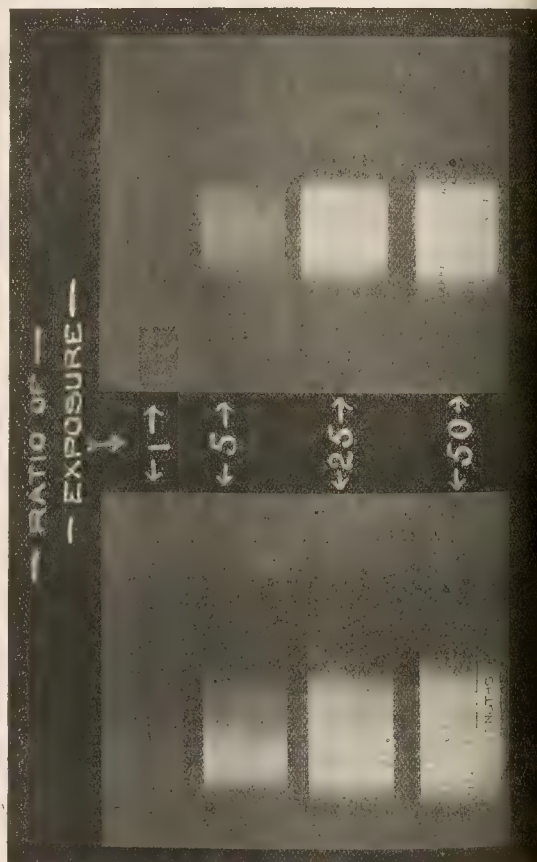


Fig. 5.



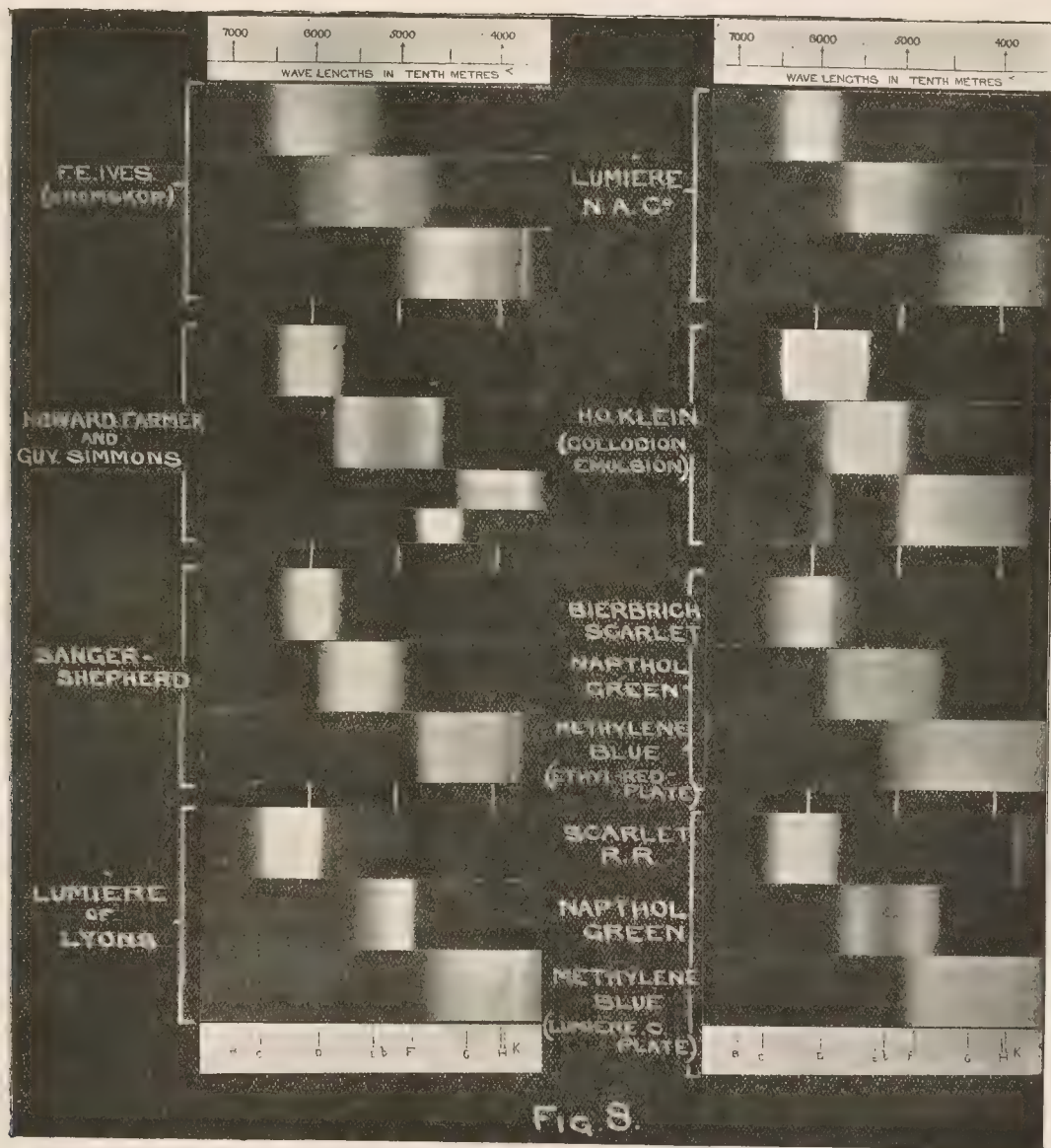


FIG. 8.

THE FUNCTIONS OF TRICOLOUR FILTERS.

The diagrams and illustrations which appear on this and the previous pages were omitted from Messrs. Bull and Jolley's paper published in last week's JOURNAL.

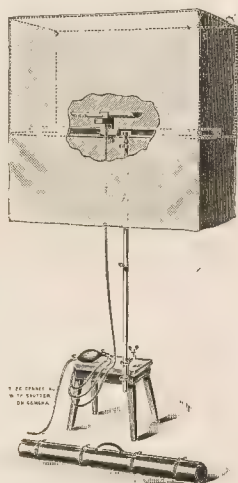
It is well known that the German Empress excels in the photographer's art. She it was who furnished the illustrations for the narrative of the tour of the Emperor William II. in Palestine, published by Baron von Mirbach. Her Majesty has taken advantage of the Christmas holidays to instruct her two youngest sons in the art of photographing in colours, and her pupils have made surprising progress.—"New York Herald."

THE Committee of the Professional Photographers' Association have taken the first step towards the establishment of that much-required institution—an examining board for professional photographic assistants. The sub-committee which has the matter in hand held its first meeting last week, but with the most assiduous attention to business, it can hardly be hoped that a workable scheme will be evolved for many months at least. The problem to be solved is undoubtedly a very difficult one, and although almost every professional photographer in the kingdom is personally interested in the success of the undertaking, experience of the attitude of professionals towards other attempts to benefit their order hardly lead us to expect that the Association will receive much assistance from outside its ranks. Still, the harder the battle the greater the glory, and we heartily wish the Association a successful achievement of its purpose.

New Apparatus, &c.

The Ideal Portrait Lamp. Geo. Houghton and Son, Ltd., 88 and 89, High Holborn, W.C.

The apparatus consists of a frame, constructed of aluminium rods, supported by a standard, adjustable for height, with an arrangement for clamping to a stool or chair. When erected, over the frame is placed a cover of fireproofed cloth, the front consisting of one thickness of cambric, the back and sides having, in addition to the cambric, an outer thickness of dark coloured calico. The lower portion of this cover hangs loosely. The lamp consists of a shallow tray in which a special flash powder is placed. Connected with the tray is an arrangement for detonating a percussion cap to ignite the powder, the trigger being released by a pneumatic ball and tube, another tube from the same ball being connected with the shutter of the camera, and adjusted so as to open the shutter just in advance of the release of trigger. The composition is an extremely rapid-burning one, and the flash so instantaneous that the sitter can be taken in the act of talking, without the slightest trace of movement showing. When the exposure has been made the loose drapery is gathered up, imprisoning the smoke, and the cover is lifted off the standard and removed to the open air or placed outside a window for the smoke to disperse.



We had an opportunity of seeing the apparatus at work at night in an ordinary photographic studio under conditions which put its utility to the fullest test. The negatives, which were made in our presence, were equal to those taken by the best electric light systems, and the ordinary faults of flashlight portraits were absent, owing no doubt to the diffusion of the light by means of the cambric screen. The apparatus proved perfectly efficacious in preventing the escape of smoke into the room, and as it is so independent of any outside accessories, so portable and so easily set up and adjusted in any position, it will doubtless be highly appreciated by those photographers who are often called upon to take at home portraits. Indeed, when used for this particular purpose it is probable that better results would always be obtained than by daylight, and the advantage exists that the position of the subject may be chosen to suit the furniture and decorations of the room instead of being limited by the position of the windows. The quantity of powder used is small, about 40 grains sufficing for a head and bust portrait, and we are informed that it is not of a dangerous nature and not liable to explosion by detonation or friction.

Messrs. Gardner and Co., of West Nile Street, Glasgow, are the Scottish agents for the lamp.

Marion's Supreme Plate. Manufactured and sold by Marion and Co., Ltd., 22-3, Soho Square, London.

Messrs. Marion and Co. have added to their series of dry plates a new one, which, from its character, should meet with much success.

The new plate does not make pretensions to orthochromatism, but claims supremacy of quality, supremacy of speed, and supremacy in ease of working. These desirable characteristics appear to have been secured by means of an emulsion of extreme sensitiveness, rich in silver, coated thickly upon excellent glass, and with great care to ensure freedom from technical defects. It will be remembered that Messrs. Marion and Co. were the pioneers who introduced the new plates of extreme rapidity. Their P.S. plate won immediate recognition for its speed. The Supreme is of similar rapidity, and bears the No. 250 H. and D. The conscientiousness with which the firm has used the Hürter and Driffeld system for the measurement of the speed of plates is unquestioned, and the figures we have quoted may be taken as a true index of the possibilities open to the photographer who uses these plates. Thus we find that the amateur using one of the cheap hand cameras, with a lens of the low intensity of F/11 may, even at this season of the year at noon, obtain a fully exposed negative with these plates in 1-15 to 1-25 second when photographing, on a very fine day, a close object, or landscape with heavy foreground. The exposure for an ordinary landscape would not exceed 1-50 second, under similar conditions, but at the brightest season of the year the stop might be reduced to F/20 for such a subject. If the photographer is content to rely upon development for obtaining greater detail, a further reduction of the exposure may be made. We have tested a sample of these plates, and directed our attention more especially to their quality and their latitude of exposure. The test for latitude was a severe one. Two plates were exposed upon a subject presenting great contrast. To the one an exposure of 12 seconds was given, and to the other 144 seconds. Both plates were developed simultaneously with the same developer for the same length of time. The exposure of 12 seconds was correct, as it gave some detail in the deep shadows. But the second negative, although exposed twelve times as long, still gave a useful result. The grain of the deposit is very fine, considering the rapidity of the plate, and the films are of great perfection. A plate with this latitude of exposure should present the minimum of difficulty to the inexperienced photographer, whose greatest errors usually occur in exposure. We also gave particular attention to the gradation of the image, and think the series will give much satisfaction to those who require a plate with a long scale of gradation, rendering subtle differences of half-tone. Such plates are very valuable for delicate effects of light and shade.

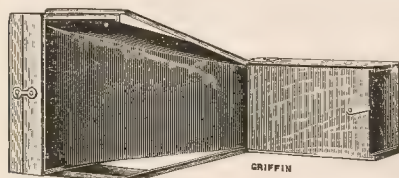
New Developers for Gaslight Papers. Sold by John J. Griffin and Sons, Ltd., 20-26, Sardinia Street, W.C.

The metal-hydrokinone developer which Messrs. Griffin and Sons have sold for a long time in various forms of preparation under the title of M.Q., is now placed upon the market in a new form which is certainly calculated to add to its already extensive popularity on account of the convenience which accompanies its employment. The developer is compounded in a highly concentrated single solution which keeps without deterioration and which requires only simple dilution with water to form the developing solution. The concentrated developer is sent out in a stoppered bottle with a rather wide mouth, and the glass stopper is moulded so that it constitutes a cup which acts as a measure. The arrangement is especially designed for use in the development of Velox paper, but there is not the slightest reason that the same should not be applicable to the development of any other sensitive surface for which metal hydrokinone is suitable, the dilution being modified according to purpose. The method of putting up is certainly a most convenient one.

An entirely novel developer for Velox and other gaslight papers is now sold by Messrs. Griffin under the name of Sepol. As its name suggests its peculiarity is that it produces an image of sepia tint instead of the usual black or blue black. Following the instructions given, that is to say, giving the sensitive paper an exposure of four to six times that normally required, and compounding the developer as instructed we found it quite easy to produce prints of a pleasant brown tint, and not difficult to obtain a reasonable amount of uniformity of tint even when employing negatives differing in character. We should imagine that this developer will prove a very popular introduction as it entirely obviates the necessity of any troublesome and uncertain process of toning the developed and fixed print. Sepol may be had packed in cartridges or in concentrated solution.

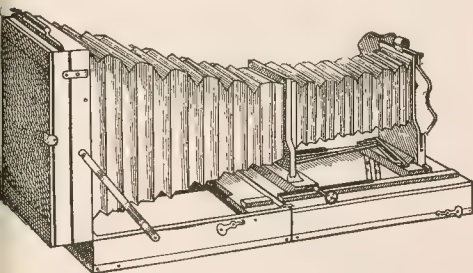
ties in Enlarging Apparatus. Manufactured by John J. Griffin and Sons, Ltd., 20-26, Sardinia Street, London, W.C.

Series A fixed focus enlarger constitutes an enlarging apparatus reduced to the elementary and necessary principles, nevertheless its limitations it is quite efficient, and, moreover, is convenient in construction is ingenious, and it folds to a convenient size. The apparatus is for enlarging from $\frac{1}{4}$ plate negatives to plate size. The front part consists of a box, one end having



to carry the negative to be enlarged from, and the other end carrying the lens, which is an achromatic combination, fitted with a shutter for exposing. Bellows of red and black cloth connect the front part with the back, which includes an arrangement for holding the bromide paper upon which the enlargement is to be made. The paper is merely placed face upwards in the back, and covered with a sheet of glass. The bellows body is held rigid by struts on each side. The apparatus is adjusted exactly to enlarge from $\frac{1}{4}$ to 1-1 plate, and no focussing arrangement is necessary, the distances being adjusted in manufacture. For exposure the aperture is taken bodily into the open air and placed, negative upwards, under the sky. As the price is within the most limited means, as makers say, the enlarger is an excellent one for the tyro, or for the amateur who wishes to try his hand before going to much expense.

The Series C folding enlarger is a piece of apparatus on a much more elaborate scale; indeed, it possesses the means of every adjustment that could possibly be required. The general appearance of the apparatus will be realised from the illustration. It is made of brass, enlargements up to 10 in. by 8 in. The woodwork is polished and the bellows are cloth, and the metal-work is lacquered brass. The lens is an achromatic combination, fitted with stops and an iris shutter. The dark slide is of the usual construction, of a metal back, and is fitted with carriers for 1-1 and $\frac{1}{4}$ plate. The negative is taken to the negative to be enlarged from is fitted to the carrier so that it may be shifted from side to side, and thus a portion of the negative only may be used to enlarge from, and it may be adjusted obliquely, so as to rectify any want of uprightness in the negative. A rack and pinion is provided for focussing in the ordinary way, but the difficulties in focussing and adjusting the relative positions of screen, lens, and negative are simplified enormously in using



the apparatus by a device with which it is fitted, which has the effect of automatically adjusting the relative positions of the negative and back in accordance with the conjugate foci of the lens for the ratio of enlargement. For daylight exposures the makers direct the apparatus should be taken outdoors and pointed upwards, so that the illumination is obtained directly by skylight. There is, however, no reason why the apparatus should not be kept horizontal and the illumination obtained from a white reflector. A special plate carrier is supplied with the apparatus to carry lantern size plate,

and lantern slides may be made by reduction from negatives of any size from 10 in. by 8 in. downwards.

Griffin's gaslight attachment provides a means of employing artificial light with either of the before-mentioned apparatus for enlarging. It consists of a curved metal-plate, whitened to form a reflecting surface, having its sides continued in deeper curves almost to form cylinders. The interior of the cylindrical ends are of bright metal to form reflectors, and each contains an incandescent burner as the sources of illumination. Fittings are provided for attachment to ordinary gas supply by means of an indiarubber tube. The arrangement is also specially applicable for use in making lantern slides by reduction. The outside of the metal-work is japanned black, and the price at which it is offered is extremely reasonable. Although primarily intended for use with the enlarging apparatus we have described, it is equally applicable to most other apparatus constructed on similar lines, and for lantern-slide making any simple means improvised for the purpose of holding the negative in front of the reflector in conjunction with an ordinary camera would constitute a perfectly effective installation.

The "Alphengo" Reflecting Enlarging Lantern. Manufactured by W. C. Hughes, Brewster House, 82, Mortimer Road, London, N.

The apparatus consists of a metal chamber, the interior lighted by two lamps, which may be for oil, incandescent gas, electric light, or acetylene. At the back is a white screen or reflector, and at the front an arrangement for holding the negative to be enlarged. In front of the negative holder is a platform upon which can be placed one's ordinary landscape camera, and the whole then constitutes a

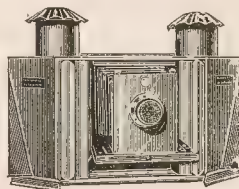


Fig. 1.

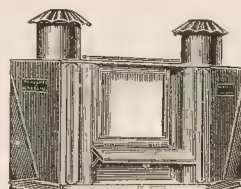


FIG. 2.

complete enlarging system. The illustrations, figs. 1 and 2, show a front view of the apparatus with and without the camera in position for making an enlargement. Enlarging, however, is not the only use to which the apparatus may be put. It is equally available for making lantern slides by reduction, or for copying prints by artificial illumination. For the former purpose the ordinary camera is used, but, of course, in its natural way, with the front of the lens toward the negative, the ordinary dark slide holding the lantern plate by means of a carrier. For copying, the print to be copied is adjusted in front of the back or reflector, and the lens of the camera pointed towards it through the front aperture, the negative carrier being

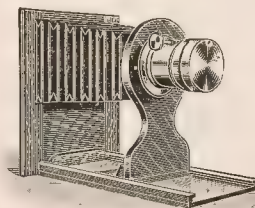


FIG. 3.

removed. Fig. 3 represents a bellows body attachment for fitting to the front when the apparatus is in use as an enlarger, instead of a camera when a camera is not available; it is not supplied as part of the apparatus, but the reasonable price at which it is offered and its convenience for carrying a large lens, will no doubt tempt many to include it in their purchases. For all the purposes we have enumerated the apparatus is undoubtedly efficient, and the use of reflected light for illumination in making enlargements or reductions from negatives instead of a condenser is recognised as being the

preferable system, when the quality of the results is important. We are very much surprised that an arrangement of the kind is not universally in use amongst professional photographers for copying prints by artificial light, especially in the dark days of winter.

"Porcelain" S.C.P. Slow Contact Paper. Manufactured by Wellington and Ward, Elstree, Herts.

Apart from the convenience of being able to dispense with dark room illumination for manipulatory purposes, development papers of the S.C.P. type are found to be superior to ordinary bromide papers for making contact prints, especially of a small size, in the better rendering of the shadow detail and the less liability to harsh results in the endeavours to secure sufficient depth in the lower tones. The new grade of S.C.P. termed "Porcelain," which Messrs. Wellington and Ward are placing on the market does not differ, we believe, as far as the sensitive material of the paper is concerned from the S.C.P. paper already in use; the improvement is in the surface of paper which is fairly described by the title given it. The paper is of very pure whiteness, and the character of the emulsion enables prints to be made on it with ease from reasonable good negatives having a peculiar richness in the deep shadows. The specimen prints which accompanied the sample of the paper sent us were of an attractive blue black tint and perfect in gradation. Choosing the amidol developer mixed according to the formula given in the instructions as an alternative to metol-hydrokinone we found not the slightest difficulty in making equally satisfactory prints from our own negatives.

Messrs. Wellington and Ward have also introduced a new grade of bromide paper marked "Xtra R." This is a paper very similar to Whatman rough drawing paper in character, and naturally more suitable for large sizes and broad effects than for the rendering of detail. As the emulsion with which it is coated is that usually employed for the Wellington and Ward bromide papers it is needless to say that the results obtainable on the new grade of paper when the subject is suitable leave nothing to be desired in quality, and it is not an unimportant feature of the paper that the price is the same as the ordinary grades.

Patent News.

The following applications for patents were made between January 1 and January 9, 1904:—

Shutters.—No. 30. "Improvements in or connected with photographic shutters." The Thornton-Pickard Manufacturing Company, Ltd., George Arthur Pickard and Ernest Vary Piercy.

Carbon Printing.—No. 47. "Improvements in the photographic process of pigment or carbon printing." Charles Sawyer.

Cameras.—No. 119. "Improvements in photographic cameras." (Date applied for under Patents Act, 1901, March 25, 1903, being date of application in United States.) Complete specification. Henry William Hales.

Shutters.—No. 267. "Improvements in or relating to shutters for photographic purposes." Arthur Lewis Adams.

Lighting Apparatus.—No. 284. "An improved lighting apparatus for photography." Complete specification. Joseph Leclerc.

Printing Frame.—No. 309. "Improvements in photographic printing frames." William Frederic Butcher.

Printing Frame.—No. 346. "Improved photographic printing frame." Card Edward Hoditz.

Cameras.—No. 426. "Improvements in photographic cameras." Arthur Lewis Adams.

Cameras.—No. 619. "Improvements in and relating to cameras." Henry James Spratt and George Albert Spratt.

Apparatus.—No. 627. "Improvements relating to photographic apparatus." (August Blanc, Switzerland.) Henry Harris Lake.

PHOTOGRAPHIC Convention of the United Kingdom.—There will be a meeting of the Council at Anderton's Hotel, Fleet Street, E.C., on Thursday, January 28th, at six o'clock, to receive a report from the local committee and to discuss the proposed arrangements for the meeting to be held in Derby in July next.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Jan.	Name of Society.	Subject.
22.....	Nottingham Camera Club.....	Amateur Photographer Prize The Valley of the Dore. Illu. Mr. W. Ward.
22.....	Plymouth Photo. Society	Royal Photographic Society's petition Prize Slides.
22.....	Aberdeen Photographic Assoc....	Exhibition of Members' Work.
23.....	Ashton-under-Lyne Photo. Soc.	Chess Match.
23.....	Oxford Camera Club	Exhibition of Royal Photo. Society Prize Slides.
25.....	Iford and District Photo. Soc.	Jumble Sale of Members' Photo. Odds and Ends. Mr. Ernest J. The Photography of Some Phenomena. Mr. Geo. H. man, M.D.
25.....	Camera Club	Lantern Slide Competition. Defects and their Remedies. Zoological.
25.....	Southampton Camera Club	Visit from Members of the graphic Section of the Palaeo- sophical Institution.
25.....	South London Photo. Society....	Velox and other Twilight Demonstrated. Mr. A. C. Ald Some Recent Improvements in Mr. Thos. May's.
26.....	Croydon Nat. His. & Sc. Soc.	Burnt-in Photographic Miniatures. P. Elliot.
26.....	Glasgow Southern Photo. Ass.	Lantern Evening. Photo News Slides.
27.....	Ashton-under-Lyne Photo. Soc.	Hand Camera Work. Mr. W. T. Competition Pictures on view.
27.....	Photographic Club	
27.....	Hull Photographic Society.....	
28.....	Watford Camera Club	
28.....	London & Prov. Photo. Assoc.	
28.....	Liverpool Amateur Photo. Assoc.	

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

JANUARY 14th.—Mr. T. K. Grant in the chair. Mr. A. Bedding exhibited two photographs of skeletons in what were evidently carefully built vaults. The photographs were made within the precincts of Old Bermondsey Abbey, and Mr. Bedding, having tried in vain to get any history of the Abbey, asked if anyone present could tell him where such information could be obtained.

Mr. Anthony exhibited a book of views printed in two colours (pink and blue), slightly out of register, together with an arrangement for viewing the same—viz., a spectacle containing a red and a green glass, which gave the appearance of relief. The idea, of course, is not new, but is interesting.

Mr. Haddon detailed a series of experiments he had made with the object of finding exactly the action of barium chloride when used as an eliminator of hypo, and said that barium thiosulphate, when formed, and decomposed sulphur would be formed in the process, rendering any chance of permanency nil.

CAMERA CLUB.

A "LADIES' night" at the Camera Club is usually regarded as a "dies non," so far as lecturing is concerned, and a programme of much lighter kind is generally provided upon these happy occasions. But this practice has been departed from lately, and Mr. W. Godfrey, the hon. secretary and prince of organisers, has succeeded in securing the co-operation of some lady lecturer. On the 11th inst. the choice fell upon Mrs. Watts-Hughes, who gave an interesting account and demonstration of her method of producing what she terms "voice figures."

Students of natural philosophy know well enough that sound waves have often been made to produce on suitable media geometrical patterns of very beautiful, and sometimes very complex, form. If we remember rightly, the first experiments of this kind were due to Christiaan Huyghens, the German philosopher, who showed a century ago that if a series of metal plates will arrange itself in definite positions, the nodal lines when the plates are vibrated by the application of a violin bow. There was a much later instrument by Professor Sedley Taylor, called the phoneidoscope, which consisted of a glass cup supported on a stand, with an attached tube which could be applied to the mouth. A soap film was drawn across the horizontal mouth of the cup, and when a note was sung into the tube the film was thrown into the most beautiful ripples, which, when seen by reflected light, were gorgeous both in form and colour.

Mrs. Watts-Hughes has made an instrument of almost identical pattern, but instead of using a soap film she stretches over the mouth of the cup a piece of indiarubber tissue, placing upon it a vibratile surface sand, lycopodium, or other dusty materials.

sings into the attached mouthpiece. As might be expected, she produces by this action various geometrical forms, just as Chladni a hundred years ago, but it is obvious that the instrument is much rougher than the delicate soap-film apparatus devised by Sedley Boscawen, and the effects are of a rougher description. Mrs. Hughes seemed to hold out the hope that a study of these figures and their production would be useful to singers, but we confess that we do not see how that can be the case. If she could affirm that Patti, Mrs. Reeves, Edward Lloyd, or some other of our leading vocalists had learned to sing that way, we might be inclined to agree with her, but to our notion singing into a tube, whatever pretty figures it may cause, could not possibly aid in good vocalisation.

Mrs. Hughes calls the instrument in its new form the eidophone, and as an introduction to its consideration she spoke of the general nature of musical vibrations, and pointed out how the number of impulses per second were doubled with the rise of each octave. She showed how individual ears differed in their ability to appreciate high sounds, and by a process of reasoning that was not too far-fetched connected the highest number of sound-vibrations with the vibrations of the ether which gives us light, and identified them with the heavens above, and the low sounds with the earth beneath. As she frankly admitted there were many present whose knowledge of light-undulations was greater than she could boast of, she did thenceforward content herself by dealing with sound.

A very large number of photographs of the "voice figures" formed by the vibrating disc of the eidophone were thrown upon the lantern screen, and many of them were of a very curious description, but a critical observer could not help wishing that the figures themselves reflected from the disc, and shown in actual movement, could have taken the place of many of these pictures. The variety of the figures was very great indeed—so great, in fact, that the lecturer's attempt to classify them was not at all successful. It would not be the serio is student much to divide them into daisy forms, ferns, trees, and so on. And in the production of some of the figures there was a little too much of the personal equation to make them any scientific value. Thus, in some of the most curious trumpet-like forms, which showed a most surprising stereoscopic effect on the screen, the method of procedure was this: A tube with an india-rubber disc at its end was drawn by hand over a sheet of glass which had been covered with liquid water-colour, while a note was steadily sung into the tube. The consequence was that the liquid film was thrown into ridges, and there is no kind of doubt in seeing that with one note an octave higher than a previous one those ridges must be half the distance apart.

We presume that the lantern slides shown were the actual plates on which these sound vibrations were originally recorded, and must admit that some of them had a weird fascination about them. But they do not give any definite information, as does the effect of a vibrating tuning-fork upon a smoked surface. They certainly suggest forms and groupings for the use of decorators, as the kaleidoscope will; but they do not appear to be of any scientific importance. A short musical programme followed the lecture, and everyone went home about 11 p.m.

On the following Wednesday there was a house dinner at the club to afford an opportunity of presenting to Mr. Wallace Godfrey a handsome silver tea service on his marriage. We will close this account of the proceedings by wishing him and his bride both health and happiness.

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION: EDINBURGH BRANCH.

JANUARY 8TH.—Present, Messrs. Yerbury, Bibbs, Heaven, Patrick, and Moffat. Mr. Yerbury occupied the chair. Letters of sympathy were received from Messrs. Crooke, Balmain, and Crawford. A paper was read from the family of the late Mr. Alexander Inglis, in which one sent by the hon. secretary, at the request of the association, condoling with them in their recent bereavement.

The following subjects were discussed:—

How do picture post-cards affect portrait photographs. All the members present took part in this discussion. It was unanimously decided that it was very undesirable to print picture post-cards in this way, as it would tend to hurt the ordinary portrait business.

The recovery of silver.

Mr. Balmain wrote that he had, for some time past, been trying to recover the silver from the old hypo baths, both negative and print fixing. He had come to the conclusion that the results were not worth the time and trouble expended upon them. The members present agreed with the above, but the majority were strongly in favour of saving the cuttings of the silver printing paper, and also precipitating the silver from the first washings of the prints before toning and fixing. Copies of the "Rottenotint portrait," reprinted from "Judy," were distributed. A vote of thanks to the chairman terminated the proceedings.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE following are extracts from the annual report:—The membership roll at the beginning of the year contained 326 names; the number of new members elected during the year amounted to 28, resignations, lapses, and deaths to 26, leaving 328 names in the books at the end of the year. The coffee meeting held on Wednesday afternoon, from 4 to 6 o'clock, continues to be well supported, and the lantern being available at these meetings, affords members an opportunity of judging the quality of their slides, besides proving an attraction to the meeting. The Thursday evening lectures and demonstrations have also been well attended, and your council cordially invite suggestions from members, with a view to rendering the meetings still more interesting.

The thanks of the society are due, and are hereby tendered to the ladies and gentlemen who have given lectures and demonstrations before the members or have otherwise given their services for the benefit of the society, to the judges in the annual competition, to Dr. J. W. Ellis, F.E.S., for book, "The Mediæval Fonts of the Hundred of West Derby and Wirral"; to Mr. F. K. Glazebrook, for book, "Cantor Lectures on Glass for Optical Instruments"; to Mr. E. Rimbault Dibdin for book, "Photographic Lenses" (a simple treatise); to Mrs. Paul Lange for two complete sets of lantern slides, illustrating the late Mr. Paul Lange's lectures, entitled "Southern Norway" and "Norway Revisited"; also for 27 books on photographic and other matters; to Mr. O. R. Green for 24 x 18 camera outfit with two lenses, tripod, etc.; also fourteen 24 x 18 negatives, and four framed carbon transparencies; to Mr. Fred Anyon for a bromide enlargement of the late Mr. Paul Lange; to Mr. Geo. E. Thompson, for a carbon print, entitled "Threshing Wheat"; to Mr. Edwin Kite, for an anti-mony ash tray; to the Rev. H. H. Williams, for six lantern slides of American scenery; to Mr. Henry Lupton, for three books, "Where to go for a Holiday," "The Best Cruise on the Broads and Norway Tour."

The council have to record, with deep regret, the death of two members during the year—viz., Mr. Paul Lange, elected 1885, president in 1890, 1891, and 1899; and Mr. Joseph Earp, elected 1883, and hon. treasurer from 1887 to 1890. In response to the wish of a number of members, a fund has been opened with the object of raising a permanent memorial of the late Mr. Lange, in recognition of the valuable services rendered by him to the association, of which he was so zealous a member. The memorial is to take the form of a plaque, to be offered in competition annually (or as often as the interest accruing on the invested fund will allow) to members of the association only. The sum of £62 4s. 6d. has already been promised and subscribed, and the council will be pleased to receive further contributions before finally closing the fund.

CROYDON CAMERA CLUB.

JANUARY 13TH.—The annual meeting was held on this date, and for the first time in the history of the club a contest for the post of president took place, Mr. Hector Maclean and Mr. S. H. Wratten being both nominated for the position. The contest was in every sense a friendly one, but the personal popularity of Mr. Wratten made him a dangerous opponent, as the voting showed, Mr. Maclean being appointed president for the fourteenth year in succession, by a majority of eight votes.

From the draft report it appears that the club comprises 119 effective members, including 24 who have joined during the preceding twelve months. Owing to a deficit on the exhibition and to other causes, the cash balance is not so large as was formerly the case; but in all other respects its affairs appear to be in a flourishing condition. An attractive fixture list has been gone through, and is in contemplation, and the average attendance of members has been distinctly good. Messrs.

F. W. Hicks and W. H. Rogers retire from the council, and the vacancies thus caused will be filled up at an adjourned meeting convened for the purpose, and to consider other matters which could not be dealt with during the evening. Both these gentlemen have been invaluable members of the council, and a general wish was expressed that their retirement would be but temporary. Whilst the election of president was proceeding Mr. Packham occupied the chair.

RICHMOND CAMERA CLUB.

JANUARY 14.—A discussion took place on "Films versus Plates." It was opened by Mr. Cembrano, who remarked that in the early days of films he had tried a considerable number of makes, but his experience of them was unsatisfactory, and that now he confined himself to plates. Films have the great advantage of lightness, a very important consideration, especially for those who work large sizes, and they are free from the risk of breakage to which plates are subject, but the same emulsion which, when spread upon glass, would give great rapidity, becomes much slower when spread upon a celluloid or other film, so that they are not so well suited for quick exposures as plates. Another objection that he found in them is that after exposure they must be developed within a short time. In his experience they deteriorate very rapidly after exposure, and at the end of a few months become worthless; whereas, he had kept plates for a year or more after exposure, and found that they still developed up bright and clean. Nevertheless he had seen pictures at the Camera Club, taken in India, which, to his surprise, he found had been taken upon films developed in this country months after exposure. When he goes abroad he takes plates which he brings home for development, with the certainty that they will all be good, but he could not feel the same certainty with films, and he was convinced this is one of the reasons why films are not more generally used. With films all the advantages are before, and with plates after, development. Mr. Ardaseer mentioned that he had been informed by one maker that he had tested the speed of emulsions coated upon various substances, ranging from blotting paper to glass, and he had found that the speed depends upon the degree of hardness of the supporting medium.

SOUTHAMPTON CAMERA CLUB.

JANUARY 18TH.—Lecture and demonstration on the "Ozotype" process, by Mr. Thos. Manly. Mr. Manly explained and demonstrated the simplicity and utility of his process, in an extremely lucid manner, from the method of sensitising the paper to the production of the finished print, which is of a very artistic character, and is more simple than the carbon process, inasmuch that no double transfer is required, and the undeveloped prints will keep for a longer period, which is an advantage. The method of printing is very similar to that of platinotype, and Mr. Manly claims that it has no superior in the market as regards permanency.

BOWES PARK AND DISTRICT PHOTOGRAPHIC SOCIETY.

JANUARY 18TH.—First annual meeting. The report and balance-sheet was submitted and adopted, the financial position of the Society being very satisfactory. The medals and certificates awarded by the judges at the exhibition held on the 4th and 5th inst. were presented by the president, who also, on behalf of the members, presented to the hon. secretary as a token of esteem a handsome silver-mounted oak inkstand. The following gentlemen were elected officers and council for the year 1904:—President, Mr. W. T. P. Cunningham; vice president, Mr. A. J. Craston; hon. treasurer, Mr. A. Bird; hon. secretary, Mr. A. Kernon; hon. assist.-secretary, Mr. F. Slater; hon. librarian, Mr. C. S. Carr. Council: Messrs. H. C. Bird; R. Core Gardner, C.P.A.; A. F. Hawes; H. C. Hornsey; A. G. Johnson; T. B. Read; and H. Young.

'GOLDSMITHS' INSTITUTE PHOTOGRAPHIC SOCIETY.

JANUARY 5TH.—With a view to giving a practical proof of the capabilities of "Griffin's Folding Enlarger," Mr. A. W. Green gave a demonstration of "Enlarging at Home." After indicating the great artistic value of the enlarged print when carefully executed, and briefly outlining some of the conditions which are essential to its successful production, among which he included the use of the new "Art Velox," with its lustrous surface and wide gradations, the demonstrator gave point to his remarks by a practical exposition of "the faith that was in him" in the shape of an excellent 10 by 8

bromide print which he made with Messrs. Griffin's Series "enlarger and incandescent gas attachment, in about 15 minutes." He also explained the commencement of exposure to developed print. He also explained the working of the three grades of enlarging apparatus which, marketed by his firm, viz., the Series "A," which is retailed at a price within the limits of the slimmest purse, the Series "B," somewhat superior form with more convenient attachments, and lastly, the Series "C," which is not only made with first-class materials and workmanship, but combines the "fixed focus" feature of the two previous patterns with a number of additional advantages, such as adjustable plate and lantern slide holder, automatic focus gear, and rack and pinion. This is really an enlarging, reducing, and lantern slide-making camera.

ULSTER AMATEUR PHOTOGRAPHIC SOCIETY.

JANUARY 11TH.—Annual meeting, Mr. David Elliott, B.A., in the chair.

The annual report was read, and stated—"The president and committee, in presenting their annual report at the close of the nineteenth year of the society, have again the pleasure of announcing a satisfactory year's work. The members on the books at the beginning of year numbered 86. There were 9 new members elected during year; 13 lapses, resignations, etc., leaving a total membership at end of the year of 82. The committee have to record, with deep regret the death of one member, Mr. E. Bingham, for many years a prominent member of the committee. The general attendance of members friends has been very encouraging, and now that the society has well-fitted dark-room, easy of access (being on the ground floor), committee trust that same will be well availed of, and lead to increased membership. Your hon. secretary has been in correspondence with Mr. Liller, secretary of the Hotels and Tourist Association Ireland, re having dark rooms in hotels for the benefit of amateur photographers. Letters have also been received from the Registrar of the Royal Dublin Society, and the secretary of the Ulster Agricultural Association, Ireland, stating that amateurs have permission to photograph at shows of their societies. Through the kindness of Mr. Struver a medal was presented for competition among members, and your society had the honour of receiving a gold medal from the Lord Mayor of our city. It will also be a pleasure to the members to notice that of them, Sir Otto Jaffe, has been nominated as Lord Mayor for ensuing year."

The report was adopted.

The following were elected for the session 1904-5: President, Dr. Elliott, B.A.; committee, Miss E. Haslett, Miss W. Haslett, S. Allworthy, M.A., M.D.; Major-General Bland, R.E.; William Leary, J. W. Storey, B.A.; H. Struver; S. Clugston; hon. treasurer, J. Campbell Carson; hon. lanternist, C. Mitford Martin; hon. librarian, C. Mitford Martin; hon. secretary, Thomas N. Murray.

KENT AND LACEY, LIMITED.—This company has been registered with a capital of £10,000 in £1 shares, to acquire the business of Lyd Sawyer, Limited, of Singleton House, Northumberland Street, Newcastle-on-Tyne, and of Kent and Lacey, of 46, James Street, Harrogate, with a view thereto to adopt an agreement between Stainer (receiver of Lyd Sawyer, Limited), of the first part, W. Kent and S. Lacey of the second part, and F. G. Lundi (for this company) of the third part, and to carry on the business of photographic artists, photographic process, and general printing, photo-lithographers, art dealers, etc. No initial public issue.

At the technical meeting of the Royal Photographic Society Great Britain on Tuesday, January 26th, 1904, at 8 p.m., Mr. J. Sterry will read a paper entitled "The Separation of Development into Primary and Secondary Actions. Consequent Effect upon Correct Rendering of Light Values and Theory of the Latent Image." The following is the synopsis:—When a sensitive film is soaked between exposure and development with a solution antagonistic to developer, the gradation of the negative obtained is entirely altered, such alteration being largely dependent upon the strength of solution and the time of immersion. There is, however, a limit to action, the final result obtained being an entirely new scale, given under favourable conditions a closely correct gradation from the impression made to a point beyond the period of reversal shown in ordinary development.

Commercial & Legal Intelligence

Advertising for Pupils.—On Tuesday last, at Westminster Police W. Morris Crouch, otherwise Morris Beethoven, late of Ebury Imlico, was brought up in custody, on remand, charged with obtaining sums of money with intent to defraud. Ms. William Lewis, prosecuted for the Treasury, said the prisoner, who was a photographer, had advertised for pupils and assistants in a position to receive premiums and furnish deposits. The prisoner entered into agreement to undertake to make repayment of the deposits, but at the time his affairs were at the lowest pecuniary ebb, and there was no prospect that he would be in a position to meet his obligations. Alfred G. Cooper, of Richmond, said he paid the prisoner £50, and got into communication with him through an advertisement of an operator in a high-class London studio, with a view to a partnership. When the witness had deposited his money and entered upon his duties he found that there was no camera on the premises. Afterwards obtained, but no genuine business was done. The witness could not get his promised wages of two guineas a week, and was sent by the prisoner to collect the replies to many advertisements for pupils. The witness made repeated applications for the return of his deposit of £50, but could never obtain any portion of it. Robert C. Williamson, clerk, said that in September last he saw an advertisement in a daily newspaper. He had a conversation with the prisoner at Ebury Street. The prisoner said that he wanted some one to undertake clerical duties in connection with an employment agency, and that he must have a deposit of £50 as a guarantee of good faith. The witness consented to furnish this sum in two payments, and signed an agreement to act as the prisoner's secretary at a salary of £2 a week. The witness found his principal work was to answer advertisements in the photographic papers to solicit half-crowns "for register fees." He could not get his wages, and had never been able to get back one single penny of his £50 deposit. After some further evidence the prisoner was remanded.

Crystoleum Painting as a "Home Occupation."—So many of our ladies have been lamenting their lack of occupation and wishing for some home work, either for profit or amusement, that we thought we might suggest something which will be both profitable and amusing, but which, like everything else, will require application. Many ladies take up a piece of work, commence it, and then think it is too tedious, and throw it aside. Then they grow discontented because they have nothing to do, whereas if they would make a point of using up their old stores they would find many things to do. This kind of back and finishing up commenced work ought really to have been done before the commencement of a new year, and we would advise our young friends never to let the year close without completing all the work they have commenced since the beginning of the year. The work we have in mind is crystoleum painting, and would be pleasanter to ourselves and give more joy to our friends than being able to paint their portrait? Many girls will think, Oh! I have never learnt to paint. We can easily dispose of that objection by saying that it does not matter in the least whether you are able to paint or not. All that is required is a good photograph of a rather light tint, printed upon albuminised paper. Make a note of the colour of the hair, the eyes, and the complexion, and failure is impossible. Of course this, like everything else, requires a little knowledge. This knowledge may be obtained from Mrs. Alston, who has made a speciality of crystoleum-painting, and produced pictures just like beautiful painted miniatures. Mrs. Alston has had several competitions for the best specimens of crystoleum painting. Following on the success of last year, a competition was opened, which commenced October, 1903, and closes May 24th. There is no entrance fee in connection with this competition, and prizes are to be given in prizes for the best specimens. Surely, prizes are worth competing for, besides obtaining knowledge of this beautiful work. The materials required are neither expensive nor expensive. The complete outfit may be obtained from Mrs. Alston has hitherto been highly successful in teaching crystoleum painting by correspondence. If a guinea outfit is in mind, tuition is given free, and certainly this offer should be of advantage to you. You at once place yourself under the guidance of an experienced artist. A diploma is awarded for proficiency, enables pupils to become teachers, or to sell their pictures, if they wish, of increasing their incomes. As to the method itself, it is so simple and clear that anyone can master it.—"The Lady's

THE Photographic Association, Ltd.—A statutory meeting of the creditors of the above named company, against which a winding-up order had been obtained was held on Tuesday at the Board of Trade offices, Lincoln's Inn, W.C., under the presidency of Mr. Winearls, Official Receiver. The Official Receiver stated that the order for the winding-up of the company was made on December 1st. A statement of affairs had been filed by Captain Richardson, but owing to the incomplete state of the books he had been unable to prepare a proper deficiency account. There were forty-three unsecured creditors, and the total amount owing to them was £1,288 12s. 9d., loan debenture bonds £5,936. The assets were returned as follows:—Stock-in-trade, trade fixtures, etc., £200; goodwill valued at £250; book debts, good, doubtful and bad, £3,000, estimated to produce £1,500. Total assets £1,950. That amount was insufficient to the extent of nearly £4,000 to meet the debenture claims, so that there would probably be nothing for the unsecured creditors. The deficiency as regards shareholders was returned at £18,632. The Official Receiver continuing, said the company was formed on February 16th, 1899, with a nominal capital of £25,000 in £1 shares, and was formed to carry into effect a provisional agreement dated February 1st, 1899, to carry on a photographic club, and the business of dealers in photo requisites. The business was originally started by Mr. Le Couteur in 1896 at 18, Brook Street, Hanover Square, W. When the concern was sold to the company it was owned by Mr. Le Couteur and Captain Connop. Captain Connop had put £4,000 into the business. A short time prior to the formation of the company Mr. Cobbold put £1,250 into the concern for which he received a bill of sale as security. There had been various changes in the directorate, but at the date of the winding-up the directors were Captain Connop, Captain Richardson, and Mr. Wilson Burgess. Mr. Burgess said that was not correct, as he did not act as a director after January, 1903, when he was practically kicked out. (Laughter.) The property that was to be acquired under the original agreement by the company consisted of the goodwill, copyright in films, benefit of agencies and contracts, and interest in the leasehold premises at Brook Street, Hanover Square, and also certain freehold and leasehold premises at Hendon, the consideration being £20,000 in shares and £5,000 in cash. By a subsequent agreement entered into in March 1899 the agreement was adopted with the following modification. The property at Hendon was not included, and the payment of the purchase money was to be satisfied by the allotment of £20,000 in fully paid shares, of which £4,750 was to be surrendered in exchange for £1,250 first mortgage debenture shares, and £3,500 second mortgage debenture shares of £1 shares, the same to be secured on the whole of the assets of the company, and to rank *pari passu* with the ordinary shares in respect of dividend. No prospectus was issued in connection with the issue of the ordinary shares. The £20,000 worth of shares were allotted in July, 1899, and in addition to those shares £1,852 shares had been issued for cash, making a total of £21,852 shares. It would be a question for the liquidator to consider as to whether those £1,852 shares had been paid for. According to the directors' minute book the £4,750 shares were surrendered by Mr. Couteur, and were exchanged for mortgage debenture shares. Those debentures were issued to various persons, and a question would arise as to their legality. One of the directors Colonel Josiah Harris, who was appointed in 1902, complained that those debentures were issued to various people at board meetings to which he was not asked to attend, and a question would arise as to whether those board meetings were properly convened. The secretary of the company had sworn an affidavit in which he alleged that he was instructed not to write to Colonel Josiah Harris by one of the other directors. Mr. Burgess said he instructed the secretary not to write to Colonel Josiah Harris on the ground that at the time Colonel Harris was not a shareholder in the company, and therefore could not properly act as a director. The Official Receiver said the company was registered under "Table A," and it would be a question as to whether a director could not act without being a shareholder. Colonel Harris afterwards became a shareholder in the company, but not in 1902. In April 1903 Mr. Hayes, of Coleman Street, was appointed Receiver by the Court of Chancery, and he had sold the assets of the company with the exception of the book debts for £450. The purchaser was now in possession of the company's property. A debenture holder's action was pending and it would be necessary to test the validity of the debentures in

that action. It would also be necessary to draw the attention of the Court to the fact that Colonel Josiah Harris was not asked to be present at the board meetings at which those debentures were created. Colonel Harris said he objected most strongly to those debentures being granted, because he considered that it was taking away the assets from the creditors, with the result that the creditors would receive nothing. After a long discussion Colonel Harris moved and Mr. Chapman seconded that the matter be left in the hands of the Official Receiver, and this proposition was carried unanimously. At the shareholders' meeting a similar resolution was passed.

Correspondence.

* * Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.

* * We do not undertake responsibility for the opinions expressed by our correspondents.

PHOTOGRAPHIC WASHING.

To the Editors.

Gentlemen,—I feel reluctant to again trespass on your valuable space, but I must respectfully point out the serious compositor's error in the chemical equation of my last letter. The formula for sodium thiosulphate is $\text{Na}_2\text{S}_2\text{O}_3$, not as published NaS_2O_3 , which is as serious an error as the chemical equation I endeavoured to correct. The printed construction of the entire equation itself, with the water of crystallisation separate from the chemical molecule to which it attaches, is open to criticism. Another correspondent has the chemical formula for barium hyposulphite misquoted as $\text{Ba}_2\text{S}_2\text{O}_3$, instead of BaS_2O_3 . H.O.

—Thanking you for past favours, I am, gentlemen, yours truly,

January 18th, 1904.

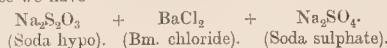
FRED W. EDWARDS.

To the Editors.

Gentlemen,—Mr. Noton's letter, in your issue of 1st January, contains two errors. His $\text{Ba}_2(\text{S}_2\text{O}_3)$ should be BaS_2O_3 , and this salt is not barium sulphate, but barium hyposulphite. Soda hypo + barium chloride produce common salt and barium hypo.

"K," in your issue of January 15, says that barium hypo is "perfectly soluble in water." Mr. Edwards, in the same issue, says that it is "practically insoluble." Which is right? Will you kindly say?

If barium hypo is perfectly soluble I wonder, as "K." wonders, whence Mr. Noton's precipitate is derived, unless (as "K." suspects) his fixing bath contains sodium sulphite, which has turned to sulphate. In that case we have



If the two last of these salts interchange their molecules, we at once get Mr. Noton's insoluble barium sulphate and common salt, but unluckily the soda hypo, which was to be eliminated, remains instead.

If we use no sulphite in the bath, but simply get from the soda hypo + barium chloride, a perfectly soluble barium hypo + common salt, there can be no precipitate. But if the barium hypo can be perceptibly more easily and perfectly and certainly washed out than is the case with soda hypo, we have a very valuable improvement by Mr. Noton's method; only we must put no sulphate in the fixing bath, for fear of its combining as a sulphate with barium chloride.

I, therefore, have to ask you a further question. If barium hypo is perfectly soluble, can it be more quickly, perfectly, and certainly washed out than soda hypo?—I am, gentlemen, yours obediently

January 16th, 1904.

TREVOR GRANT.

[We shall deal with this subject next week.—Eds. B.J.P.]

THE IRIS DIAPHRAGM.

To the Editors.

Gentlemen,—With reference to your last leaderette, p. 42-43, I beg to observe that I was able to trace—in my theory and history, p. 97—the iris diaphragm back to the forties. Objectives containing

"une pupille artificielle" were sold by Ch. Chevalier, and Niepce is reported to have used such a device with his own. In the meantime I have found a notice of this idea at a still date. A short article, "The Iris Diaphragm, an Old Invention," Journ. Roy. Microscop. Soc., 1880, 3, 890—is quoted as taken from Nicholson's Journal, 1804 (exactly a hundred years ago). I have, ever, neither in a position to guarantee the correctness of the invention, nor to ascertain whether the idea of the iris diaphragm worked out practically at that time. But perhaps one of your readers will look up the source cited.—Yours truly,

MORITZ VON F.

Jena. January 16th, 1904.

ORTHOCHROMATIC PHOTOGRAPHY.

To the Editors.

Gentlemen,—In reply to the rather impatient and somewhat impolite letter of Mr. Henry Oscar Klein, we beg to state that we have no desire to be drawn into any discussion about orthochromatic emulsion, since this can only resolve itself into an advertisement for Albert's emulsion, which is the only make on the English market that is actively pushed.

With regard to the announcement in your pages advising us to read our paper, we are, of course, not responsible for it. We have not the least idea who is. Mr. Klein's letter may perhaps have the clue. Can it be that he himself has had it inserted in your paper to serve as an introduction to his letter, and to commence a discussion for collodion emulsion?

On the other hand, perhaps it is due to ourselves that we have not entirely adhered to every statement made in our paper. We have compared orthochromatic plates, the result of no test has been published, except it had been confirmed by repetition. Repetitions being carried out over and over again in the collodion emulsion. With regard to the speed numbers, we did say "Account must be taken in all estimates of relative plate speed of the light used to test; . . . our test light was a W. mantle gas lamp,"* and they were only ascertained as a guide to make the photographic effect of our spectrum exposures nearly as possible actually correspond, so that one could say with absolute fairness the true relative sensitiveness of any plate or film. Supposing that our speed number for the C sensitised emulsion was higher, then we should have had to give a corresponding less exposure in the spectrum camera, and therefore its sensitivity to colour would not appear so good as it does. Mr. Klein has it both ways.

No one with a grain of common sense would expect to find the relative speeds of exposures to incandescent gas light would be the same as to the electric arc or daylight. New emulsion is given with the electric arc, and if it is desired to know the speed for arc light, then arc light must be used for the test. If ratios are required for three-colour work, then the filters must be used as well. It will be seen from this that our speed numbers have no direct connection with ratios obtained in practical work when using the electric arc and colour filters. Nevertheless, that when using a white light, such as the electric arc, the C sensitised emulsion is equal in speed to the A sensitised emulsion, as at present, when both are used exactly as directed, is simply and no amount of reiteration, either by Mr. Klein or anyone else, can make it true. With arc light reflected from white paper, the speed ratio of A to C is as 5 to 9, the A being sensitised immediately before use, and the C sensitiser added three days previously, as Mr. Klein suggests. If the emulsion is used immediately after adding the C sensitiser, it is very much slower than this. In three-colour work it is, of course, possible to make the speed under white light of the C equal to that of the A, but in two ways, first, either by using a weak colour filter for the red record, which would not give correct colour rendering, or by using a green colour filter that would be unnecessarily deep. With filters used here, which, though much less expensive, we find more accurate than Mr. Klein's, we find the exposure for the

* The Photographic Journal, October, 1903, page 266.

least six times that necessary for the A, and extra exposure, is experience of every operator we have ever met; even Mr. Klein self admits to three or four times being necessary. The only of the exposures being equal is when carbons cored with parlar earth giving red light have been used. This, of course, is giving the conditions. Shortly after our paper was read, we received a letter, informing us that Mr. Klein did not agree with results. We replied that perhaps this was a pity, but a matter of indifference to us. However, we offered to repeat the tests before Klein if he liked, or to give him the opportunity of himself giving the tests under the same conditions, with the same emulsion sensitiser as we had been using. Needless to say he did not accept of this offer, but, instead—will it be believed?—he actually makes tests, not with the same light that we used, viz., incandescent gas, nor the electric arc, as is used in practical work, with incandescent electric light, a light so yellow as to be utterly invisible. Then these tests unfortunately prove too much, for each square of the Chapman Jones plate tester means half as an exposure again as the preceding one, then instead of the C-tised emulsion being only equal in speed to the A, it is eight times faster!

A long course of respectful admiration for, and reverent handling of this wonderful product, has apparently caused Mr. Klein to delude himself into the belief that it is perfection. But no emphasis of will make us, or anyone else practically using the stuff, believe in the kind, for its variations are positively heart-breaking. At the same time, we do not shut our eyes to its possibilities. The results here have done work with it which will bear comparison with that done anywhere; indeed, we have this year put forward a three-colour block, negatives made by emulsion, in the "Process Book," and we are not ashamed to show the original of this in the reproduction. On the other hand, we have never seen anything in three-colour published by Mr. Klein, excepting an attempt at a spectrum in last year's "Year Book," of which we are not the least proud, as showing the excellence of the emulsion. In conclusion, we must again repeat that we decline to be drawn into any discussion for the purpose of advertisement.—Yours faithfully,

A. J. NEWTON,
A. J. BULL.

London County Council School of Photo-Engraving
and Photography,

6, Bolt Court, Fleet Street, E.C.

January 18th, 1904.

OVER-PRODUCTIVENESS IN PHOTOGRAPHY.

To the Editors.

Gentlemen,—The article on "Over-productiveness in Photography" in your last issue is interesting, but like most of these articles I have in endeavouring to draw comparisons between the work of the painter and that of the photographer, to the detriment of the latter, a very important point is overlooked, or at any rate, disregarded, conveying a wrong impression to the general reader. In discussing the comparative merits of the two classes of workers, the painter is placed upon a pedestal occupied by such men as Turner, Millais, Leighton, etc., or at any rate, on such a lofty pedestal of superiority that he would never condescend to produce pictures alike, while the camera artists are referred to in such a way as to leave the impression that they are all of the "touch and go" class. This style of argument is misleading, because we are always hearing about a large class of beginners on the one side, and never hear anything about the tyros in the other class. One might imagine that there were no failures by students of drawing or painting; that they never committed glaring errors in composition, produced no artistic daubs, in fact, that they jumped straight into the elementary stage altogether. A few moments reflection on the matter will be useful and instructive. Why, for instance, do we hear so much of the Board School dabbler with paper and pencil, chalk and slate; or go a step or two higher, and visit the exhibitions of drawing and painting at the Technical schools, and the private schools in the country where these subjects are taught. Why, a large proportion of them would not find one purchaser, much less a second,

so that there would be no need to duplicate copies! Let us start fair in this controversy, and pit the thousands of elementary school daubers with pencil and brush against the equally elementary snapshotters who abound all over the country; while, as for the high-class workers, there is no more need for the Horsley Hinton, the Page Crofts, the Percy Lewises, the Craig Annans, etc., to break their negatives after the first production than there is for the first-class artists on canvas to break their brushes and easels. Good workers are scarce in each branch of art, and they will all want their brushes and negatives. Mr. Lockett, or anyone else, must not too readily assume that painters who have made a name in the world would not, or do not, produce copies of their famous pictures; it depends to a great extent upon the demand. An admirer of any particular painter who wishes to possess one of his works for mural decoration, would in nine cases out of ten, if there were not one already in the studio to his liking, commission the artist to paint one for him, merely specifying the class of subject; and so with the pictorial worker with the camera. The admirer of Hinton's works, for instance, desiring to purchase, would not probably be particular whether it were "Tide Bearer," or "Melton Meadows," or "Requiem," or a new one altogether, and the amount of brains and talent exercised in the production of a new or an old photo would not materially differ, for it is a great mistake to assume that extra copies of any particular success in pictorial photography can be turned out in a mechanical manner, merely because the worker may possess the negative.

In conclusion, then, to those who are about to take Mr. Lockett's advice and have a general smash-up, I would reiterate Punch's warning, "Don't."—Yours faithfully,

Park Close Studio, Corsham, Wilts.,
January 18th, 1904.

HERBERT SPACKMAN.

Answers to Correspondents.

* * * All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.

* * * Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.

* * * Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & Co, 24, Wellington-street, Strand, London, W.C.

* * * For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

J. C. H. BALMAIN, 69, Shandwick Place, Edinburgh. Two Photographs of the "Cinderella" Pantomime at the Theatre Royal, Edinburgh.
Cooper & Clift, Market Place, Boston. Photograph of St. Botolph's Church, Boston.
A. Webster, Bainton, Stamford. Photograph of "The Haycock" and Street, Photograph of the Church and Bridge—both at Wansford.

T. H. COPE.—If you communicate with Mr. T. E. Freshwater, 3, Fleet Street, London, E.C., he will probably be able to advise you.

SPOTS ON PRINTS.—F. NEWELL.—Particles of iron in the washing waters are a well-known cause of spots on prints. Attention has frequently been called to the fact in our columns during the past few months, though we thank you for your letter.

MANDARIN G'EXTRA.—W. BEVINS says: "I want to get some of the orange dye Mr. W. S. Davenport uses for his dark-room lamp light filter, as described in the 'Almanac,' and cannot meet with it at several places I have tried in London. You could not tell me, I suppose?" In reply: The Berlin firm have an agency in London. The address is 20, Eastcheap, E.C.

MOUNTING ENLARGEMENT.—J. H. says: "I should esteem it a favour if you would inform me the best way to mount a bromide enlargement 5 ft. by 2½ ft.? It would, of course, be put on a wooden stretcher, but should canvas first be fixed on stretcher, and then the print mounted on the canvas?" In reply: The canvas, or linen, should first be strained on the stretcher, and the picture mounted afterwards.

TITLE OF STUDIO.—G. E. C. says: "I would be glad if you would answer a question I am in doubt about. I am opening a studio, and I wish to call that studio Sandhurst Studio, because I am close to the Royal Sandhurst College, and because most of my work is with the college. Can I register that name, Sandhurst Studio?" In reply: You can call the studio by the name you propose, but you cannot register it under the Trade Marks Act.

STAINED NEGATIVES.—PRINTER writes: "Having spoilt several negatives by getting them silver stained in the rush for Christmas work, I should feel greatly obliged if you could recommend any way of removing the stain from varnished and unvarnished negatives." In reply: Some stains cannot be removed, while others can. Try a long immersion (some hours) in a new solution of hypo-sulphite of soda. Of course, the varnish must first be removed from the negatives which are varnished.

THE DAGUERRETYPE PROCESS.—A. OXLADE says: "Would you kindly give the working formulae for the 'Daguerreotype Process'?" Can the materials be obtained at present date?" In reply: It would take up far more space than we can afford in this column to give the details required for working this obsolete process, hence we must refer our correspondent to some of the earliest works on photography. We do not think it is possible that the silvered plates are to be had now, or the apparatus necessary for working the process.

COPYRIGHT QUERY.—COPYRIGHT says: "An assistant is sent to take photograph in House of Lords. The photo is copyrighted and sold. Afterwards I find that the assistant took two photographs without moving his camera. He keeps one negative, which is exactly similar to the photo I copyrighted. Does his copyright hold good by law? I cannot prove he used my dry plate, although I know he did."—In reply: As the assistant was paid by you for doing the work, he has no copyright in the picture. It really belongs to you.

DURATION OF COPYRIGHT.—H. L. MOREL asks: "Is it necessary to renew the registration, or does the original stand good, and for how long, and if I ought to be in possession of a paper showing that the above is entered at Stationers' Hall?" In reply: No renewal fee is required. The copyright lasts during the life of the author, and for seven years after his death. A copy of the entry in the register may be obtained at Stationers' Hall, E.C., by giving the date of registration, etc. The fee for a certificate is 5s. for each entry.

COPPER TONING—FILM.—PHOTOPHIL writes: "(1) A reference to a description of 'Mr. Ferguson's Copper Toning Process,' mentioned in the BRITISH JOURNAL OF PHOTOGRAPHY, December 4th, 1903, page 965, second column, sixth line, would much oblige. (2) Is there not some substitute for transparent celluloid film which is impervious to water, and perhaps also less inflammable?" In reply: (1) We answered this query for you in our issue for January 8th. (2) There is the "Cristoid" film, which is insoluble in water, but is not impervious to it. This film is not inflammable.

STUDIO QUERY.—S. L. FISHER says: "I propose building a new studio in a certain town. Would you kindly let me know if you are acquainted with a successful single slant light, where the studio is only 17 ft. wide? Personally, I think the double slant more suitable for a studio 33 ft. by 17 ft., but would esteem the favour of your valued opinion." In reply: There are very many studios with a single slant being successfully worked that are much less than 17 ft. wide. It is quite a matter of opinion as to which is preferable, the single or the double slant.

LENS QUERY.—J. G. HACKETT asks: "Will you kindly answer the following: (1) Zeiss convertible anastigmat, series VIIa, 23½

focus, f 12.5. (2) Cooke lens, series V., focus 18 in., f 8. So ining that (2) is working with a larger diaphragm and so much nearer the plate than (1), is it quicker, and to what extent? In reply: If the lenses are worked with their full aperture the No. 2 will be much the quicker. It will require less than half the exposure of the other. But if both lenses be stopped down to similar ratios, one will be practically as quick as the other.

ARISTOTYPE PAPER.—ARISTO writes: "Can you tell me who are the present agents for the American 'Aristo' paper in this country? I heard some time ago that one of their demonstrators paid a visit to Peterborough, but being situated somewhat away from the centre, he missed me altogether, and that is the very paper I have been interested in. So much so, in fact, that I sent to America three years ago to try and obtain it, and they replied saying they were sorry they could not send me samples and prices as requested, but their business relations with this country at that time were such that they were not in a position to handle the trade." In reply: The paper may probably be obtained of Messrs. Kodak, Limited, 43, Clerkenwell Road, London, E.C.

PHOTOGRAPHY IN AFRICA.—F. R. KEMPE asks: "Will you kindly give me your advice with regard to photography in South Africa? I understand studio work, and have been twelve months in a photographic studio. I want to be advised regarding going to Africa and starting a business. I thought of advertising for a partner who would come out with me. I want a man who understands retouching and finishing, as I am not much good at that branch, but thoroughly understand the studio work, etc." In reply: Personally, we know nothing about the present state of the photographic business in Africa except that there are some very excellent photographers there. We should think your best way would be to advertise for a partner you desire. We do not answer correspondents by post.

COPYING.—J. H. BALDOCK writes: "A friend has asked me to copy a very old parchment deed. The parchment is yellowed and more than half the writing has disappeared, leaving a kind of semi-transparent effect on the parchment, which has been eaten into numerous holes, and in places a good-sized piece has gone altogether. What I have done is this: I have tried to photograph it (vertically) lying on a flat board; lying on glass with a silvered glass reflector below it; and between two sheets of glass at a window, treating it as a transparency. I have tried slow plates and chromatic plates, also various forms of developers, and, of course, varying exposures. The results are unsatisfactory, as you will see by the enclosed print. Can you suggest any other procedure? If so, I shall be much obliged." In reply: Our correspondent has a very difficult job on hand, and we are afraid we cannot help him without seeing the deed. We might suggest, however, if the document is not too large, that a trial be made by contact printing.

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dye. If more light still be desired the focus may be shortened by adding highly refractive salts to the water. To those who desire an instrument for the expression of their artistic conceptions with more restrained alteration he recommends the use of two opera glass objectives of largest possible relative aperture. Mount them in a short tube with their flat surfaces turned to each other. This lens will be rather slower than the water lens, but although "not quite free from spherical, chromatic and astigmatic correction," should surpass the improved type of the Grün lens (fig. 130, in Eder's Jahrbuch, 1902) for astigmatic correction.

* * *

Lens v. Plate.

The article to which we have referred in the previous paragraph may, however, deserve consideration from a more serious point of view. If the optician has done much during the past twenty years to improve the quality of the photographer's work the plate maker has done more. The optician's task has been of much greater difficulty, which must not be overlooked in making this comparison, yet the plate maker has reaped the greater reward from the extension of the use of photography during that period. With the plates of extreme sensitiveness placed on the market during the past two years it may well be asked, what is the use of these lenses of exceptional aperture? For certain purposes, such as copying, enlarging, etc., they are of great value, but for general use $f/3$ is rarely wanted. We think the optician is well advised to subordinate rapidity to perfect definition. The opticians' task to increase the rapidity of a lens is an unattractive one, considered financially. It demands increased labour for a relatively smaller market, and he may well ask himself if the game is worth the candle. On the other hand, the plate maker who can produce a more sensitive emulsion, combined with other indispensable qualities, may look forward to a vast extension of business. The optician's market is suggestive of the returns from agriculture. To increase the rapidity of a lens the profit is smaller in comparison with the cost. So in farming, increase in quantity or quality of return can only be got at higher relative outlay.

* * *

A New Development Theory.

Dr. R. E. Liesegang has recently published a paper in which he states that for some time past he has worked upon the hypotheses, that chloride of silver, without free silver nitrate, is occasionally reduced to sub-chloride only by the action of a very dilute solution of hydroquinone, soda, and sulphite, with a considerable addition of potassium bromide. If metol be used, however, the chloride is immediately reduced to the metallic state. The coloured image in the fixing bath is assumed to undergo the following change. The hyposulphite of silver converts the subchloride to

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** The Editor can only be seen by appointment.
** We do not undertake to answer letters by post.

EX CATHEDRA.

More light. Herr Karl Martin, of Rathenow, contributes an article to the "Photographische Mitteilungen," which may be looked upon as the utterance of an optician in his less serious moments. He reminds photographers that for more than fifty years they have had lenses with an aperture of $f/3$. The only improvement made in half a century has been the anastigmatic flattening of the field, which in the olden types is but imperfectly realised. The Planar, however, shows that this is possible with an aperture scarcely inferior to that of Petzval's lens. May not the question be asked, if the rapidity such lenses imply may not be taken as the practical limit, every step in advance becomes increasingly difficult? The Grün lens, for instance, appears to be of no value for obtaining fine definition at its abnormal aperture, since fluctuation of temperature affect the focus. Emil von Högh met with the same difficulty in 1895 or 1896, when calculating a lens in which alcohol was used. The instrument acquired a name which might have jeopardised the photographer, who used it after closing time. Herr Martin makes suggestions for the construction of lenses of exceptional rapidity, which may be of some value to those who are infatuated with emotional representations of the external world by diffused impressions upon a sensitive surface. The flask filled with water used by the dabbler to concentrate the light upon his work may be corrected for photographic use by adding a suitable violet

metal and chloride, and the latter is dissolved. The yellow, red, or otherwise coloured image of the finished print is a consequence of the minute size of the particles of silver. The subchloride predominates in proportion to the inactivity of the developer, that is to say, according to the quantity of water and bromide present or to the absence of alkali. To these causes may be added, as similar in effect, the restriction of the period of development, and the prolongation of the exposure. According to circumstances the image may be either yellow or red, without the slightest admixture of black. Prolongation of development or higher concentration of the solution will be productive of more or less metallic silver. In the fixing bath the loss of colour is greater in proportion to the yellowness of the image, but a black tone is not affected. The following experiment is offered as further confirmation. A yellowish red print obtained from gelatino-chloride, and a pure black print from gelatine bromide, were bleached with a solution of bromide of copper and washed. The prints were then exposed to daylight and redeveloped. Metol-soda immediately gave a black image, but hydroquinone, soda and sulphite with plenty of bromide, produced in both cases a coloured image. The original colour of the image could easily be renewed with the chloride paper, and the bromide paper gave a pleasing brown tone. Both the yellow and red prints again lost strength in the fixing bath, but the green and black did not. Dr. Liesegang does not hold that the theory is proved, and offers certain objections to it, but he holds to it as a working hypothesis.

* * *

In the Long Ago.

The extracts from the *Liverpool Photographic Journal*, the organ of the Liverpool Photographic Society (now the BRITISH JOURNAL OF PHOTOGRAPHY) of fifty years ago, which we gave our readers last week, and the week before, are interesting as showing the state of photography fifty years ago. From these extracts it will be seen that the art was far more advanced than many present day workers may surmise. For example, specimens of photo-lithography were shown at one of the meetings, as were also some photographic engravings on steel plates; so that neither photo-lithography nor photogravure is quite such a modern invention as many may imagine. One of the members of the Society showed a paper which was to be printed by gaslight, and yielded an excellent colour, so that gaslight papers are not altogether a modern idea. Another member of the Society endeavoured to persuade his fellow members to confine themselves to facts, without attempting to compete with the fine arts; while at the same time he laid down those principles of chiar-oscuro which are recognised as the essentials in works of fine arts for the benefit of those inclined to reject his advice as to the limits of photography. Here it will be seen that the limit of photography, as a fine art, was fully recognised half a century ago the same as it is to-day. The question was a vexed one then and it is still. At one of the meetings a member related that he had discovered that a weak negative by printing through blue glass would produce very effective prints. This is a method very generally followed now. We merely refer to these reprints of the old Journal to point out that our grand parents were not quite so benighted in photography, and its application, as many modern workers may have surmised. One thing that is noteworthy in connection with this old Society is the many new or improved apparatuses that were from time to time exhibited, and that not one of them formed the subject of a patent. One is almost inclined to speculate if that would be the case now-a-days when the most trivial thing seems to form the subject of a patent if its inventor thinks there is any novelty in it.

Micro-planar v. Ordinary Micro-objectives.

The controversy in our columns on this subject is one of considerable interest to those who give attention to the photographing of microscopic objects. The illustrations that have appeared have shown that in some cases one form of lens has yielded a better result than the other and in others the contrary. Now, it strikes us that, in comparing any two forms of lenses for any particular work, the excellence of the individual instruments, pitted against each other, is an important factor in the case, and this must not be overlooked. If the instruments are by makers of high repute they may be relied upon as being good, but some may be better in some respects than others, even if they are by the same maker. No high-class optician will let an instrument out of his place that is not up to his standard, but it does not follow that some he may issue are not something above that. Therefore, if a lens by a given maker of one form possessing superexcellence be compared with another of, say, normal excellence and of a different type, the comparison will not be convincing as to which type is the best. We know some old microscopists who pride themselves that they possess the finest "tenth" or "sixteenth" that A. or B. ever turned out, and they would not change it for any other by the same maker, and, possibly, they have ground for their opinion. What has been said with regard to microscopic objectives applies equally to photographic lenses. All lenses that are issued to the leading English opticians are carefully examined before they are sent out, and unless they pass a certain standard of excellence they are returned to the workshop for alteration, if not actually rejected entirely. But if the instrument should happen to exceed this standard of general excellence no alteration is made in it to reduce it to what we will term the standard of quality. Hence it follows that all the lenses issued by the first English makers—and they are but few—may be relied upon, yet some at times may prove in some respects slightly better than others; and so it is with microscopic objectives, and possibly to a greater extent. Therefore, as we have just said, any comparative tests of different types of lenses will, to an extent, be dependent upon the individual instruments themselves; also upon the class of subjects they are tested upon.

* * *

Are Residues Now Worth Saving?

This question engaged the attention of the Edinburgh Branch of the Professional Photographers' Association at its last meeting. One of the members wrote to the effect that for some time past he had been trying to recover the silver from old hypo baths, both negative and print fixing, and he had come to the conclusion that the results were not worth the time and trouble expended upon them. This opinion was endorsed by the members present at the meeting, but the majority of them were strongly of opinion that the saving of the cuttings of the silver papers, and precipitating the silver from the first washing waters of the prints prior to toning and fixing, was worth doing. Now, these opinions, coming as they do from a body of professional photographers, are well worthy of the attention of workers on a limited scale, who have been, and are being, at considerable trouble in saving their wastes, and have been at times sorely disappointed at the return they have had for them from the refiner. Only a few weeks ago we received a letter from a correspondent saying that he had sent four pounds of residues, and, after two shillings and a penny had been deducted for reducing, he received five penny stamps. In this case it is clear the "game was not worth the candle." At one time, when the collodion process was in vogue, and photographers sensitised their own paper on

long silver baths, the residues were a valuable asset in a large business. The used developer deposited a goodly amount of metallic silver; the washing waters, before using the prints, were rich in silver; and the old fixing baths, by reason of the papers being heavily salted, also contained a considerable quantity of recoverable silver. The conditions are just the reverse now. The developer contains no silver; the P.O.P.'s contain no more silver than is necessary to yield a good print, and that is very little indeed as compared with what was the case with heavily-tinted albumen paper sensitised on a strong bath. Bromide papers contain no free nitrate, and only enough bromide of silver to give a vigorous picture, and that, again, is very little, though ample for its purpose. The same with gelatin plates; there is sufficient silver in them to give a vigorous negative, but, after all, it is a very small quantity. Now, it is obvious that, as there is so little silver in modern plates and papers, there is very little to be recovered from residues from them. But this is not all when we take into consideration the low price the metal realises when it has been recovered. The present market price of standard silver is less than two shillings and twopence per ounce, whereas that recovered from photographic wastes is rarely up to the standard quality. At one time the price of silver was more than double what it is now. With the above facts before us it will be seen that it is very questionable whether it is worth the while of those who work on a small scale, or amateurs, to trouble themselves about saving their residues—that is, if time and trouble is a consideration.

ON MAKING SOLUTIONS.

There is one means more ready than another of finding a dark-room man of tidy habits it is either to scrutinise his shelves to see the condition of the various solutions in frequent use, or still better, to watch him use a bottleful of solution. What with stock solutions of pyro or other developing agents, solutions of soda, hypo, carbonate of soda, bromide of potassium in daily use, and ferridcyanide of potassium, uric chloride, ammonium persulphate, etc., in less urgent demand, it will be seen that a solution shelf may well be filled even for photographers in a small way. We should be careful that the knowledge of this fact has had much to do with the recommendation so frequently met with of "saturated solutions," the only good words for which that can be truthfully said being that they are a trouble to make. This is virtually the whole of the thing. "Saturated solutions," made by using an excess of crystals in the solvent and occasional shaking, are objectionable in many directions. With an overworked worker they rarely are saturated, and to a novice they are difficult to make really saturated. Their saturation is complete only at a particular temperature; and that, if allowed to remain undisturbed for some time, the material will crystallise out, which will also be the case if the temperature of the solution by any means varies, mixed, when more of the salt will be taken up and crystallise out again when the temperature gets lower. Again, supposing several stock solutions run out at the same time, what a loss of time to be continually making them, in order to get complete saturation. If, in most likely be the case, complete saturation be arrived at, the whole fabric of reliable and comparable solutions for various photographic operations falls to the ground, and the work is not very far removed from the state of "thumb." It is really most simple to keep solutions required strong at a given strength a little below

saturation; workers can then compare formulae from a definite standpoint, quite different from the inevitable confusion of a formula with "saturated solution." Of course, if it were a question of work carried on by expert chemists, they would have a fair idea of what proportion of salt, etc., would be contained in really a saturated solution, if a formula were put into their hands; but photographers are not all expert chemists. The confusion of mind that would arise at, say, a "practical evening" at a society, when, for example, one member should say there was nothing better than a 12 per cent. solution of sulphite for mixing with amidol as a developer, using the latter at 4 grains to the ounce; while another should say he greatly preferred to make it 8 grains to the ounce in a saturated solution of sulphite, and let it down with an equal quantity of water! As our readers will know, there is practically little difference between the two. The former would always be 12 per cent.; the latter would vary between 20 and 25 or 30, according to the temperature and mode of making. Further, still referring to a chemist's work, one would never think of employing saturated solutions unless the saturation carried with it certain advantages not possessed by weaker solutions, and this in photography is rarely, if ever, the case.

There is, however, in some quarters an unaccountable objection to the use of the term per centage to indicate definite proportions of substance dissolved; but this could easily be met by substituting such a term as grains per fluid ounce or ounces per pint, centigrams per litre, and so on. The root of the objection, however, is perhaps deeper, and through a want of thorough acquaintance with our somewhat involved system of weights and measures, the objectors are apt to see a lion in the way, the creation of their own minds. We never hear any objection on the grounds of indefiniteness if, for example, so many grams in a litre are spoken of, but the moment anyone speaks of grains per ounce, the usual fatuities of "Which ounce?" and so on, are heard, and per centage solutions are said to be meaningless. We appeal to our readers whether this sort of querulous objection is not common enough. We would like to make an effort to prevent their occurrence. First, we remind our readers that there is a legal measure of bulk called a fluid ounce. If we take that measure in water at a certain temperature, it happens that it will also weigh an ounce; but when "an ounce" of a liquid is specified, an ounce measure is usually implied. Hence a 10 or 20, etc., per cent. solution means one of which a measured 100 ounces contains 10 or 20, etc., weighed ounces of the substance specified. We will later bring our remarks to a more concrete form.

LORD RAYLEIGH has been created a foreign Knight of the Prussian Order Pour le Mérite for Sciences and Arts by the German Emperor.

THE third annual open exhibition of the Glasgow Southern Photographic Association will be held in the rooms of the Association, 1, Eglinton Lane, Glasgow, from March 22nd till April 5th next. There will be three open classes, one confined to members of the Scottish Photographic Federation and three confined to members. The prospectus will be ready shortly, a copy of which may be had on application to the Hon. Secretary, 28, Bank Street, Hillhead, Glasgow.

MESSRS. H. AND W. GREEN, of Rotherham, will shortly remove to new works, which they are now building in Rotherham. To reduce the stock of cameras, lenses, backgrounds, etc., and to save cost of removal, they are prepared to accept any reasonable offer for goods mentioned in a general or bargain list, which will be sent on application. The goods include thousands of developing dishes, printing frames, lantern slides, enlargers, stamp and midget cameras, dark-room lamps, albums, rubber type outfits, etc.

"COLOUR-SENSITIVE" VERSUS ORDINARY PLATES AND THE USE OF YELLOW SCREENS.

BEFORE proceeding to examine and explain the nature of the results obtained by the use of "colour-sensitive" plates, both with and without transparent coloured screens, compared with those given by uncorrected ordinary dry plates, it will be necessary, for the sake of clearness, to state a few facts about colour and its effects on the normal human eye.

White light, such as bright sunlight (daylight) consists, as most people know, of a mixture of lights of many different colours, known as the "prismatic colours," or colours of the "spectrum." We will assume that the reader knows this, and also how it can be shown to be true, by separating these colours by means of a prism of glass or other colourless transparent material, and by making white light again from these colours by means of a second prism so placed as to reverse the effect of the first. If some of the colours are partly or wholly cut out of the band of colours which constitute the "spectrum," the effect of recombining the remainder is a coloured light said to be "complementary" to those removed, and all colours of all shades consist of pure spectrum colours, mixed in various proportions, or very rarely of pure spectrum colours. Thus, the colour of a coloured transparent object, like a piece of stained glass, is the residue of the white light passing in, after the glass has "absorbed" the "complementary" rays of light. A red glass is red because it is capable of absorbing light of any colour other than red. Similarly, with coloured objects seen by reflected light, their colour is the "unabsorbed residue" of the light falling on them. If the light falling on them or a transparent "coloured" substance is itself coloured (i.e., deficient in any of the colours of the "spectrum" which go to make up white light), naturally that colour in which the light is deficient will also be missing in the light reflected or transmitted by the object. If, therefore, a coloured substance be examined by a coloured light, its apparent colour will change with that of the light employed. This is important in photography, because daylight varies considerably in colour at different times of the day and year, and contains much less blue and violet light (i.e., appears more yellow) at some times than at others, owing to the absorbing power of moisture, fog, etc., for blue rays. Blue haze, such as is often seen in hot, damp weather, owes its colour to blue light "reflected" by suspended particles, the yellow light complementary to it being transmitted or absorbed.

In reproducing a coloured object in monochrome, it becomes necessary to make up one's mind as to the relative brightness of different colours. For many people, and especially with some colour contrasts, this is by no means easy; but there can be no doubt that to almost everybody pure violet and deep blue are the darkest colours, and pure yellow the brightest, green, red, and orange being intermediate. Of course, any of these colours may be darker than any other if it be not pure but "degraded," i.e., if it absorbs a proportion of the light of its own colour as well as the complementary colours, or, in other words, if the coloured light returned is not returned in its entirety. The colours of Nature are nearly always more or less degraded. Turning now to the application of these remarks to photographic reproduction, it should be noted that all dry plates are sensitive to light of all colours. If this sensitiveness agreed with that of the eye in judging the relative brightness or tone values of different colours, we should have true "orthochromatic" plates. Unfortunately, this is very far from being the case. Ordinary (non-colour-sensitive) plates are so immensely more sensitive to blue and violet light than to light of any other colour that the blue and violet parts of white or other coloured light are

alone responsible for the effect produced by any ordinary exposure. All negatives made on "uncorrected" plates are representations of the blue-violet light given off by the object photographed, and no more. It is this fact which makes it so difficult to correctly estimate the exposure required; one has to estimate the intensity of the blue-violet part of the light, not that of the light as a whole; and, unfortunately, very large variations in this part cause comparatively little variation in the brightness of the light to our eyes. Long practice alone can guide us in our judgment.

Why, then, does not a picture taken on an ordinary (uncorrected) plate appear altogether false? There are several reasons. First of all, where the object photographed is devoid of colour, i.e., simply black and white and neutral half-tones, obviously, since it has no selective action on the light (i.e., it is not coloured), but the light simply varies in intensity, the different parts of the picture, it does not matter whether we make use of all or a part of the light only (the blue-violet), the relative brightnesses of the parts of the subject remain the same. This case, though not common, is often approximately true, colours, if present, not being prominent, or else very degraded. Secondly, all coloured objects reflect some white light (i.e., some of the coloured light which, in the main, they absorb, as well as the complementary colour proper, which they reflect well), and the blue-violet part of this reflected light has, of course, its usual effect. It may, and frequently does happen, therefore, that an object of a "colour" to which a photographic plate is quite insensitive with the exposure given produces a marked effect on the plate; this effect, however, is due solely to the blue-violet part of the reflected white light. One ought, therefore, to be very cautious in expressing opinion as to the colour-sensitiveness of a "corrected" plate from a simple test on opaque coloured objects. Lastly, although our eyes are very sensitive to differences of colour, our ideas on the relative brightnesses of different colours, and therefore the appropriate rendering of them in monochrome, are much less definite. These three considerations, together with the correct reproduction of form, combine to hide from us the false nature of the picture in a majority of cases.

There are, however, a great many cases where the colour contrast is so pronounced that its incorrect rendering by an ordinary plate would give a useless result; and even, apart from these extreme cases, a decided improvement in pictorial quality would often be obtained if colour were taken more into account. This a colour-sensitive (orthochromatic or isochromatic, etc.) plate does. Its action is as simple as that of the ordinary plate, but instead of being affected by blue and violet light only, it has a useful sensitiveness for light of other colours also.

From what has been said already, it will be obvious that the more sensitive a plate is to yellow and yellowish green (the brightest of colours), the more nearly will its reproduction of colour in monochrome be correct until, in a truly corrected plate, we reach a sensitiveness for these colours (relative to blue-violet sensitiveness), agreeing with our visual perception. Even the best green-yellow sensitive plates, like the Ilford Chromatic and Rapid Isochrom, do not respond sufficiently to these colours, but are still too sensitive to the blue and violet, though the gain by their insensitiveness to the blue and violet is in many cases enormous. These plates owe all their useful impressions to the effect of the blue and violet combined with the green and yellow, instead of blue and violet only, and, consequently, in estimating the intensity of light, and so the exposure required, we are not so liable to be misled as with an ordinary plate. In other words, we are to be guided more by the brightness of the light as it appears to the eye, and need not trouble so much about its "act-

quality," i.e., its strength in blue-violet rays. Where yellow and green objects form a feature of the picture, the "Chromatic" plates display their advantages at their best, and even orange and red objects produce much more effect on them than on an uncorrected plate. This is due, not so much to the greater sensitiveness to orange and red which Chromatic plates possess, or that is very small, but because red and orange-coloured objects generally reflect a good deal of green and yellow light.

In order to compensate for the excessive blue-violet sensitiveness, which is present even in "Chromatic" plates, a "screen" which filters out a part of the blue and violet rays is very convenient. Obviously, a yellow screen which almost completely absorbs the blue and violet rays, if used with an ordinary plate, takes away practically all the light of those colours to which alone such a plate is sensitive, and the exposure required must be so prolonged as to make the use of a screen impracticable. With a green-yellow sensitive plate this is not so, for a good yellow screen allows the green and yellow to pass without loss, and only the blue-violet part of the plate's sensitiveness is reduced. The more sensitive the plate is to yellow and green the less is the reduction of blue sensitiveness required to give correct rendering in monochrome, i.e., the lighter the tint of the yellow screen necessary, and conversely, with a given yellow screen, the greater the sensitiveness of the plate to yellow and green the less will the screen increase the necessary exposure.

It is, therefore, quite incorrect to imagine that a definite screen has a fixed slowing power, and one can therefore only speak of its "speed" in reference to a particular plate of a definite degree of colour sensitiveness.

Seeing how many dyes are available, it should now be quite possible to construct a number of "screens" adapted for use with a particular uniform brand of plate in all circumstances, and differing only in the amount of their correcting power. The nature of these screens will depend solely on the amount of correction desired and the increase of exposure one can put up with. Thus, a pale-tinted screen can be made which will reduce the intensity of the blue-violet until its effect on the plate relative to that of the blue-greens and light blues agrees with our ideas of their relative brightnesses. Of course, in doing this we also partly correct the brighter yellowish-greens and yellows, etc. In results obtained with such a screen the deepest blue-greens, blues, and violets will be approximately correctly rendered, but the yellows and brightest yellowish-greens, orange, etc., will still be too dark in the positive.

Fortunately, the relative sensitiveness of the Ilford colour-sensitive plates for the brighter blue-greens and yellowish-greens agrees very fairly well with our eye estimate, so that if we "correct" properly for one of them we correct for all.

To carry correction further, evidently all that is corrected by the first screen must be uniformly reduced until the bright yellow-greens attain their correct brightnesses relative to the deepest blue-greens, blues, and violets. In other words, besides reducing the blue and violet still further, we must also reduce what we have already corrected by the first screen, viz., the deepest blue-greens and light blues. It must have a slightly different tint, more golden yellow, than our supposed first screen. Another stage would be to correctly adjust for the pure orange-yellows as well. To do this we must now still further reduce all we weakened in the last case, and the yellowish-greens and bright greens as well. Such a screen would have a more orange tint than the last. The important point about all this is that it is a change of tint, as well as a deeper one, that is required in the successive degrees of correction, not a mere increase of the depth of the same tint. This latter at once leads to "over-correction," and is always the cause of that phenomenon; it shows itself as a practically complete insensitiveness to blue and violet, due to the complete absorp-

tion of these colours by the screen, while in many cases the yellows are still insufficiently corrected *relatively to the greens*. A screen which completely cuts out any pure colour must give "over-correction" for that colour, and the peculiar effects obtained on "colour-sensitive" plates when used with a deep yellow screen are due to this cause alone; the screen is at fault; it reduces the blue and violet too much while leaving the light blue and blue-green and greens unaffected. What is wanted is a screen of a pale orange or golden yellow tint which shall not reduce the deep blue and violet practically to extinction, as the strong, bright yellow screens do, but shall also somewhat reduce the light blue and blue-green. Similarly, a screen which is to correct for the orange-yellows as well as the greenish-yellows, greens, and blues, must not completely extinguish any of the latter colours, although, with all the colour-sensitive plates available up to the present, each of these colours would need reducing in intensity, and the screen would require to be more or less strongly orange or red in appearance. Screens correctly adjusted on these principles could not produce "over-correction" in any circumstances, though they would differ in the amount of their under-correction for yellow, orange, and red according to the extent to which the correction was carried.

STUDIOSUS.

SOME THOUGHTS ON COLOUR-VISION.

THE subject of colour-photography being at present much in the minds of photographers, the theory of colour-vision becomes of interest to those who are studying this branch of photography. The following somewhat random thoughts suggested themselves on reading some articles describing existing theories of colour-vision.

There seems to be an artificiality about the theories at present accepted involving assumptions of special nerves or "visual substances" which, apparently, physiologists have not yet succeeded in isolating, or detecting *in situ*. Taking the theory of Hering, where are the visual substances situated—in the retina, or in the brain? Obviously, there must be some mechanism in the retina itself to receive and differentiate the various colours; the bundle of impulses is then transmitted to the brain, where they are transmitted into sensations, and the mind perceives a certain resultant impression. The visual substances must, then, be situated in the retina, and we must suppose that every part of the intricate network of nerve-fibrils distributed through the retina contains all the visual substances.

It will be instructive to compare the method of working of the other sense-organs in this connection. Consider the immense variety of flavours distinguished by the sense of taste, and the endless series of odours reported by the olfactory nerves, from the delicate gratification of the rose's perfume to the jarring wrench of a puff of sewer-gas. How are all these varied properties recognised? It is impossible to suppose that the majority of flavours are the resultants of combinations of a few simple or elementary flavours. A vast number of distinct chemical substances have each their own characteristic taste which, once experienced, is always afterwards recognised. What mechanism can possibly sift out all the varied impulses corresponding to these numerous flavours, and transmit to the brain a message peculiar to each which, translated into brain-language, reveals a subtle property which would have been unknown to us but for the organ of taste? Is there a special "tasting substance" in the nerves of the tongue for every existing flavour? The idea is absurd. It is extremely probable that the peculiar property of a substance which is revealed to us as taste is a function of the molecule, and the nerves of the tongue are of but one kind and substance, responding by virtue of their subtle structure to each peculiar molecular vibration. Why, then, should it be thought that Nature would go out of her way to

elaborate new substances for the purposes of colour-vision when she had already evolved a material of so sensitive a character that it can distinguish an enormous number of minute molecular movements? It is true the movements now to be detected are ethereal and not material, and, since the molecules of different compounds are distinct in structure, they will be equally distinct in their vibratory or other movements. But although there may be no distinction in kind of vibrations of ether-waves corresponding to different colours, there is a difference of quality, namely in wave-length and number of impulses in a given time. A material or structure that can differentiate the vibrations of two such similar molecules as, say, potassium and sodium chlorides, may surely, without straining of analogy, be supposed capable of distinguishing varying periodicities of etheric undulations. But we are still left without an explanation as to how the brain translates these impulses into colour. This cannot be answered. We are quite unable to say why or how the vibrations impressed by molecules of sodium chloride on the nerves of the tongue should be translated by the brain into a sense of saltiness. It is so with all other sensations. Nor does it seem necessary to assume the existence in the brain of special visual substances, or special cells, to translate impulses of various periodicity into their respective colours. A man tastes for the first time some new fruit from a foreign country, and at once recognises a new flavour. Can it be believed that Nature had prepared in his brain, and in the brains of a long line of ancestors, special cells so that he might be able to taste this particular flavour when chance placed the fruit within his reach? Our common-sense rejects the notion. The brain that can, without special materials, translate unerringly into its appropriate taste-sensation a flavour never before experienced, may surely be relied on to construe correctly, also without special apparatus, each light-wave into the colour-sensation corresponding to its length and period. But, why a sensation of yellowness should result from the impress of light-waves having a length of 590 millionths of a millimetre, cannot at present be answered.

It would be interesting to study the subject of colour-vision in the light of the doctrine of evolution. At what stage in the evolution of man was this power developed? Probably far back in pre-historic ages; certainly not within historic times. The ancients knew and valued the purple of Tyre 1,000 or 2,000 years B.C. Since purple is a secondary colour, it is clear that an advanced stage in the evolution of colour-vision had already been reached at that epoch. Utility or fitness is the ordinary cause of the development of a new organ or power in the organic world. Cases of colour-blindness have been met with of such completeness that the vision of the subjects was practically mono-chromatic; yet these people were at no disadvantage in the practical affairs of life. Such facts point to a time when our ancestors had only mono-chromatic vision. They also suggest that colour-vision was acquired accidentally; some slight perception of difference of colours in some individuals was gradually accentuated by the dawning æsthetic sense in man, and eventually by cultivation the power was extended and fixed. How this power should contribute to the survival of its possessors is difficult to imagine, and from this point of view colour-vision ought to be largely the exclusive possession of a cultured minority. If the three-sensation or three-substance theory be the true explanation of colour-perception, it must have been at this period that the substances were elaborated. It may be imagined that some slight modification of the material of the existing nerve-tissue occurring in individuals enabled them to perceive differences of appearance in objects, which we now know as colour-differences, and these new, and at first crude, sensations adding to the sum of the pleasures of life were naturally cultivated, and thus in time the modified nerve-materials became fixed and definite and more perfect in their functions. All this

is not more difficult of acceptance than many of the hypotheses advanced to explain the evolution of various organic structures but the difficulty still remains why this power should have become so universal as it is. On the other hand, the existence of completely colour-blind persons is certainly, at first sight, a strong argument in favour of a special-substance theory, indicating the absence in such cases of a special colour-perceiving apparatus. But this would imply that the colour-perceiving apparatus is something over and above the merely visual apparatus. We are here reminded of Hering's white-black substance, for the perfectly colour-blind see objects in light and shade, and the explanation might be that they have the white-black substance while the colour substances are wanting. In this case the white-black substance would be merely the original substance of the optic nervous system before our ancestors had developed colour-vision, and the colour-pair substances are the modifications. This argument favours Hering's theory as against the Young-Helmholtz.

Other points of difficulty in Hering's theory suggest themselves, but the reasonable limits of an article of this character have already been reached. One may conclude by briefly adverting to one other apparent objection. There appears no reason why rays of light whose only difference is a slight inequality of wave-length should have such totally opposite effects on the same substance—destructive in the case of two particular colours, constructive in that of two others. Further, on the evolutionary hypothesis, it is difficult to see how modification of the original visual substance could acquire properties so profoundly different from those of the parent substance.

FESTINALENTE.

COMBINED DEVELOPING AND FIXING WITH CYANIDE OF POTASH.

"COMBINED Developing and Fixing" formed the subject of a very interesting paper read by Mr. Thorne Baker at the Royal Photographic Society a few weeks ago. Though the idea is by no means a new one, as was proved in the discussion that followed the paper, combined developing and fixing seems to open a wide field for experiment in photographic chemistry. The lecturer exhibited some very good slides as examples of plates developed and fixed in the same bath, but only claimed a partial success for the result of his labours.

The writer was surprised to find that, in both paper and subsequent discussion, hyposulphite of soda was the only fixing agent that was referred to by the speakers, even the use of wet-plate fixing solution of cyanide of potash not being mentioned. As the subject seemed to afford an opportunity for some interesting investigations, several experiments were made in combined developing and fixing, substituting, however, cyanide of potash for hypo for fixing purposes. Although hypo is now universally used by dry-plate photographers, most wet collodion operators still prefer cyanide of potash, the latter fixing agent being more rapid and clean in its action than that of the former, and the collodion film requires very little washing to eliminate the cyanide of potash.

The chief disadvantages in the use of cyanide are the excessively poisonous nature of this chemical and its higher price. A fairly strong solution of cyanide fixes a dry-plate very rapidly, and the plate requires little subsequent washing.

The writer's first experiments were made with the pyro-ammonia developer; this developer was only used for the purpose of observing the effect of cyanide on the developer. As cyanide of potash is a strong alkali, it would be thought that a smaller quantity of ammonia would be required, and accordingly operations were commenced with half the normal quantity

accelerator, about an ounce of a saturated solution of cyanide as added to four ounces of developer. The plate was fixed a few minutes, but not a trace of the image appeared.

It was obvious that the cyanide exercised a powerful restraining action on the developer, so the next plate was developed with twice the normal quantity of ammonia with less cyanide in the developer. A trace of the image appeared, but the plate was fixed before development had fairly started. The quantity of ammonia in the film was still further increased on the next plate; this time the image appeared quickly, and seemed to be developing properly, but when the plate was fixed a very thin picture with any amount of green fog caused by excess of ammonia was the only result.

For the next experiment amidol was selected, as the image with this developer flashes out very quickly it seemed to offer a better chance of success. The amidol was used dry, with a double quantity of sodium sulphite, but as the image failed to appear a small quantity of ammonia solution (Am. 2½ drms., water 20 ozs.) was poured into the dish, which immediately brought out the details of the negative, but the plate lacked density.

For the next plate an ounce of the ammonia solution was added as accelerator to the amidol. Ammonia with amidol gives a deep blue colour. Acetone and sodium sulphite kept this blue stain within reasonable limits, but the results on several experimental plates were not satisfactory, as the cyanide of potash prevented anything like density being obtained, and the ammonia produced a lot of chemical fog.

Pyro-soda, with three times the normal quantity of soda, and several drops of 880 ammonia, was then used. This was more successful, and with three drops of nitric acid to keep the developer from staining the plate (which with the large quantity of alkali was otherwise inevitable) a very passable image was obtained, being fixed and developed in about six minutes. The green fog was, however, very much in evidence on all the pyro-soda-ammonia negatives.

Pyro, in conjunction with amidol, was then tried. Pyro prevented the blue stain, caused by the use of amidol and ammonia, providing sulphite of soda was placed in the developer before the alkali was added. The pyro-amidol developer gave far more successful results than any of those previously mentioned. The proportions used were approximately as follows:—Pyro, 3 grains; amidol, 3 grains; sodium sulphite sat. solution, 1 ounce; sodium carbonate sat. solution, 2 ounces; ammonia 880, 3 drops; pot. cyanide sat. sol., about 1 ounce. A complicated and messy formula. Several variations of the above developers were tried, and the results were not by any means failures, and four plates developed and fixed with good printing density. Probably some of the other developers would have given still better results; metol-hydrokinone, for instance, seems to offer considerable advantages for combined developing and fixing.

The chief requirement seems to be a developer that brings out the image directly the developer is poured on the plate, and which will also give sufficient density before the image is fixed. Pyro alone did not develop the image quickly, and amidol gave no density, but the combination of the two produced very good negatives.

The plates when finished were evenly developed, and there were no weak spots in the image. The net results of the writer's experience is that though successful combined fixing and development would be well within the range of possibility, the simultaneous method would be more expensive in time, trouble, and money than separate operations. The subject is, however, of considerable experimental interest, and from this standpoint alone is worth the attention of photographers who like to wander from the beaten track.

Neither hypo nor cyanide of potash are ideal chemicals for combined developing and fixing, and probably some other fixing agent must be found if the single operation is to be commercially successful, but in any case the loss of control over the developing image would be such a serious drawback to the practical worker that probably it would be adopted only by the press-the-button type of photographer. In conclusion, we may remark that there is at the present time one branch of photography in which combined developing and fixing is successfully carried out with very little expense and trouble, viz., the ferro-prussiate printing process, in which the prints are developed and fixed at the same time in the same solution of H.O.

J. I. Pigg.

REMBRANDT PORTRAITS: A PHOTOGRAPHIC DISCOVERY.

(From the *Glasgow Herald*, June 22, 1867.)

"We have from time to time, during the last ten years, called the attention of our readers to the various advances which have been made in the art of producing pictures by the influence of the sun's rays acting on prepared silver, paper, and glass. The art of Sun-painting, whether we take into consideration the process known as the Daguerreotype, the Calotype, or Photography, is one of the most marvellous discoveries of modern times. By means of a salt of silver, and other chemical agents, the various substances we have named are rendered so sensitive to the solar rays that everything which the eye can distinguish, even when aided by a combination of the most powerful lenses, can be almost instantaneously depicted, and by other now well-known processes can be rendered sempiternally permanent. The extraordinary minuteness and brilliancy of the Sun-pictures now produced by the mighty host of practitioners of the art has ceased to be a miracle, but the surprising thing has always been that so little progress was made in the direction of giving a more artistic character to the portraits produced. It is true that photographic landscapes and sea-views have arrived as nearly as possible at perfection, but the photographic portraiture which meets the gaze in every city, town, and village of the empire, has not passed beyond the hard, formal, and cold stolidity which distinguished the first specimens exhibited in this country, from the studio of Daguerre himself. They are only sharper and more bright, but they have not acquired one atom more of artistic feeling.

"We are happy to have it in our power to inform all who take an interest in the progress of this very fascinating art, that now in this city an immense step has been made in the only direction wherein, as we think, improvement could be desired. This improvement, the discovery of Mr. Eadie, of the Minerva Rooms, Argyle Street, who is an accomplished painter of landscape pictures, consists in a novel arrangement by which all the softness and all the gradations of light and shade, which are so charming in some of the best painted and engraved portraits, can be perfectly rendered on silver, glass, or paper; and by which, at the same time, the portrait is produced with the proper aspect—not right for left and left for right, as has hitherto been the universal practice.

"For example, by the usual method, the camera delivers to the prepared plate all which the lens can take in—the face, the bust, the hands, and down to the feet and the carpet, if a full-length likeness be wanted; but there is no gradation of tone, no artistic distribution of light and shadow. Now, by the new process, a portrait is taken upon a plate; but, if we may be permitted to use such a form of expression, it seems to be thrown upon a cloud, because all round the head there is a white halo, and this light may be disposed at the back of the head or at the face at the pleasure of the operator, to suit the character

or the complexion of the sitter, and this aureola of light passes by imperceptible gradations of depth into a deep black, while the bust of the sitter is, so to speak, vignettied, passing from clear and bold lines into the obscurity of the dark shadow, which is the field upon which the portrait and its surrounding light are projected. By this novel arrangement, the concentrated light which Mr. Eadie throws upon his Rembrandt-Portraits, he shows as thorough a knowledge of pictorial effect as the camera itself exhibits of power to seize and transmit whatever is presented to it; and the powerful—we might almost say spiritual—pictures produced, evince in a high degree the artistic qualities of Mr. Eadie's intellect.

"The discoverer of these most admirable improvements has chosen to name the pictures so produced Rembrandt-Portraits, and in as far as they are pervaded by a very large amount of that breadth of light and shadow which distinguishes the paintings of the great master, we think the name appropriate enough. We have had an opportunity of carefully examining half a dozen of likenesses done after the new manner, and we can safely say that, for pictorial beauty and admirable arrangement of light and shade, they are superior by many degrees to any works we have ever seen produced by solar agency, and we can compare them with nothing save exquisitely-finished engravings.

"The Public had become almost surfeited with the cold and idiotic formality of photographic portraiture, but we think that Mr. Eadie's invention will at once elevate Sun-painting into the realm of high art, and therefore, it must, in his hands and after his style, become permanently popular."

MR. EADIE, PROFESSIONAL ARTIST,

Sole Inventor of the Direct Camera for producing Non-Reversed Portraits, etc., etc.,

Feels highly gratified in receiving daily public testimony of his Novel Invention, producing on Glass a Direct and Positive Portrait or Landscape, etc., representing everything in view in its true position. By the old method such is impossible, as Portraits, etc., coloured, were, and are produced to the public still, entirely the reverse of nature, such as showing the vest buttoned on the wrong side, the watch in the wrong pocket, the marriage ring on the wrong hand, and the sword of the soldier placed so as to be drawn with the left hand. These extreme errors are entirely avoided by Mr. Eadie,

at his

Photographic Studio, 249, Argyle Street, Glasgow.

DEVONPORT Camera Club. — The spring sessions commenced on Tuesday, January 19th, with a members' lantern evening, the slides exhibited included moorland churches, Dartmoor scenery, a holiday tour on the Continent, astronomical and scientific, those contributing being the President (W. H. Mayne), the Hon. Secretary (A. J. Catford), Engineer-Captain T. J. Haddy, R.N., and Mr. R. Maw. The lantern was manipulated by Mr. S. F. J. Heal.

G.E.R. 'MECHANICS' Institution, Stratford, E. (Photographic Section).—The eleventh annual exhibition will be held at the Mechanics' Institution, Store Street, Stratford, E., on Tuesday and Wednesday, March 8th and 9th, 1904. The judges will be Messrs. J. T. Ashby, F.R.P.S., and Ernest Marriage, F.R.P.S. The following are the open classes:—H. Any subject. Awards, one silver and two bronze medals. I. Lantern slides (sets of four). Awards, one silver and one bronze medal. J. Stereoscopic slides (sets of four). Award, one bronze medal. K. Not for competition. Exhibits invited. Fuller particulars may be had of the Hon. Secretary, Mr. A. Woolford, 16, Grove Green Road, Leytonstone.

SOME DISCURSIVE NOTES ON THE USE OF PLATES AND FILMS IN INDIA.

Specially contributed to the Journal of the Photographic Society of India.

"WHAT plates do you advise me to get?" is the question one often greeted with by the novice in photography. To answer such a question is but to name what one considers the best on the market for all round purposes. The writer's experience is as follows:—

(1) For a plate of medium rapidity for landscape and general work and capable of doing slow hand camera exposures Wratt and Wainwright's Instantaneous easily holds its own. For the purposes indicated above it appears perfect; it has keeping properties far in advance of any other plate in the market, and is essentially the plate for a beginner.

(2) As a faster plate for general hand camera work, and for any subjects where a considerable degree of speed is essential the Ilford Special Rapid plate gives most excellent results with a greater freedom from fog than any other plate which the writer has tried in India. Lumière's plates also give good results.

(3) When extreme speed is required, the Ilford Monarch plate should certainly be given a trial. Those who have already tried it speak very highly of its capabilities, and particularly of its very great speed and fineness of grain, the latter a peculiarity not often noticeable in very fast plates.

(4) Of isochromatic plates, the Instantaneous of B. J. Edwards and Co. will be found as good as any, and they will also be found to possess keeping properties of a nature not usually obtainable in isochromatic plates. These plates may be obtained ready backed under the description of "anti-halo"—this is a great convenience. Mawson's Iso. plates are also reliable.

A word here as to the keeping properties of isochromatic plates may not be altogether out of place: that isochromatic plates do not keep as well as ordinary plates in any climate is a recognised fact, and to this may be added a rider to the effect that a tropical climate, and particularly a damp heat, is most detrimental to their wellbeing. An iso. plate that will keep through a Calcutta rain under ordinary conditions has yet to be put on the market. It therefore behoves all users of these plates to be exceedingly careful as to the freshness of such they may purchase. It is somewhat outside the scope of this article to deal with the advantages to be gained by the use of plates of this type; their primary *raison d'être* is, of course a more correct rendering of colour values in monochrome and they are particularly valuable to secure the true rendering of cloud forms whether on the same negative as landscapes or not. The fact that these isochromatic plates and films are daily coming into more general use, as instanced by the Kodak Company discontinuing the sale of all but isochromatised films should be a valuable criterion of the merits of sensitive emulsions of this nature.

The question as to whether films will keep as well as plates in India during the hotter and damper months of the year has always been considered as answerable only by a decisive negative. The vast improvements which have been introduced into the manufacture of the former products during the last year or two, however, induced the writer to make a few experiments in the form of tests of some of the various makes of films present on the market, and it is the results of these test experiments that it is proposed to detail in this article.

Films may be divided into three distinct classes:—

(1) Those having celluloid as a supporting base.
(2) Cristoid films, which consist solely of a double emulsion of sensitive gelatine film.
(3) What are known as stripping films, i.e., single gelatin

films on paper supports, from which they can be easily stripped after development.

The first-named class may again be subdivided into two sections, viz., roll films and flat films, and it is proposed in the first instance to discuss the results yielded to the writer by these particular varieties of films. Several films of a number of each of the best known makes obtainable were placed in dark slides and kept there for over a week in the extreme heat of Calcutta in the middle of May, and the camera was then taken out into hot sunshine for a considerable time and the necessary exposures given to the films.

After a lapse of several days the films were developed in a dark room, the temperature of which was distinctly nearer 100 than 90 degrees, and in solutions which could only be described as tepid. No formalin bath was given before development, and no ice was used in that or any of the subsequent operations. The test was, as it was meant to be, a very severe one, and the writer was not in the least surprised to find that the majority of the films submitted to it succumbed at an early stage of the proceedings to the demoralising influences to which they were subjected. It was an ordeal to which one would have submitted one's favourite brand of plate with a considerable amount of fear and trembling, and the films gave way before it like chaff before the wind; there were, however, exceptions in the shape of two kinds of films which distinguished themselves by the creditable results they gave under the trying circumstances which have been enumerated. The films in question were the Mawson "Castle" and the Mawson "Celeritas," the former giving considerably better results than the latter. The remainder of the films experimented with were literally nowhere, many of them running off their celluloid supports shortly after as they came into contact with the developer. Such a state of things speaks for itself, and the reader may well be left to draw his own conclusions from the facts put before him.

The next test made was to all intents and purposes a second edition of the one described above, the only difference being that roll films were experimented upon instead of flat ones. The results on the average may be said to have been distinctly more satisfactory than in the former instance. Many of the negatives obtained were certainly a long way off perfection, but it would be possible to name half a dozen makes of films that gave results on which the makers have distinct reason to congratulate themselves. Ensign, Wellington, and Kodak films were perhaps about the most satisfactory, and gave results of about equal merit.

The severest trial of all was yet to come, however—the testing of the keeping properties of the films through the damp heat of the monsoon months—and it was here that the truth of the longstanding prejudice against the use of films in India was strikingly exemplified. It is no exaggeration to say that none of the films experimented upon—and they were many—gave really satisfactory results. Some were better than others, the roll films being distinctly in advance of the cut films, none of the latter, in fact, giving results which might be described as even passable.

Summarised, the conclusions, which may in the writer's opinion be deduced from the results of the above experiments, amount to more or less as follows:—

(1) Celluloid roll films can be worked in dry heat, and are preferable to cut films for the purpose.

(2) Films on a celluloid base are entirely unsuited for use under circumstances of extreme moist heat.

It may be safely assumed that the thicker the films the worse the result when tropical conditions of climate have to be taken into consideration; this is possibly because the thicker the celluloid base the more noxious gases it presumably gives off to the detriment of the sensitive film. This perhaps explains

why the thinner roll films possess better keeping and heat-resisting properties than their more substantial brethren. Or, again, it may be that the fact of the roll film being better protected from climatic influences by its tight packing preserves it from being affected by climatic influences to the same extent as the envelope-covered cut film.

Having disposed of celluloid films, it will be well to go on to the next variety on the list—Cristoid films. As previously explained, these films consist solely of a double emulsion of sensitive film. The two layers are of different degrees of sensitiveness, the lower one being of moderate speed and the superimposed film of considerable rapidity. The makers of these films claim two important advantages in respect to them in comparison with other films on the market. They assert them to be entirely devoid of halation, and that it is impossible, within reasonable limits, to so overexpose a film as to render it impossible to produce a good negative. Both these assertions have been found to be borne out by actual practice. The films keep admirably, and if the makers' instructions are faithfully followed appear to yield as good results throughout the year in India generally as the plates at present available. They are, however, in the writer's opinion, slightly more troublesome to develop than other films, but not sufficiently so as to deter any serious photographic student from at least giving them a trial; the two unusual properties alluded to above are worth considerably more than the extra trouble involved.

Stripping films, the last variety to be considered, can be dealt with in a few words. They consist of gelatine sensitive emulsion coated on paper, from which they are, after development, transferred to glass, from which they are stripped when dry. They gave very fair results in the writer's hands, and kept comparatively well in the hot weather and rains. A very fair amount of extra trouble is, however, involved in their manipulation without the compensating advantages obtainable from the class of films last described. The stripping films have, however, the merit of being inexpensive.

Regarding the use of films in the cold weather, it is fairly safe to say that any of the best known makes will give satisfaction if obtained fresh and treated with reasonable consideration. Of the isochromatic films on the market, it may be said that they possess similar properties to isochromatic plates of the same makes allied to the relative advantages and disadvantages of the emulsion being on a film support. B. J. Edwards and Co.'s Inst. Iso films and the new Kodak N.C. film are the most satisfactory films of this class tried by the writer.

THE WANDERER.

MISS GERTRUDE BACON gave a lecture before the Manchester Astronomical Society recently, her subject being "In Odd Corners with a Camera." Miss Bacon showed lantern-slides of photographs which she had taken from a balloon during aerial voyages with her father, the Rev. J. M. Bacon. These reproduced the appearance of towns and of crowds as seen from great heights, and included pictures of cloud effects. There were also photographs taken in the course of three eclipse expeditions upon which Miss Bacon had gone with other members of the British Astronomical Society. But the most interesting of the lantern views was one showing a photograph of the bottom of the sea taken from a balloon. In November, 1902, the Admiralty gave Mr. Bacon facilities to put to the test a theory that the sea, if looked down upon from a sufficient height, may be seen right to the bottom. If the theory proved to be correct, the Admiralty hoped that a way would be opened of discovering the submarine boats of enemies in time of war. Mr. Bacon crossed the Irish Channel, and from a height not stated he saw down to the bottom of the sea and made a photograph of the bed of the ocean. If a submarine boat had happened to be in that particular part of our home seas it would no doubt have been shown up by the photograph.

UPON CHANGING PHOTOGRAPHIC PLATES FROM THE DEVELOPER TO THE FIXING BATH WITHOUT RECOURSE TO THE DARK-ROOM.

[A Paper read before the Section of Photography and Microscopy of the Franklin Institute.]

(1) Let a photographic plate, which has been exposed in a camera, be developed in the dark-room in the usual way.

(2) After development place the plate under a tap of running water until the developer is thoroughly washed off.

(3) Open up the dark-room to daylight and place the plate in the fixing bath.

Fixation, without fog, will be complete in about ten or fifteen minutes, according to the strength of the bath used.

I was led to the above experiment by the fact that dealers are using developing machines in the dark-room to develop films because of the increased ease and speed by which films can be handled with the machine. Instead of putting the fixing bath into the machine, they withdraw the film after washing, place it in a tray containing a fixing bath prepared for a great number of films, and immediately proceed to develop a new film.

It at once occurred to me that it would be very important to devise a method of development by which the amateur, who has no dark-room, might be enabled to attain the speed of the dealer who has a dark-room.

The following experiments, (a), (b), (c), led up to (d), previously mentioned.

(a) Submit an exposed plate to the action of the developer, wash and fix in the dark-room, and the result will be a negative free from fog.

(b) Plunge an exposed plate, without development, into the fixing bath in daylight. After fixation the plate will be clear.

(c) Submit an exposed plate to the action of the developer in the dark-room, and in daylight, before washing, plunge it into the fixing bath. The plate will be fogged.

(d) Submit an exposed plate to the action of the developer, and, after washing off the developer in the dark-room, plunge the plate into the fixing bath in daylight. The negative will be found free from fog. (See *ante*.)

The developing machine is admirably adapted for just such an experiment. An exposed cartridge can be placed in it in daylight; can be developed in daylight; can be washed in daylight; and in daylight the carrier, black paper, and film can be unrolled, the film torn off from the paper and immersed in the fixing bath, prepared for a number of films, in another dish. In such an experiment I have found the negative to be free from fog. Thorough washing after development, and before exposure to the light, is the *sine qua non*. To obtain thorough washing after development, place the machine under a tap of running water, rotate the film, and frequently pour off the water until it runs clear.* Washing should be complete in about two minutes, and the machine be ready for the immediate development of another film.

Thus a method is pointed out by which the amateur, without a dark-room, may attain the speed of the dealer with a dark-room.

A. W. McCURDY.

DISCUSSION.

Mr. U. C. Wanner.—The paper of Mr. Arthur W. McCurdy, of Toronto, Canada, on the above subject suggested the following experiments:—

I exposed four Bradley's "Extra-Speed" plates twenty seconds each at U. S. stop 128 on a dull, cloudy morning in October, between 7.30 and 7.50 a.m., and a fifth plate two seconds at the same time and stop. The first of the four plates was developed as an over-exposed plate with pyrogallie acid developer, and fixed in the usual way, in the dark.

The second was developed precisely like the first, and when development was completed, was thoroughly rinsed under the tap and exposed to gaslight for half an hour, and then fixed in light. It was necessary to mark the plates to know which was fixed in the dark and which in the light. The third plate developed was the two-second exposure, treating it for under-exposure, after securing all

the detail possible, and developing the high lights almost to a harshness. I rinsed the plate thoroughly and exposed to gaslight for half an hour, then redeveloped the plate in a solution one-half the strength of the original until the entire surface of the plate was veiled that little detail could be seen in examination of plate by the ruby lamp. The plate was again thoroughly rinsed and exposed to gaslight for a considerable time, after which it was fixed in light.

The veiling of the film produced a much better printing negative than would have been possible without it in a plate so much under-exposed, by giving a better printing density to the entire negative, and especially to the shadows, without affecting the detail to any appreciable extent. This, of course, must be done with considerable care and judgment, as carrying the veiling too far would be at the sacrifice of brilliancy and detail; and again, this might be of use in securing diffusion or indistinctness for art purposes.

The fourth and fifth to be developed were treated precisely as the first and second, and, when development was complete, washed under the tap for a period not exceeding two minutes, after which they were dried in daylight. The fourth was fixed after being exposed to daylight an entire day, and the fifth was fixed before the Section of Photography and Microscopy on October 29th, 1903, after two days' exposure to daylight.

There is no apparent difference in the resulting negatives from the plates of same exposure and development, and the under-exposure was very materially improved by the heroic treatment given it.

These experiments fully bear out the claims made by Mr. McCurdy, and the conclusion is that a plate or film, washed free from the reducing agent used in developing the image, may be fixed as well in the light as in the dark, and at the convenience of the operator.

PHOSPHORESCENCE OF PHOTOGRAPHIC PLATES.

I OBTAINED the following results, writes Mr. T. A. Vaughton in "Nature," which are new to me, in the course of some experiments on the action of light on the salts of silver. I have not yet thoroughly examined the light or radiation emitted in these experiments, but its actinic power is low, and it appears to render the brush discharge from an induction coil more luminous. The sensitive silver salts, such as the bromide, iodide, and chloride, if precipitated and kept in the dark, have the property, under certain conditions, of emitting light in the degrees proportionate to their sensitiveness. Thus the bromide, which is the most sensitive, emits more light than the iodide and chloride. A convenient way of observing the phenomenon is to take a bromide photographic plate and place it at once (without having exposed it) in ordinary pyro soda developing solution and allow it to remain for ten minutes. Take out of the solution, wash, extinguish the "red lamp," and in total darkness plunge it suddenly into a dish containing a saturated solution of aluminium sulphate. The plate immediately becomes phosphorescent, and the solution also is luminous, but not so bright as the plate is at first. The light gradually weakens, and in a minute or two dies away. On pouring the solution off the plate into a bottle, the whole body of the liquid becomes luminous, and has the appearance of "bottled moonlight." It remains so several minutes, and the light is increased by shaking the liquid. If half the plate be exposed to the action of white light for a second before treating with the pyro soda solution, that half remains dark and emits no light when the plate is put into the aluminium sulphate. If the plate is given a short exposure in the camera, and developed and put into the aluminium sulphate solution, the image will appear dark on a phosphorescent background. On placing some precipitated bromide of silver (which had been kept a few days in corked test-tube in the dark) in a porcelain dish and exposing it to a bright red light whilst adding the pyro-soda solution, it appears black, but on pouring off the solution the precipitate gradually assumes a bright green appearance under the red light, whilst in white light it appears dark grey or black. The remarkable part of these experiments appears to me to be the fact that the exposing of the silver salts to the action of light destroys their power of emitting it under the treatment described, whilst the salt precipitated and treated in total darkness emits light freely.

* In this experiment I used pyrogallie acid developer.

Mr. H. J. Edwards writes to the same Journal:—"Some time ago when developing an X-ray photograph I observed the effect noticed by your correspondent. Very little of the silver salt had been acted, and the plate, after development, when put into alum solution lit up as described. I have often watched for the same effect with ordinary negatives; sometimes there is phosphorescence, sometimes not. Apparently a fairly long development with the pyro is necessary. Not only the plate itself, but the used developer I give the phosphorescence with alum solution. Dilute sulphuric acid may be used instead of the alum. Quinine sulphate or hydrochloride does not light up when the used developer is added, but it does if a few drops of sulphuric acid are subsequently introduced. Printing out paper may sometimes be successfully used instead of a plate, or the experiment may be still more easily made by mixing potassium bromide and silver nitrate solutions in dim gaslight, de-aerating, and shaking up the resulting silver bromide with pyro soda. The resulting liquid results which gives the lighting up effect when poured into alum solution or dilute sulphuric acid."

A PETERBOROUGH PHOTOGRAPHER'S BANKRUPTCY.

At Peterborough Bankruptcy Court on Friday last week, Harry Marriott, photographer, living at London Road, and lately carrying on business at the Eastmid Studio, Market Place, appeared before Mr. Registrar Gaches and underwent his public examination. There was statement of affairs on the file. Examined by the Official Receiver Mr. Howard W. Cox, debtor said he was apprenticed to the printing business at Wisbech. He studied photography himself, as an amusement first, and then he began business in Peterborough. Had you any money then?—No, only what my father lent me. How much did you have?—I cannot say. How long did you carry on that business?—The first business you had?—Twelve months. When was it you began?—I do not remember. Well you said here (in the statement by debtor) that you began in 1895. Is that correct?—Somewhere about then. What did you do at the end of the twelve months?—I took another business. What was it?—The same profession. Where?—The Cathedral Studio. In Peterborough?—Yes. Did you pay anything for that?—Yes. How much?—£100. Where did you get the £100 from?—From my father. You borrowed it from your father, or did he give it to you?—I borrowed it. Did you pay him back?—I think not. Don't you know?—Well, I have paid him the money back, but very little. Have you an account of how much you paid him?—I have not. How long did you carry on that business?—Five years. What happened then?—I built another studio. Where?—At my last place. Built it yourself?—Yes. How much did it cost?—About £200 or £300. Where did you get the money from to build that?—From my father. He lent it or gave it to you?—Lent. Did you pay him back?—No. Who was the studio to belong to at the end of the lease?—We were to renew it if necessary. You were to have it and glaze it?—No, I was not to do external repairs. That studio was to belong to the landlord?—Yes, in consideration of the lease and the rent I paid. What was the rent?—£40 per year. Did you get into difficulties at the end of five years?—I got into difficulties the first year I was in my new place. Did you call a meeting of your creditors?—I do not know I am sure. Did you execute a deed of assignment for the benefit of your creditors?—Yes. Who was the assignee?—R. W. Parr. Did you know what your liabilities were?—I cannot say exactly. Well, as near as you can tell me?—I think they were nearly £100. You said before they were £500, and now you say you were owing several hundred pounds to your father?—Yes, exactly, but not at the time you were speaking of. You said you borrowed £100 to get into the new studio.—I mean £100 beside what I owed my father. How much were they?—I cannot say now, it is such a long time ago. How much larger were they than you expected?—The Registrar: Is your father named under the assignment?—I cannot say. I had nothing at all to do with it really. The Official Receiver: What was the dividend?—I do not know. What became of the studio and the things in it?—They were sold to Eastmid and Co., Ltd. What was the Eastmid and Co., Ltd.?—It was formed out of the previous business. Who started the Eastmid Co.?—Well, Mr. Parr was Secretary. Yes?—And there were two or three directors, as far as I know; I was only acting-director of the business, and I did not do much of that work at all. Who paid for shares and found the

money?—I cannot say. Don't you know?—No; I know my father had some shares. What has happened to the Eastmid Co., Ltd.?—It was wound up. Who wound it up?—I do not know. What became of the Eastmid Co.'s goods?—I think the business was sold to my father. Did he give it back to you?—No, he sold me it. What did you pay him for it?—I do not think I have paid him yet. What did you agree to pay him?—£50 or £60. And you have not paid him?—No. How much have you paid him during the last twelve years, since 1892?—I do not think I have paid him anything. You told me just now you paid him some.—They would only be small amounts, borrowed suddenly and paid back in a few days. Have you ever had a business anywhere else?—No. Not in Leicester?—No. Never had a business anywhere at all?—No. As soon as the company was formed you began to incur debts again directly. You have been gradually getting into debt since the company was started?—I was working as manager then. You incurred debts yourself, didn't you?—Well, of course after the assignment we tried to pay everybody cash, and did not run into much debt. When was the company wound up?—It did not exist more than two or three years. You have been incurring debts ever since the company was wound up?—Yes. Could you pay them all?—I thought I could. Out of what?—Out of what I was earning. How much were you earning?—It varied in good and bad seasons. It has been £1 some weeks lately. When did you first begin getting summonses?—I have had them more or less ever since I made the assignment. That shows you were getting into debt, because you could not have been summoned unless you owed money.—You see all my old creditors did not come in. Well, they need not come in unless they like. So you have been insolvent ever since the deed of assignment, and you knew you could not pay your creditors in full?—Yes, if I had sold my business as a going concern I could have paid them. Yes, but you did not expect to sell it for much, did you? How much did you expect to get for a business which only brought in something occasionally?—Not very.—Why didn't you sell your business as a going concern?—Because I was hoping I should do better. If I had fine weather this year I might have pulled myself together. When did you buy a bicycle? The Registrar: The last one do you mean? The Official Receiver: Yes, the last bicycle. The Registrar: When did you buy your last bicycle?—No answer. The Official Receiver: Perhaps I should have put it that way. The Registrar (deliberately): When did you buy your last bicycle?—It would be about two or three years ago. The Official Receiver: I mean from Messrs. Robertson's?—Yes. Is that two or three years ago?—As far as I can remember. And what has become of the bicycle?—Sold. When?—About July, I think. To whom?—I don't know. It was sold on the Hill. What?—It was sold on the Market Hill. By whom?—It was damaged and was not worth repairing. Who damaged it?—It was worn out. Worn out?—Yes. But you had only had it about a year and a half or two years?—I must have had it longer than that. 1900 it was sold. You had had it something like three years.—Three years. Well, why worn out? My bicycle looks like new, and I have had it seven years.—This didn't. Why worn out?—I had to have it repaired several times until it got—You mean you broke it?—Yes, it was no use repairing it any longer. How much did you get for it?—25s., I think. You hadn't paid for it?—I had paid partly for it. No, you have not paid anything. They have proved for it now. The Registrar: How much have they proved for? The Official Receiver: They are proving for £3 0s. 9d., balance due to them. The Registrar: How much was the bicycle? The Official Receiver: £10. It is correct—he has paid part.—Debtor: And then there were contra accounts, too. Yes, I am including that. The contra account was £4 9s. 6d. Now, why haven't you filed your statement of affairs? The Registrar: Too busy, perhaps. (Laughter.) The Official Receiver: Why haven't you filed your statement of affairs? I did not know what to do. Oh, yes, you did. You were told what to do, and I have written a letter explaining to you what to do. Have you got my letter in which I told you what to do?—No answer. Why haven't you filed your statement of affairs?—Because I didn't know what to file. You didn't know?—I didn't know what to file. Where is the letter I sent you returning the statement you sent and explaining what you were to do?—It was at home. Why didn't you do what I told you? You have set out here a list of creditors. A great many amounts are not put opposite them. For instance, the Stamford, Spalding, and Boston Bank, how much do you owe them?—I really don't know. Do you

live in Peterborough?—Yes. Have you ever been past the Stamford, Spalding, and Boston Bank since the receiving order?—Yes. Couldn't you go in and ask them what you owed them?—Yes, I only put—Answer my question. Could you not go in and ask them what you owed them?—Yes. Did you do it?—No. Did you get a letter from me telling you to do it?—You suggested it. Why didn't you do as I asked?—I only put the name down—whether I owed them anything or not. Why didn't you go and ask them whether you owed anything or not?—No answer. The Registrar: That is a very loose way of doing anything. The Official Receiver: H. B. Vergette, ironmonger, Market Place—do you owe him anything?—I did owe him something before the assignment, and he did not come in. Why haven't you put the amount you owe him down?—Because Mr. Parr had all those. You have got to file your statement of affairs. If you don't know, why don't you go and ask Mr. Vergette what you owe him?—No answer. The Registrar: You see all those who did not come into the assignment are creditors now. The Official Receiver: Clarabut, Market Place, draper—no amount, and it does not say what the consideration was. Colls, Cowgate, the same; Dobson; Ellis and Everard; Edwards, Long Causeway. You have sixty-three creditors, and in hardly any cases are the amounts in; in no cases the debts and in no cases the consideration, all of which he could have ascertained if you had taken the trouble. The Registrar: Besides that, he ought to have known the amounts himself. It is a very loose way of going on. The Official Receiver: Of course he ought. He has not set out his rent. He has not set out anything. The Registrar: He ought to know his liabilities. It seems as if one doesn't care. Well, you must file—Debtor: I didn't want to make out a false statement. The Official Receiver: You did not make any attempt, although you had this back three weeks ago, telling you what you could do to make it complete. The Registrar: How long would it take him to make out this statement? The Official Receiver: Two days, if he worked. The Registrar: What are you doing now?—Debtor: Nothing. The Official Receiver: Two days, of course, would do it then. I would suggest a week. The Registrar: I will give him ten days. Debtor: What about those who live away? The Official Receiver: You must write to them.—And send letters through the post without any stamps? You must pay for the stamps. It is your statement.—Where am I to get the money from? How have you been living since the receiving order?—Eh? How have you fed yourself and drank yourself since the receiving order?—My wife has been keeping me. Then get your wife to find stamps.—I didn't understand it properly. You have been told, and I have told you, too, in letters which you can read and understand.—I have not been able to get at what the result of the assignment was. The Official Receiver: You have never tried. The Registrar: You could have gone to Mr. Parr and asked him; and your father would know. He was chairman of the company. The Registrar added that he would make an order that debtor file his statement within ten days. That would be ample time for a man who had nothing else to do. The Official Receiver: Is this statement in your own handwriting?—Debtor: Yes. What have you done to complete it since I wrote to you, and told you what to do?—I don't know. You have done nothing! I told you what to do—took the trouble to write a long letter to you explaining what you were to do. Mr. Craig tells me he told you, too, and you have done nothing. I had better tell the debtor at once (Mr. Cox proceeded, addressing the Registrar), that if he does not comply with your order I shall apply to the Judge to commit him for non-compliance with it. The Registrar: Certainly. It will be a serious thing for you if you don't file this statement. Debtor: I don't want to do anything that was detrimental. The Official Receiver: It is obvious he didn't want to do anything. Debtor: I went to Mr. Whitsea, the solicitor, and asked him. He said he would want a sovereign, and I said I could not afford that. The Official Receiver: I should think if you had drunk less during the last year you could have found the sovereign. It costs money to have beer and spirits and so on. The Registrar: There are other photographers in the town, aren't there?—Yes. They appear to get on, you know.—I think they are in a very

bad state. I should not say anything in public—what their business is. But I know trade is bad all over the country. And as drinking, sir, I have sometimes gone from morning to night without any food, and if I can't go in and have a glass of beer I cannot after my business. The Official Receiver: You have no right to that as long as you owe your creditors a penny. The examination was then adjourned.—*Peterborough Evening News.*

THE WORD "BIOSCOPE."

[*Tim's Report.*]

The case of the Warwick Trading Company versus Urban was cited by Mr. Justice Joyce in the Chancery Division of the High Court of Justice on Tuesday last.

The plaintiffs were dealers in cinematographic apparatus and film and by this action they claimed—(1) an injunction restraining defendants from infringing the plaintiffs' registered trade mark, word "bioscope"; and (2) an injunction restraining the defendants from passing off their goods as and for those of the plaintiffs. Defendants did not deny the infringement, but instituted proceedings by way of a cross-motion to expunge the plaintiffs' mark from the Register of Trade Marks, on the grounds—(1) that the mark had been entered on the register without sufficient cause; (2) that the word had reference to the character of the goods to which it was applied; and (3) that it was at the date of registration, or had since become, the name of the goods, and was therefore merely descriptive. The action and the motion came on for hearing together.

The plaintiff company was incorporated in May, 1898, for the purpose of acquiring and carrying on the English branch of a business theretofore carried on by a firm of Maguire and Baucus (Limited), New York and England. The defendant, Charles Urban, was at first employed in the American branch of Maguire and Baucus, and the formation of the plaintiff company he became one of their employees. The plaintiffs' business consisted to a great extent in the sale of a machine for projecting animated photographs on to a screen which machine they called the "bioscope." They also did a large business in films to be used in their machines, and in cameras taking negatives for the purpose of making the films. The plaintiff company did not themselves manufacture their goods, but had them made for them by other firms under their direction and supervision. In September, 1898, the plaintiff company applied for and obtained the registration of the word "bioscope" as a trade mark in respect of cinematographic apparatus for projecting animated pictures on a screen. It appeared that in 1903 the defendant Urban left the service of the plaintiff company, of which he had been the managing director, and commenced to carry on a similar business on his own account. He traded under the name of the Charles Urban Trading Company, and sold machines and apparatus like those of the plaintiffs, using the word "bioscope" in connection with his goods. In the circumstances the plaintiffs brought their action, which was met by the cross-motion of the defendant. Upon the motion the plaintiffs contended that "bioscope" was an "invented word" within Section 64 (1) (d) of the Patents, etc., Act, 1888, or, alternatively, that it was a word "having no reference to the character or quality of the goods" within sub-section (e) of the same section; and consequently that it was a good trade mark. The defendant, on the other hand, contended that the word was not an invented word, that it was a known name of goods of this description, and that the mark ought to be expunged from the register. Counsel on his behalf referred to various books or publications in which the word was to be found among them being the "Dictionary of Photography," the "Amateur Photographer" (1896), and the "Bioscope, or Dial of Life" (1891), while the word "bioscope" was indexed in the British Museum catalogue.

Upon this part of the case his Lordship held that "bioscope" was not an invented word, but was, in fact, a known English word. Further, it had been used in connection with apparatus of a similar character. He accordingly directed the mark to be expunged from

the register. Upon the other part of the case the plaintiffs contended that upon the evidence the word bioscope as applied to cinematographs and cinematographic apparatus denoted the origin of the goods—viz., that the goods sold under that name were the goods of the plaintiff company. They alleged that the defendant had, by his course of dealing and his catalogues, endeavoured to pass off his goods as those of the plaintiffs.

Mr. Hamilton, K.C., and Mr. Hodge appeared for the plaintiffs; and Mr. A. J. Walter and Mr. White for the defendants.

Mr. Justice Joyce, after stating the facts, said that before the plaintiff company existed the word "bioscope" was known in France as applied to a machine similar to that of the plaintiffs. An essential part of that machine had been patented in France and was protected in England, and both the plaintiffs and defendants paid royalties to the patentee. It was also shown that the word was known in America, and was to be found in various English publications. His Lordship then referred to the motion to rectify the Register of Trade Marks, and said that he had already ordered the mark to be expunged. The plaintiffs, however, endeavoured to maintain their right to a monopoly in the use of the word, in what was known as a passing-off action. The plaintiffs had amended their writ by asking for an injunction to restrain the defendant from representing that his business was the business of the plaintiffs. As to that, his Lordship held that there was no evidence to show that the defendant company had represented its business to be that of the plaintiff company. But an injunction was also claimed to restrain the defendants from using the word "bioscope" in connection with projecting machines and cameras without distinguishing the defendant's goods from those of the plaintiffs. But the plaintiffs were now calling their machines the "Warwick Bioscope," while the defendant called his the "Urban Bioscope." There was no danger of mistake, and no case of deception had been proved. His Lordship then referred to the judgment of Lord Herschell in "Reddaway v. Banham" (1896, A.C., 59), and to that of Lord Halsbury, Lord Chancellor, in "Birmingham Vinegar Brewery Company v. Powell" (1897, A.C., 710), where he said:—"The proposition of law is one which has been accepted by the highest judicial authority, and acted upon for a great number of years. It is that of Lord Justice Turner in 'Burgess v. Burgess' (D. M. and G., 204)—'No man can have any right to represent his goods as the goods of another person, but in applications of this kind it must be made out that the defendant is selling his own goods as those of another.' That is the only question of law which, as it appears to me, can arise in these cases. All the rest are questions of fact." The principal ground alleged by the plaintiffs for their case was that, by reason of the user of the term "bioscope" in connection with their goods it had come to denote their goods alone. In his Lordship's opinion, that had not been established. The plaintiffs were not entitled to the sole use of the word, and had no monopoly in it at all. The defendant's goods were sufficiently distinguished from those of the plaintiffs, and the action must be dismissed with costs.

The Röntgen Society's next ordinary general meeting will be held on Thursday, February 4th, 1904, at 20, Hanover Square. The chair will be taken at 8.30 p.m.

The Croydon Camera Club's Seventh Exhibition will be held at the Galleries, Park Lane, Croydon, from Wednesday April 6th, to Wednesday, April 13th, 1904. The judges will be Messrs. Frederick H. Mans, Frederick Hollyer, and Rev. F. C. Lambert, M.A. The following are the classes:—Restricted to Members: Section A (any subject)—Open to all members of the club. Section B (any subject)—Open to all members who have not gained an award at any of the club's annual exhibitions. Section C (lantern slides, any subject)—Sets of four. Awards will be given for the best sets. Open to members. Open to the World: Section D (any subject). Section E (lantern slides, any subject)—Sets of six. Awards will be given for the best sets. Entry forms and further particulars can be obtained from the exhibition secretary, Mr. C. Umfreville King, 1st Bank, Selsdon Road, Sanderstead, Croydon.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Jan.	Name of Society.	Subject.
29.....	West London Photo. Society..	<i>Mounting, &c.</i> Mr. E. T. Holding.
29.....	Nottingham Camera Club	<i>Photograph and Rotogr. Papers.</i> Demonstration. Mr. W. A. Sims.
29.....	Aberdeen Photographic Assoc.	Jumble Sale.
29.....	Watford Photographic Union	Members' Lantern Slides.
30.....	Glasgow Southern Photo. Assoc	Last date for sending in Entries for the Championship Cup and Lantern Slide Competitions.
Feb.		
1.....	Southampton Camera Club.....	<i>The Photographic News</i> , Prize Slides.
1.....	South London Photo. Society	<i>Colour Photography for Moderate Means.</i> Mr. T. Thorne Baker, F.C.S., F.R.P.S.
1.....	Bowes Pk. and District Ph. Soc.	Lantern Slide Competition.
1.....	Oxford Camera Club	Annual General Meeting.
1.....	Ilford and District Photo. Soc.	<i>A Ramb's Through Epping Forest.</i> Mr. H. T. Mally, F.R.P.S.
1.....	Camera Club	<i>A New Departure in Connection with Control Printing.</i> Mr. Nelson K. Cherrill.
1.....	Glasgow & W. of Scotland P.A	<i>Recovering Residues.</i> Demonstrator, Mr. W. G. Buchanan.
1.....	Burton-on-Trent Photo. Soc.	Lantern Lecture, "Majorca."
2.....	Royal Photographic Society	<i>Bromide Printing.</i> Demonstrated. Mr. G. Winthrop Somerville.
2.....	Glasgow Southern Photo. Assoc	<i>Stereoscopic Photography.</i> Mr. W. B. Hosack.
2.....	Aberdeen Photographic Assoc.	Annual "At Home."
2.....	Rotherham Photo. Society	Printing Papers—P.O.P., Bromide, Gaslight.
3.....	Croydon Nat. His. and Sc. Soc	<i>Ancient Entrenchments.</i> Anthropological.
3.....	Photographic Club	Open Night.
4.....	Bath Y.M.C.A. Camera Club	<i>A Few Practical Hints to Amateurs.</i> Mr. S. Curvis.
4.....	Southport Photo. Society	<i>A Cycle Tour in the Lake District.</i> Illustrated. Mr. J. T. Rigby.
4.....	Glasgow Southern Photo. Assoc	Last date for sending in Prints to the Federation Exhibition at Perth.
4.....	Liverpool Amateur Photo. Asso	Competition Pictures on view.
4.....	London & Prov. Photo. Asso.	<i>The Decimal and Metrical Systems.</i> Mr. J. R. Gotz.
4.....	Richmond Camera Club.....	Lantern Night.
4.....	Watford Camera Club	Photographic Evening. Mr. H. Wood-Smith.
4.....	Hull Photographic Society	<i>Photography Prize Slides.</i>
4.....	Dundee & E. of Scotland P.A.	<i>Gum-bichromate.</i> Demonstration. Mr. G. D. Macdougald.
4.....	Gainsboro' Camera Club	<i>Amateur Photographer Prize Prints.</i>
4.....	Camera Club	<i>Amiens and its Cathedral.</i> Rev. T. Perkins, M.A.

CAMERA CLUB.

ACCIDENTS will happen, even at such a well regulated establishment as the Camera Club, and on Monday last week the expected lecturer, Mr. Egerton Castle, was obliged by force of circumstances to beg off. But a most admirable substitute was found in the person of Mr. Henry Stevens, who had kindly consented at very short notice, to bring a selection of his beautiful pictures and to talk about them.

In these days of so-called "pictorial" photography, which is too often the excuse for unlimited faking of both positives and negatives, it is quite a relief to turn to the kind of pictures which used to be regarded as the best. The type of picture which we mean was one which owed its being to an intelligent use of the camera and lens, coupled with the artistic instinct which prompted good choice of subject and correct lighting. There was no dodging of any kind. Mr. Stevens is one of the foremost exponents of this kind of photography. He has always aimed at the highest technique, and he manages to hit his mark. At the Camera Club on Monday night he showed on the lantern screen nearly two hundred pictures, and he was able to say that he had never retouched or altered a picture in the whole course of his career. Another still more curious statement was that he had never used an isochromatic plate or screen. Considering that he has produced such a variety of beautiful flower studies this is very remarkable, and many will suggest that he would have done better had he adopted these modern aids. But looking to the lovely and tender tones which Mr. Stevens secures upon the petals of these studies the impartial critic is led to ask himself how they could be improved. With regard to the animal studies it is at once evident that they would have been impossible under the extended exposure which would have been necessary with an efficient screen.

One of the secrets of Mr. Stevens's success is liberal exposure with

a small stop, coupled with partial development so as to bring out everything upon the plate. And it is quite evident that he must possess an enormous stock of that invaluable photographic ingredient called "patience." We should like to see the expression on the face of the average professional photographer if he had brought to his studio a basket containing live rabbits, cats, kittens, and a fox terrier, with instructions to make a good picture of them in the studio, and to take care that none of them moved. Mr. Stevens possesses the secret of accomplishing this, and not once in a while, as a fluke, but over and over again. He said that it often involved three entertainments going on at the same time, and he had all kinds of music to amuse the animals. One would like the sackbut, another the dulcimer, and so on.

The lecturer also showed a number of very successful portraits of different members of the club, and Mr. Frank Braine was very anxious to know in what manner the photographer had secured their attention, and whether the attraction provided took the form of liquid refreshment of any kind. Flowers, animals, portraits, curios, alternated with one another in marvellous profusion, and Mr. Stevens showed that he was a most versatile workman with the camera. On the motion of the chairman of the evening, Mr. T. C. Hepworth, he was accorded a most sincere vote of thanks.

On Thursday, the 21st inst., there was an interesting lecture by Dr. Von Recklinhausen, on "The Mercury Vapour Lamp and its Application to Photography." We some months ago described this lamp in our columns, and therefore it will be unnecessary to enter into minute details concerning it. It is being pioneered by the Westinghouse Company, and we believe that anyone who wishes to see it in action can do so by applying to them. The lamps shown at the lecture consisted of two, each requiring a 50 volt current, and giving together a most brilliant light, by the help of which several portrait negatives were secured by Dr. Grün with his liquid lens. An improvement has been made in the lamp since last we referred to it. Its form is that of a glass tube, about two feet long, exhausted of air and containing at one end a bulb containing mercury. This tube is so supported that it can be tilted, when the mercury naturally runs to the lowermost end, makes the necessary connection between the two terminals, and the light is immediately established. In the older form of stationary lamp an initial current of high intensity was required to bridge over the space before light could be had.

It will be evident to those who have only slight electrical knowledge that the mercury vapour lamp resembles a Geissler tube. But the light given out is far more powerful than any apparatus of the kind which has been yet brought forward.

It is not a pleasant light, for the red rays of the spectrum are absent from it. Examined with the spectroscope we find bright lines in the blue, yellow, and violet regions, and a mixture of these colours gives a light of very peculiar tint. One gentleman who was present declares that it made the living face look like that of a corpse—and a dirty corpse, too—"one that wanted washing." But in spite of this drawback the light is found very serviceable for photography.

The lecturer gave a brief historical account of the efforts to obtain a light from mercury vapour, and claimed that this lamp—known as the Cooper-Hewitt—was the first one which was practical and commercial. The lamp as at present made is only workable on a continuous current installation. The light given is rich in ultra violet rays, but unfortunately these do not get outside the lamp, for they are screened off by the glass. Experiments are now in progress, with a view to use quartz or some kind of special glass which will pass ultra violet light. The unpleasant tone of the light, which might frighten ladies away from a photographic studio, can be modified by screening it with red silk, which has been treated with a fluorescent dye. The lamp is claimed to have a far higher efficiency for a given current than any other form of electric illumination. The lamp has found favour in America with process block makers, who use two 50-volt lamps, supported on suitable stands, upon each side of the drawing to be copied. It is absolutely steady in action, never flickers, and the radiance afforded is of a constant kind. It is also used for general studio work and for printing negatives.

Particulars regarding this latter employment of the lamp will interest our readers, for the dull weather experienced for many months must have made many of them wish for some source of efficient artificial light. The lecturer said that a landscape negative which would require ten minutes to print in direct sunlight, on a June day, and thirty-

five minutes to print it in diffused daylight, would require under the arc light eighty minutes, and under the Cooper-Hewitt mercury lamp only twelve minutes. This high efficiency of the mercury lamp is due, not only to its activity, but also to the circumstances that the glowing tubes can be brought close against the printing frames.

We suppose that never before was a lecturer assailed with such torrent of questions as this one had to answer. And we regret that we cannot afford space to consider them. Before the close of the meeting Dr. Grün was able to show the results of his portraiture. One taken in half a second at F. 5 was fully exposed, and one to which ten seconds was given, with a red screen behind the lens, was considerably over-exposed. Dr. Grün explained that this particular red passed the yellow rays, and the picture showed the value of such rays to the photographer. The lecturer, although he was speaking not in his own language, was singularly clear in all his explanations, and was much thanked by those present for his admirable demonstration and discourse.

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

JANUARY 21ST.—Mr. Rapson in the chair. The hon. secretary announced that the supper (February 18th) would be served at 7.15, not 7.30 as announced on tickets. Mr. S. Rawkin gave a lecture on "Some Lantern Slide Methods," fully illustrated with examples of building up pictures and sky of general and local reduction with hypo and ferricyanide, of local and general toning as a means of obtaining colour. A pleasant and instructive evening was spent, and the lecturer was heartily thanked for display of skill and ability.

CROYDON CAMERA CLUB.

JANUARY 20TH.—A somewhat novel demonstration was provided for this evening, Mr. Hickox, the originator of the Quta Ferrottype Camera showing this ingenious little machine in actual operation, in combination with the platinotype portrait lamp, the latter being in charge of its inventor, Mr. W. H. Smith, who, in addition, manipulated the camera "to the manner born," though his acquaintanceship with it had been of short duration.

Between twenty and thirty photographs of the members were taken in what appeared to the uninitiated, to be an incredibly short time, on minute precisely being the period necessary to focus, expose, develop, fix, wash, and dry the resulting "tin-type." This, of course, could only be achieved by reducing each step to a semi-mechanical operation. The lamp itself standardised the exposure, $7\frac{1}{2}$ grains of magnesium ribbon forming one charge, and the mechanism of the camera did the rest, excepting a brief wash, and hasty drying over a special spirit lamp attached to the tripod. The Quta may be broadly stated to consist of three compartments, the camera proper being one, a magazine of 36 ferrottype dry plates alongside being another. After focussing the screen it slid on one side, and a dry plate automatically occupies the focal plane. The third compartment is underneath, with two narrow tanks, ranged one behind the other, containing respectively the developing and fixing solutions. After exposure a lever is pulled, the plate drops through a slot into the developer, or rather into a movable dipper contained therein, and after a brief immersion is removed by the clipper into the fixing solution. Fixation is complete in a few seconds, and the plate taken out briefly washed and dried. The camera is so light loading, and provision is made for taking both upright and oblique pictures. The whole apparatus packs up into small compass, and its construction is such as to stand a considerable amount of wear and tear. Focussing is achieved by a simple sliding motion, which, not so convenient as a rack and pinion, is perhaps less likely to get out of order. It is claimed for the Quta dry plates that they are a step in advance as regards speed, and Mr. Smith bore out this contention, but, compared to a modern fast dry plate, they are extremely slow. With a stop approximately F. 6 out of doors in the shade, 2 to 3 seconds is required, according to circumstances. Indeed, Mr. Hickox stated that until Mr. Hector Maclean had drawn the platinotype portrait lamp to his attention, he had been unable to find any artificial light of any practical value, though he had scoured Germany and the United States in the quest. Flash lamps placed close and with a small charge would do the work, but the dust had to be got rid of somehow.

An exposure of 17 seconds to the two powerful arc lights had resulted in under-exposure.

Mr. Hickox, in the course of his remarks, stated, with some natural complacency, that he had secured the sole rights for ferrotype photography at the forthcoming St. Louis Exhibition, and proposed planting over one hundred machines in the grounds and buildings. Presuming the operator attached to each machine to be a pushful canvasser for custom, no difficulty, to say the least, should be experienced by visitors in having their features nicely recorded on tin.

MANCHESTER AMATEUR PHOTOGRAPHIC SOCIETY.

The following are extracts from the nineteenth annual report. During the year we have held what is intended to be the first of a series of open photographic exhibitions in the North of England, and we are every reason to be proud of the results of our efforts. In conjunction with the Leeds Camera Club and the Liverpool Amateur Photographic Association we have established a rota by which there is to be an open photographic exhibition held in the North each year, at Liverpool in 1904, Leeds 1905, Manchester 1906. This year council confidently hopes will stimulate not only our own but all the photographic societies of the North, and will also tend to the advancement of photography in general. Notwithstanding an open exhibition in March the annual exhibition of members' work in November was up to and even surpassed its previous high standard of excellence. Last year we were startled to find that 64 meetings of the members had been held in one year, this year the number is 80, which includes 5 evenings at the Athenæum, 47 at the Society's rooms, and 17 rambles. If we counted the eight evenings of the open exhibition we should have a grand total of 88. At the last annual meeting we had 335 names on the roll of membership of the Society. During the year we have elected 71 members, making a total of 406. Against this we have to record the loss by death of two members, of 39 through removal or resignation, and of nine struck off for non-payment of subscription. The net membership of the Society at this meeting is 356, an increase of 21 members.

LIVERPOOL AMATEUR PHOTOGRAPHIC SOCIETY.

At the last meeting the president announced the result of the annual competition as follows:—Prints.—Championship—Class A (gold medal and trophy), Mr. Joseph Appleby; Class B (silver medal), Messrs. J. Crichton Timpany and Charles Gostenhofer; Class C (silver medals), Messrs. C. E. Langtry and H. E. Cubley; Class D, no competitors; Class E (bronze medals), Lieut.-Colonel John Pilkington and Mr. Alex. Wands. Ladies' Competition (silver medal presented by president).—Miss Laura Harvey. Lantern Slides.—Class F, championship (gold medal and trophy).—Dr. C. Thurstan Holland; Class G (silver medals), Messrs. James Petree and W. Mallinson. Bi-monthly competition for the highest number of prints gained during the year.—Mr. Charles Quinn (silver medal) and Mr. H. Holt (bronze medal).

DUNDEE AND EAST OF SCOTLAND PHOTOGRAPHIC ASSOCIATION.

JANUARY 14th.—The Dundee and East of Scotland Photographic Association is fortunate in having located in the same town a University College, and doubly fortunate that it finds members of the faculty there willing to prepare for them lectures so delightful that which Professor Kuenen delivered. The redoubtable battery of apparatus on the platform indicated at once that no ordinary treat was forthcoming. Business was quickly despatched, and the meeting at itself in the hands of Professor Kuenen and his assistants. "The Nature of Light" was the subject announced, and a series of beautiful experiments were given indicating the wave motion and the electric qualities of light. The recent lecture on "Radium" in the Innaid Hall had familiarised members with the electroscope and the fact that it could be discharged by the radium rays. The demonstration by Professor Kuenen that a beam of light had the same power was therefore watched with great interest, especially when it was shown that a piece of ruby glass, or even ordinary plate-glass, cuts off the ultra-violet rays and robs the light of its electric fluence. The effect of fog in splitting up white light into its four components gave a useful hint to photographers, and the

concluding experiment brought out our old friend hypo in a new guise. The disintegration of hypo-sulphite depositing sulphur particles in the path of the light was shown as producing on the screen the effect of the setting sun. The comment on the various experiments was made with rare grace and humour.

Patent News.

The following applications for Patents were made between January 11 and January 16, 1904:—

Printing Frames.—No. 681. "Improvements in photographic printing frames." Complete specification. James MacSheehy.

Coloured Photographs.—No. 808. "New and improved process for producing coloured photographs." Walter Riebenschalm and Gustav Koppmann.

Films.—No. 866. "Improvements in the method of using photographic films and in means therefor." Edward John Gammage.

Washing Films.—No. 896. "Improvements in and relating to means for washing photographic films and the like." Wilfrid Lean.

Films.—No. 925. "Improvements in films for use in photography." (Actien Gesellschaft fur Anilin-Fabrikation, Germany.) Charles Denton Abel.

Changer.—No. 922. "Improvements in means for holding and for facilitating the changing of photographic films and plates." Conrad Beck.

Printing Frames.—No. 998. "Improvements connected with photographic printing frames." Alfred Eustace Marriott.

Coloured Photographs.—No. 1,008. "A new or improved method and apparatus for the production of coloured photographs." Charles Julius Drac.

Sound Indicator.—No. 1,017. "Sound indicator for cameras and the like." Walter J. Levi.

FORTHCOMING EXHIBITIONS.

February 10-13.—The Longton and District Photographic Society. Hon. Secretary, T. Mottershead, 43, Stafford Street, Longton, Staffs.

February 13-27.—Scottish National Photographic Salon. Exhibition Secretary, Alex. Mackenzie, 42, Scott Street, Perth.

February 27 to March 5.—Birmingham Photographic Society. Particulars of L. Lloyd Hollies, Church Road, Moseley, Birmingham.

February 29 to March 3.—Cripplegate Photographic Society. Hon. Secretary, George H. Depledge, 17, Hazeldene Road, Goodmayes, Chadwell, Essex.

March 5. Last day for entries February 18.—South London Photographic Society. Entry forms from W. Calder Marshall, F.C.A., 41, Glenton Road, Lee, S.E.

March 5-12.—Brechin Photographic Association. Hon. Secretary, J. Kirk, 1, Infirmary Street, Brechin.

March 9-12.—Nottingham Camera Club. Hon. Secretary, Arthur Black, 9, Bowers Avenue, Nottingham.

March 15-17.—Brentford Photographic Society.

March 25 to April 9.—Northern Photographic Exhibition. Hon. Exhibition Secretary, Chas. F. Inston, F.R.P.S., 25, South John Street, Liverpool.

April 6-13.—Croydon Camera Club. Hon. Exhibition Secretary, C. U. King, Hurst Bank, Selsdon Road, Sanderstead.

DANGERS of Hydrogen.—Alfred Allchin, employed by a Greenwich firm of iron merchants, died in hospital at Greenwich on Monday week from injuries received through an explosion on the Saturday. He had placed a cylinder of hydrogen gas near a wood fire on the premises of his employers, and the cylinder burst with tremendous force.

Commercial & Legal Intelligence

Messrs. A. E. Staley and Co., are this week removing to larger and more convenient premises in the centre of the optical trade, situated at 19, Thavies' Inn, Holborn Circus.

The Leto Photo Materials Company, Limited, has been registered with a capital of £2,000 in £1 shares (1,000 six per cent. cumulative preference). Object, to manufacture and deal in photographic materials and goods, etc. No initial public issue. Registered office, 9, Rangoon Street, E.C.

Messrs. W. Butcher and Sons, of Camera House, Farringdon Avenue, London, E.C., write:—We have taken over the business of Messrs. Bessus and Co., of 84, Hatton Garden, E.C., including goodwill, patents, stock, workshop, and plant. We shall be transferring the whole of the wholesale business, including the stock, from 84, Hatton Garden, to Camera House, but for the present intend to carry on the workshop at Hatton Garden. We have secured the services of Mr. Bannister, the late proprietor, as an additional London representative. All orders and correspondence, therefore, for Messrs. Bessus and Co. should be addressed to Camera House instead of Hatton Garden.

BEFORE Mr. Justice Channell and a special jury at the Suffolk Assizes at Ipswich last week Mr. George Quilter, of the Bath Hotel, Felixstowe, sued Mr. Arnold Wright, editor and registered proprietor of the "London Argus," for damages for loss of custom alleged to have been suffered owing to the publication in plaintiff's paper of a photograph which gave a view of some stables as the plaintiff's premises. Mr. Kemp, K.C., and Mr. Poyser appeared for the plaintiff; and Mr. Dickens, K.C., and Mr. Boydell Houghton for the defendant. Defendant published an article on Felixstowe, with illustrations which were intended to give views of the new Felixstowe Hotel and of the Bath Hotel, but only stables appeared in this second illustration, and plaintiff claimed that in the next three months he lost £700 of custom by the misrepresentation. Evidence of a falling-off was given by an accountant who had examined the books of the Bath Hotel. In defence, it was explained that Mr. Arnold Wright took the photograph himself, and thought that he had included the Bath Hotel. He did not personally develop the negative, and when the "pull" of the block was sent to him it was not sufficiently clear to reveal the fact that the Bath Hotel had been left out of the picture. He afterwards inserted an article and illustrations giving prominence to the Bath Hotel. Mr. Dickens argued that the small building shown in the first picture could never be mistaken for the Bath Hotel by any reasonable being, but Mr. Kemp urged that an editor who did injustice through carelessness should pay compensation. The jury gave a verdict for the plaintiff with £50 damages, and judgment was entered for that amount and costs.

THE Woodford Photographic Society's tenth annual exhibition will be held at the Wilfrid Lawson Hotel, Woodford Green, on Thursday, February 4, 6.30 to 10 p.m.; Friday, February 5, 6.30 to 10 p.m.; Saturday, February 6, 3 to 9.30 p.m.

NEW PLANETS.—Three new planets have been discovered by Herr Dugan at the Observatory at Königstuhl, near Heidelberg. One of them may possibly turn out to be identical with an asteroid already known, but the others are certainly new. The discovery was made by photography.—"The Standard."

ROYAL PHOTOGRAPHIC SOCIETY.—Tuesday, February 2.—Second of the series of practical demonstrations on printing processes, "Bromide Printing," by Mr. C. Winthrop Somerville. Synopsis—(1) Why a preference is given to the bromide process. (2) The formation of a working and definite base to reduce uncertainty in the process to the lowest possible limit. (3) The negative. (4) Correct exposure. (5) Development. (6) Variations of exposure and development. (7) Developers. (8) Bromide of potassium. (9) Toning. Demonstration.—Enlargements and printing in of clouds. Sepia toning with sodium sulphide.

News and Notes.

RADIUM in Germany.—A mining expert at Freiberg, in Saxony, states that radium is to be found, not only at Joachimsthal, on the Bohemian side of the Erzgebirge, but also on the Saxon side, as by-product of silver ores. Substances containing radium have been found at Vereinigteld, in the Forsten Mountains, near Johannsgeorgenstadt, in Saxony. The uranium pitchblende, the production of which is very costly, and which was formerly used in the preparation of choice green and yellow colours for porcelain painting, is likely to become once more a very valuable substance, and the object of extensive mining operations.

REPORTED Discovery of Radium in America.—Several Professors of Princeton University concur in giving precision to the report regarding the discovery of radium in America, secured, not from pitchblende, but from carnotite, a canary-coloured ore, the supply of which is practically limitless. It promises to be equal in quality with the product secured by M. Curie, and to be infinitely less expensive. Carnotite abounds in Utah. It contains oxides of uranium and vanadium. Experiments lasting a year have resulted in the establishment of works on the Curie process on a large scale at Buffalo.—"The Standard."

THE President of the Board of Trade has appointed the following gentlemen, Lord Rayleigh, F.R.S. (chairman), Sir William de W. Abney, K.C.B., F.R.S., Dr. Robert Farquharson, M.P., Mr. William King, and Mr. J. Fletcher Moulton, K.C., M.P., to be a committee to inquire and report as to the statutory requirements relating to the illuminating power and purity of gas supplied by the metropolitan gas companies, and as to the methods now adopted for testing the same, and whether any alteration is desirable in such requirements or methods, and, if so, whether any consequential alteration should be made in the standard price of gas. Mr. Herbert C. Honey, of the Board of Trade, has been appointed secretary to the committee.

WRITING on Blue Prints.—In connection with the use of alkaline agents for writing in white on blue prints, one frequently sees this solution mentioned, but always with the disappointing statement that the solution will blur by spreading through the fibres of the paper. I have thought it might be of interest to such of our readers as are using blue prints to know of a method which I have used for some time with entire success, consisting of mixing the blue with a more or less thin gum arabic or mucilage water. Oxalate of potash (10 per cent. solution) is about the only alkali that will produce a pure white and satisfactory mark.—W. F. Moody, in "The Scientific American."

PETER COOPER HEWITT, the inventor of the vapour lamp, has recently been granted a patent on a new form of his lamp. Up to the present time the lamps have been constructed for installation in vertical position, but the inventor has discovered that by placing the lamps in a horizontal position a number of practical as well as aesthetic advantages are secured. The lighting of the room is said to be accomplished in a much more satisfactory manner, and the quality of the light is improved. Mr. Hewitt has also been granted a patent on an improvement in the construction of the lamps, which the starting of the lamp is facilitated at a much lower potentiality. This is done by the addition of red sulphide of mercury to the interior of the lamp during the course of construction.

ANTHROPOLOGICAL Photographs in India.—With a view to making the photographs of independent inquirers, travellers, collectors, museum officials, and others, generally available to those interested in Anthropological Science, who would not otherwise be able to obtain them, for the purpose of comparison or inquiry, the Council of the Asiatic Society of Bengal have decided to adopt for India a similar method to that which the British Association for the Advancement of Science has adopted in England. The Council have decided to establish a depot for the registration and storage of Anthropological photographs at the Asiatic Society's building. Anyone who possesses photographs of anthropological interest, is therefore invited to send one unmounted print of the same, which will be mounted by the society, together with particulars of the photographs sent, as noted in the annexed form, and

also to state whether he is willing to deposit the negative with the society. Measures will be taken for keeping all negatives so deposited carefully and in good order, but the society cannot hold themselves responsible for the negatives although every possible care will be taken. The society will also arrange to have prints made when required, at the lowest possible rates, and the price at which a copy of any photograph can be so obtained will be entered in the list that will be published by the society. The copyright of all such photographs will, of course, remain the property of their owners, and this will be clearly stated whenever any prints of them are supplied on application.

Radium and Light Waves.—Some results of an investigation into the photographic action of radium radiation were laid before the Physical Society's meeting last week by Mr. S. Skinner. The object of the research was to trace out how far the photographic influence was comparable with that of ordinary light, and the conclusions gained brought out several important points in the connection between the ultimate nature of radium and ordinary light waves. It was found that when ordinary photographic plates were exposed to the influence of radium bromide the intensity of the image produced increased rapidly with a longer time of exposure, then decreased gradually until a stage was reached when practically no dark image was formed on development. A striking resemblance is here found to ordinary photography, where, as is well known, over-exposure involves a fainter image. Further, there seemed little doubt that the impression was produced by the β and γ rays only, for the α rays must have been absorbed by the mica plate that was interposed. This would appear to point to a definite advance in the solution of the problem now before physicists, viz., whether any real modification of the prevailing wave theory of light would be demanded by further elucidation of the nature of radio-activity. A still further resemblance in the radium influence and that of ordinary light lay in the observation that a plate that had been exposed to the bright light of an electric spark, if further exposed to radium bromide underwent a complete reversal in the image. This was precisely the same phenomenon as that observed by Claydon, who obtained a reversal of the electric light impression by weak gas light. The final conclusion seemed to be, therefore, that there was a fundamental connection between the β and γ rays, the intensely rapid and minute particles of Crookes and Thomson, and the so-called waves of sunlight.

AN "Arts and Crafts Exhibition" will be held in the Music Hall, Shrewsbury, from March 15th to 15th inclusive, under the presidency of the Earl of Powis, Lord Lieutenant of the County, and under the influential patronage of the Duchess of Sutherland, Lord Berwick, the Countess of Bradford, Colonel Hon. F. Bridgeman, Lady M. Cholmondeley, the Dowager Lady Corbet, Sir W. Corbet, Bart., Lady C. Milnes-Gaskell, Mr. H. D. Greene, M.P., Lady Harnage, General Hon. W. H. Herbert, Lady Mary Herbert, Mrs. Noel Hill, Lord Kenyon, the Hon. Mrs. Leeke, the Hon. Mrs. Heywood-Lonsdale, Lady G. Monckton, the Hon. Mrs. Ogilvey, Colonel Kenyon-Slaney, M.P., Lady Mabel Kenyon-Slaney, Lady Stamer, Lady Stokes, the Hon. and Rev. G. H. F. Vane, Sir Offley Wakeman, Bart., and many others. A committee has been formed, of which Mrs. Atherley, of Attingham Park, is the hon. treasurer, and Mrs. Mather, of Meole Brace, Shrewsbury, the hon. secretary. Prizes amounting to a considerable sum are announced, limited to Shropshire. The method adopted in the division of the classes of exhibits is one which should bring out all the latent talent in the county, with the best possible results. The last day for entering exhibits or applying for space is February 14th. The authorities at South Kensington are preparing to lend a large and valuable collection of objects to illustrate in other ways the same class of subjects as those exhibited by the competitors, and other things of a highly interesting and educational character. Many well-known craftsmen from a distance have already applied for space to show their handiwork, not for competition. Besides these there will be many articles on loan connected with the history of the county. It is hoped that her Grace the Duchess of Sutherland will open the exhibition. Lectures to be delivered during the exhibition by well-known masters of arts and crafts are being arranged.

How to Adopt the Metric System.—Great Britain must adopt the metric system for the same reasons that enforce the adoption of any

other improvements. We must progress, or be content to fall out of the race and become derelict. The change is necessary, because our systems for weighing and measuring were badly conceived; they do not compare in efficiency with the metric system. But in carefully analysing the metric system under practical use, it is clear that, although the system has stood the test of use satisfactorily, the operative units in use with it are not satisfactory. Improvement is called for. The people who have adopted the metric system with the metre units have installed units that are condemned. All the English-speaking people are using systems of weights and measures which are based on the inch units. The adoption of the metric system in place of our present systems could be accomplished with very slight trouble or cost; the great cost and obstruction is due to the entire changing of our inch units. Uniformity of systems and units for measurements is very desirable, if practicable, and there are two methods by which uniformity may be obtained. Firstly, the English-speaking people can adopt the metric system and enforce the metre units, and cast away all their inch units, weights, and measures, and make the necessary sacrifice in commerce and in their institutions. That would obtain uniformity, with the perpetuation of the present imperfect units derived from the metre. Another way to uniformity is for the English people to adopt the metric system and use it with their own present inch units. This would secure uniformity of systems throughout the 1,000,000,000 people and uniformity of units with the 550,000,000 now using the inch units. The 450,000,000 people now using the metre units would be forced to use the inch units by their perfection, whilst England would be saved this terrific and useless sacrifice. This power is reserved in our inch length unit.—Mr. Thomas Parker, in "The World's Work" for February.

LORD RAYLEIGH on Shadows.—The first Friday evening meeting of the present season was held at the Royal Institution on Friday last week, when Lord Rayleigh gave a lecture on "Shadows." He first showed that, as was predicted by Poisson from theoretical considerations, in the centre of the optical shadows cast by a small circular disc, just where the shadow might be expected to be darkest, there was a bright spot. He then showed that this bright spot could be imitated with an acoustic shadow, and he demonstrated that a sensitive flame was affected and made to flare by a source of sound, such as a bird call, even when a circular sheet of glass was interposed between them, always provided that the flame, the bird call, and the centre of the glass disc were exactly in the same straight line. He then went on to prove experimentally that the same thing happened with a sphere, a result which he had also succeeded in arriving at mathematically. In connection with this he referred to Marconi's results in signalling across the Atlantic, and said that the explanation of the feat was obscure, because from what we knew of shadows we should have expected that the waves would have passed only with difficulty round such an obstacle as was constituted by the sea, which rose something like a hundred miles above the straight line between the two points on each side. But if it was difficult for a wave, whether of sound or light, to pass round a convex surface, conversely it passed round a concave surface with extra facility, as, for instance, in the Whispering Gallery at St. Paul's, where it seemed as if the sound clung to the circumference. This phenomenon he illustrated experimentally with a miniature gallery, and, placing the bird-call so that its sound was sent tangentially into the gallery and arranging the sensitive flame at the opposite end of the diameter, he showed that the effect of the sound on the flame was diminished, if not completely stopped, by holding a narrow strip of wood vertically against the side of the gallery at any point. Finally, he referred to the problem of binaural hearing. The two ears gave us information, in particular as to the direction whence a sound came, which could not be obtained with one alone, but it was difficult to explain why. The most obvious explanation was that the nearer ear heard most clearly, but that could not be maintained as sufficient, since people who heard with only one ear sometimes showed considerable power of locating sound. Still there was no other explanation available. He commended this problem to his audience as one on which they might experiment, warning them, however, that though such experiments would require very little, if any, apparatus, they must be conducted in the open air, to avoid the disturbing effects of reflection of sound from walls, ceilings, etc.

Correspondence.

*** Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** We do not undertake responsibility for the opinions expressed by our correspondents.*

THE BRECHIN EXHIBITION.

To the Editors

Gentlemen,—May I, on behalf of the Brechin Exhibition Committee, be allowed to express through your columns our extreme regret and annoyance on learning that a number of the recipients of our prospectus had been surcharged by the postal authorities on account of the packet containing a circular in type-writing characters. To those of your readers who have been annoyed by the exaction, may we urge that in this matter we are more deserving of sympathy than of censure, the trouble being entirely due to the neglect of the postal officials here, who, through ignorance of their own regulations, failed to impress the packets with the special stamp required.

Trusting this explanation may to some extent prevent the sins of an absurd Department from being visited on our heads, and thanking you in anticipation,—I am, Gentlemen, yours sincerely,

J. KIRK, Joint Hon. Sec.

Brechin, January 23, 1904.

RADIO-ACTIVITY.

To the Editors.

Gentlemen,—I notice in your article on "Radio-Activity," in your issue of January 15, that you refer in detail to some work I did six years ago. One important point, however, you have failed to mention, i.e., that all the emanations I was then dealing with will not pass through glass. This seems to separate them from what is now spoken of as radio-activity.—Yours, etc.,

W. J. RUSSELL.

Davy-Faraday Laboratory,
January 22, 1904.

REMOVING GREEN FOG FROM NEGATIVES.

To the Editors.

Gentlemen,—In reference to your article of the 15th inst. on the pyro-soda developer, in which you mention that the pyro-ammonia developer is more prone to give green fog, and recommend a very dilute solution of Howard-Farmer's reducer being rubbed on the wet negative with a pledget of cotton-wool, I know the plan is efficacious; but another simple method of attaining the same end is to allow the negative to dry as usual, and then with a piece of swansdown or flannellette placed over the finger and moistened with methylated spirit lightly rub the fog off, as it is simply a surface deposit, and yields readily to this treatment. Some of your readers may be glad to know this method.—Yours faithfully,

W. GUTTENBERG.

35, Brondesbury Villas, Kilburn,
January 21, 1904.

OVER-PRODUCTIVENESS IN PHOTOGRAPHY.

To the Editors.

Gentlemen,—My name having been mentioned by Mr. Herbert Spackman in his reply to Mr. Lockett's article, "Over-Productiveness in Photography," I, too, would like to join Mr. Spackman in his advice not to have a general smash up of old negatives. Let them lie, and although they will be the same a year or two hence, the ideas of the worker who is at all sincere will be very different, and going through them again he will regard them from a different and more advanced standpoint, and realise in them many possibilities which had escaped his narrower perception of the past. A negative is merely a way to an end, but not necessarily to one end only.

It is like a bridge over which one has to pass to cross the stream, but once over the paths extend in every direction.

The revival of gum has immensely widened the path of pictorial possibility, and in this process many of the old negatives should enter upon a new lease of life, for this method, which *is*, and *must be* the medium for pictorial expression, will get more art out of negative—paradoxical as it may seem—than it ever contained. Thus with greater power of both hand and head, the conception is enlarging, and the outlook widening, and so the possibilities of a negative are proportionately increasing. It may be sometimes advisable to stop actual working for a period, but the head should be kept going all the while, and on the resumption of mechanical activity it will be found in the results that such time has not been lost. Not only would I say save the negatives, but save also the old pictorial failures, which, as object-lessons, will teach far more forcibly than the so-called successes. Failure spurs one on, and all that is best within one responds to the call, realising that the greater the difficulty, the greater will be the triumph.—Yours, etc.,

J. PAGE CROFT.

Quadrant Chambers, Birmingham,
January 22, 1904.

To the Editors.

Gentlemen,—I must plead guilty to a feeling of sinful amusement on reading Mr. Herbert Spackman's criticism of my recent article. It is such a brilliantly perverse example of misinterpretation. To begin with, he accuses me of "endeavouring to draw comparisons between the work of the artist and that of the photographer, to the detriment of the latter." I rubbed my eyes on reading this, and began to wonder "if wisions were about." Considering that I had written with a directly opposite intention, such an accusation seemed at least unkind!

So I turned to the impugned article and read it carefully over, in some trepidation lest that hereditary foe of writers, the printer, had introduced something "not in the wording of the bond." But no; my very first paragraph contained a strong argument in favour of the equality of photographer and artist.

My esteemed critic (I hope he will forgive me if this reply is not in every respect as amiable as I have tried to make it) says I leave the misleading impression that photographers are all of the "touch the button" class, and unworthy to hold a candle to such men as Millais or Leighton. Where, oh where, must be my plaintive question, have I used words which, by the wildest stretch of imagination, can be forced to assume such a meaning?

Then Mr. Spackman, falling foul of my suggestion that on the completion of a photographic masterpiece the producer thereof would be wise to smash the negative, in order to preserve the uniqueness and enhance the value of his work, says, "there is no more need for the successful pictorial photographer to break his negatives after the first production, than there is for the first-class artists on canvas to break their brushes and easels." Quite so, I admit it; but is not the comparison a little mixed? I did not suggest that, say, Messrs. Horsley Hinton, or Craig Amman should smash their cameras and burn their tripods; it was the "idolatry of the negative" against which my words were directed—quite a different matter. Why is gold more precious than silver, radium more valuable than ether? In a precisely similar manner a photographic masterpiece would gain in value and estimation if it were known to be the only copy in existence. This was the reasoning which formed the underlying motive of my article—a plea to the artist of the camera not to "make himself too cheap," by taking undue advantage of his facilities of reproduction. Let him have copies, as many as he pleases, but from the picture itself, not the original negative. We can buy an etching or chromo-lithograph of a famous painting, but can we order duplicates by the score from the artist?

Finally, Mr. Spackman says, "it is a great mistake to assume that extra copies of any particular success in pictorial photography can be turned out in a mechanical manner, merely because the worker may possess the negative." I should think so, indeed—a mistake I am never in any danger of making. It is precisely the fact, that no

points obtained from the same negative, if controlled and manipulated from the same negative, if controlled and manipulated forms one of the strongest arguments against duplication.

There is at least one prominent studio owner in the States, who has adopted the principle of "one negative, one print," with conspicuous success. And if it can be done by the professional, surely the art-loving amateur should be ashamed of throwing his works about in wholesale and promiscuous style now, alas, so common.—I am, Gentlemen, yours truly,

A. LOCKETT.

1, Brook Street, Kennington, S.E.
January 22, 1904.

COLOUR PHOTOGRAPHY.

To the Editors.

Gentlemen,—At the meeting of the Camera Club last week, when Cooper-Hewitt mercury lamp was demonstrated, a very interesting fact was discovered by myself, which I think is worth putting on record, as it may be of value to workers in colour photography. The fact was that certain dyeing materials used in the construction of colour filters have the property of changing the wave lengths of light. This was observed in making the following experiment. Being anxious of testing the value of the light for colour photography, I made some exposures through a red screen which absolutely absorbed all the blue light; to my surprise, with ten seconds' exposure, exposure plates resulted. On examining the light, which, as is well known, gives practically no light in the red portion of the spectrum, through the screen with a spectroscope, it was found that a broad band of red became visible. An inquiry into this matter led me to the opinion that it was due to the screen, composed of red, stained gelatine, becoming fluorescent, but this is a matter of opinion. The undoubted fact remained that red light was produced direct from blue, or perhaps yellow, owing to change of wave length. It was also found that the interposition of other red dyes produced the same results. If this result is obtained with Cooper-Hewitt light, it is probable that other light, such as light from arc lamps, produces the same effects, and would not for the possibility of obtaining photographic images through colour filters by light which is primarily deficient in the recorded spectrum, which will account for some of the anomalies met with in colour work.—I am, Sirs, yours faithfully,

ERNST GRUN.

1, The Hall, Southwick, Brighton.
January 21, 1904.

ORTHOCHROMATIC PHOTOGRAPHY.

To the Editors.

Gentlemen,—Messrs. Newton and Bull's answer to my letter in the last issue of your esteemed journal contains the following statement: "With arc light reflected from white blotting paper the ratio of A and C is as 5 to 9." Now this practically confirms my ratio of 1 to 2, and further corresponds with my tests made with descendent gas light exactly as I anticipated.

I say at the same time that: "We entirely adhere to every statement made in our paper" (which, I may repeat, was to the effect that descendent gas light is used the ratio becomes 21 to 480) forbids any discussion.

But although the lecturers adhere to their first statement, they make a second one, and as the conditions of the latter correspond to those of the practical worker, I am fully satisfied, but it will be difficult to understand why the experimenters made use of a source of light, which, according to the above two statements, furnishes results so widely different to those obtained with electric light, and at the same time speed numbers which can therefore be of no practical value. I also say that they refuse to be drawn into a discussion which, I suggest, I opened for advertising purposes. That is, to say the least of it, a very bold insinuation. My letter was that of an entirely independent worker, who has no more interest in the matter than any other person who made isochromatic photography for occupation for the last twelve years.

I further suggest that I am probably responsible for the inser-

tion of an expensive full-page advertisement to open a technical quarrel means to over-estimate the value of Messrs. Newton and Bull's lecture, in face of Professor Valenta's publications during the last three years, and to point to my attempt to reproduce the spectrum by photo-mechanical means, which resulted in failure, not due to my, but the printer's and etcher's incompetence, invites my remark, that it is very careless to indulge in the pleasure of throwing stones whilst sitting in a glasshouse. The lecturers' trichromatic representation of the spectrum in the PHOTOGRAPHIC JOURNAL is still in my mind.

They further honour my trichromatic filters with a reference, and state that their own are more correct, but also, that their red sensation negative requires six times as much exposure as the green sensation. Professor Dr. Eder gives the ratio of correct filters for the above emulsions as 1 to 1, and my ratio is 1 to 1½ or 2, whereas the lecturers' ratio is 1 to 6.

A careful study of Dr. Eder's "Spectral Analytic Studies," a paper read before the Academy of Science in Vienna may induce Mr. Newton to offer his students more satisfactory trichromatic working methods.

The rest of the letter is of a personal character, which I very much regret, but need not answer.

Thanking you for the insertion of this letter,—I am, Gentlemen, yours obediently,

HENRY O. KLEIN.

9, Upper Brighton Terrace, Surbiton, S.W.

Answers to Correspondents.

**** All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.**

**** Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.**

**** Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.**

**** For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.**

PHOTOGRAPHS REGISTERED:—

London Photographic Company, Limited, 12, Baker Street, London, W. *Photograph of C. Cook.*

C. de Valroché, 154, Queen's Road, Liverpool. *Photograph of the Sisters Sprague in their Flying Act.*

A. J. Waggett, 18, Bedford Place, Brighton. *Photograph of a Specimen of Wood Carving.*

W. J. Wright, Grosvenor Studio, Church Road, Upper Norwood, London. *Photograph of a Photographic Accessory.*

J. C. H. Balmain, 69, Shandwick Place, Edinburgh. *Photograph of "Cinderella" at her Couch in the Pantomime, the Royal Edinburgh. Photograph of Little Florrie Dixon in "Cinderella." Photograph of Group of Comedians, etc., in "Cinderella."*

J. Drinkwater, 11, Station Road, Altrincham. *Photograph of a Rural Scene showing a Sheep and Lamb Pasturing.*

F. Methold, Thorne Court, Shrimpling, Suffolk. *Photograph of a recently discovered Portrait of Shakespeare.*

W. AIMER.—A letter in the local press should meet the case.

HAROLD LEWIS.—If there was no name on the print it was destroyed when your query was answered in October.

RETOUCHING.—"R. P." says: "I enclose a few specimens of retouching. Kindly give me your opinion of them." In reply: The work is fairly good, but considerably overdone.

THE DAGUERRETYPE PROCESS.—C. W. COE writes as follows: "If 'A. Axlade,' whom you replied to last week, would communicate with me he can see a direction of how to work Daguerre-type, and cuts of the apparatus." Mr. Coe's address is 52, Queen Victoria Street, E.C.

CARBON TISSUE.—"BICHROMATE" says: "I should esteem it a great favour if you could give me a formula for making carbon tissue, or direct me to where I could find same, as I am desirous of experimenting in this direction." In reply: Mr. E. J. Wall, in his work on "Carbon Printing," gives formulæ for making the tissue. You cannot do better than refer to this book.

PROCESS BLOCKS.—R. MEREDITH writes: "I am anxious to learn how to make printer's blocks—viz., zinc, half-tone, copper half-tone, and line work, etc. Kindly inform me what book or books to commence with." In reply: "Half-tone Process on Zinc and Copper," by Verlasser; and "Half-tone Process on the American Basis," by W. Cronenberg. The books may be had through any of the dealers or booksellers. We do not supply them.

LANTERN SLIDE TRANSFERS.—P. ROBINSON says: "I would be much obliged if you would tell me the name and address of any firms where I could procure transfers for making coloured magic lantern slides." In reply: We presume they may be had through any of the dealers who supply lantern requisites. Write to Mr. W. C. Hughes, 82, Mortimer Road, Kingsland, N. He may possibly supply you.

DARK SLIDES.—"SLIDES" asks: "Will you kindly give me your advice on the following? It is necessary for me to carry a 1-1 plate camera along with 12 plates. The ordinary wooden slides are too heavy to carry any distance, besides being very bulky. Can you recommend the metal or cardboard ones advertised?" In reply: Both the metal and cardboard slides are used, and they answer the purpose. But we prefer the wood ones ourselves, but of course they are more weighty than the others.

REMOVING FILM FROM PRINT.—"FILM" (Liverpool) writes: "Would you kindly let me know if there is any method of separating the gelatine film from the backing on P.O.P. (after exposure, etc.) without damaging or tearing the film?" In reply: The only method we can suggest is to harden the film with alum, or formaline, and then moisten the back of the paper with water and rub it off with the finger. With care and patience the paper can be removed in this way.

ENLARGING.—"AMATEUR IN EARNEST" says: "In reply to the answer given to my query in last week's Journal, I did not send the focus of my lens. I want to make an enlarger from a cabinet to 15in. by 12in., but cannot clearly work it out for this focus lens by the "Almanac" table." In reply: There is nothing to work out. If you will refer to the table it shows at a glance the distance the lens must be from the negative and from the sensitive plate.

LENS QUERY.—"NEMO" says: "The accompanying negative was taken with a lens of high quality, working at F. 6.3, and used at full aperture. The distance between the lens and the newspaper was about 2 yards, and the focussing was done carefully. I do not think the result is so sharp as it ought to be, and should much like to have your opinion. I made several exposures with a similar result." In reply: The negative is so much over-exposed and the grain of the plate so coarse that we are unable to express any opinion as to the quality of the lens with which it was taken.

CARBON TISSUE.—"BEDFORD CIRCUIT" says: "I think that it would be a very great convenience to those photographers who keep a stock of the various coloured carbon tissues (non-sensitive), if you could induce the makers to affix a small legibly printed label on the inside corner end of the roll, with the name of the colour clearly printed thus. This could be read quite easily by looking inside the end, and would be there as long as any tissue was." In reply: We were under the impression that the makers of carbon tissue always attached a label, or marked the ends of the band with the name of the colour.

PICTURE POST-CARDS.—"F. K." asks: "Can you give me any information to questions below? (1) Are there any manufacturers of P.O.P. post-cards in Germany? If so, kindly state name and address? (2) Please state if any firms publish photo pictorial post-cards in Germany as in this country? (3) If they do not manufacture P.O.P. post-cards in Germany at present can you give name and address of any German firm that would undertake

to make for me?" In reply: As picture post-cards are such a large industry in Germany we assume that P.O.P. post-cards supplied there, but we cannot say who are the makers of them. The cards are supplied by nearly all the P.O.P. makers here, there is no necessity to get them "made in Germany."

COPYRIGHT QUERY.—"A. C." says: "A customer has brought an engraving, 1810, to be reproduced as a line block, and enquired information on which shall be copyrighted to obtain protection for both? (a) The photographic print; (b) the impression from the line block; (c) is it necessary to copyright both, and if so, fee on (b)? The engraving will be improved, and so will negative, so that it will be easy to discover should anyone copy our reproduction, and we are aware that anyone else reproduce the same engraving if they have a second copy." In reply: If a print from the worked-up negative be made correct it will cover that in the block. The fee for registration at Stationers' Hall is 1s.

STAINED PRINT.—"BOVINE" writes: "I enclose a print taken on Velox special portrait paper, and should be glad if you would let me know the reason of the dirty whites and general fog over the entire print. Negative: Dense, somewhat fogged, good detail resulting in a splendid silver print. Exposure: 2½ minutes, 18in. from Duplex wall lamp, fitted with reflector. Development: Result alike in both instances, although actual print sent with oxalate, M.Q. developer or ferrous oxalate." In reply: The makers do not recommend the ferrous oxalate developer Velox, although it can be used. The "M. Q." is what is recommended with pure sulphite of soda; this is important. Probably the sulphite you used was inferior; if so, that would account for the trouble.

BOOKS WANTED.—"J. N." asks: "Will you kindly answer the following questions? (1) The best book or set of articles in English on emulsion making. (2) The date of the best set of articles (same subject) which have appeared in either the Journal or "Almanac." (3) Best chemicals to remove silver stains from fingers. (4) Best English text book on "Photographic Chemistry." In reply: (1) Abney's "Photography with Emulsion." (2) Many articles on the subject appeared in the Journal twenty or so years ago, but not recently; Abney's book gives every information. (3) Cyanide of potassium is what was almost universally used by the old wet plate workers, but it must be used if there are any cuts or abrasions on the fingers, as it is very poisonous. (4) "Chemistry for Photographers," by Townsend, or Meldola's book on the same subject.

* * Several articles—including one on the barium salts as "eliminators"—notices of apparatus, reviews of books, and answers to correspondents are unavoidably held over. These will appear next week's JOURNAL.

* * NOTICE TO ADVERTISERS.—Blocks and copy are received only on the approval of the Publishers, and advertisements are inserted absolutely without condition, expressed or implied, as to what appears in the text portion of the paper.

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* * The Editor can only be seen by appointment.
* * We do not undertake to answer letters by post.

EX CATHEDRA.

Convention. At the Council Meeting of the Photographic Convention of the United Kingdom, held on the 28th ult., a communication was read from Sir William Abney, expressing great regret that, owing to his medical adviser insisting on his spending July in the South of France, it would be impossible for him to be present at the Convention Meeting to be held this year in Derby. The Council at once proceeded to elect another President, the choice unanimously falling on Mr. Alderman H. Strutt, who is President of the Derby Photographic Society, and Sheriff of the County. The local Committees were hard at work, and the proposed programme for the week should prove most enjoyable. The entire ground for the meeting, including the Albert Hall (where the Concessions and Exhibition of Pictures and Apparatus will be held). This is one of the finest rooms in Derby, and will seat 500 comfortably. The date of the meeting is from the 11th to 16th inclusive.

* * *

Diaphragm. A difficulty has always been felt in using the iris diaphragm with convertible lenses. If we have three lenses of different foci and a mount for their common use, either singly or in combination as doublets, provision must be made for indicating six sets of apertures, according to the six available foci. The

moveable ring with separately-engraved scales presents certain advantages in comparison with the Zeiss system, which depends upon an engraved millimetre scale upon the mount; but Messrs. Hordry and Durand offer another solution of the difficulty, which appears to be a step nearer to a perfect system. The lens tube is engraved with a series of curved lines in a longitudinal direction, spreading out in a fan-like order. If we imagine six circles drawn round the tube, parallel to each other, at definite distances, the longitudinal lines will be cut at six different points. Each longitudinal line is used for one relative aperture for the six different foci, and the points at which the six rings intersect, indicate the position at which the index should be placed to open or close the diaphragm for a given aperture. The index is a loose tube, with a diagonal slot, which may be revolved upon the lens tube. At distances corresponding to our six imaginary rings, a short line is engraved at the edge of the diagonal slot. Against each of these short lines the focal length, to which it is assigned, is engraved. As the loose tube is revolved, any one of the short lines may be made to intersect the horizontal lines in succession. The loose tube actuates the iris diaphragm and thus the lens is stopped down to the desired aperture. If well made, this arrangement should be as simple to use as the ordinary iris diaphragm. An illustration of it may be seen in the "Photo Gazette."

* * *

Explosion of Gas Cylinder.

Last week we mentioned in a brief paragraph an accident with a cylinder containing hydrogen, by which a person unfortunately lost his life. This accident should serve as a warning to all users of compressed gas. The facts seem to be that the man placed the cylinder close to a wood fire, and after a time it exploded and so injured him that he died in the Greenwich Hospital, to which he was taken. At the present time gas cylinders are carefully tested before use and when they are filled, although to a tremendous pressure, there is always a good margin for safety. Now, all gases expand with heat, when, of course, the pressure within the cylinder is considerably increased, and if the cylinder becomes greatly heated the margin of safety may be passed, and an explosion brought about by the sheer pressure within as was no doubt the case in this instance. Why we specially call attention to this matter is that we have more than once seen fully-charged cylinders of oxygen when in use placed very close to stoves giving off a considerable amount of heat, which, naturally, materially increases the pressure within the cylinder. For this reason we would advise all users of compressed gases to avoid placing the cylinders anywhere where they are likely to become heated, or even warmed to any material degree. Not so very long ago a fire

occurred in a building in which there was one or more cylinders filled with oxygen, and one of those exploded with terrific force, blowing out the walls and doing considerable damage beyond what the fire itself would have done.

* * *

Valentines. The feast of St. Valentine, which falls upon the 14th instant, was, until quite recent times, looked forward to by many persons as quite an important date. Possibly the Christmas and Easter cards have, to a large extent, taken the place of those highly-ornamental missives which used to be quite a heavy burden to the postman. In 1870, more than a million and a half valentines were carried through the post in England alone, which would give one for every thirteen of the population at that date. It would be interesting to know how far the old custom is now kept up, and to what extent the more modern Christmas and New Year's cards have extinguished it, to say nothing of photographic post-cards. Possibly some enterprising trader will once more try to revive the glories of St. Valentine's Day by the introduction of a new form of missive in which photography will take a leading part. The old valentines were of two kinds, the harmless and amorous, and the vulgar and abusive. The first very often depicted a lady and gentleman talking at a stile, while near at hand was a village church, in case it might occur to them to be married. The other kind of valentine generally consisted of a villainously drawn caricature, with some scurrilous abuse attached, which formed a convenient method of insulting an acquaintance without much fear of being found out. The original St. Valentine, we believe, was a good bishop who suffered martyrdom in the second century, but why his name should be linked to these inane or uncouth productions we have not the least idea, unless it be that the recipients thereof may be regarded in the light of martyrs as well. We recently saw in a suburban shop a number of caricature valentines for sale, so that the custom is not quite dead. If such things could be replaced by pretty photographs, the memory of St. Valentine would be kept green in a more decorous and pleasant manner.

* * *

A Comparison of Orthochromatic Plates. In the October number of the "Photographic Journal" a paper was published under this title, the authors being Messrs. A. J. Newton and A. J. Bull. The title must be regarded as an unfortunate one, as it does not denote all the plates brought into comparison, some being included, which are looked upon as belonging to the ordinary or pseudochromatic class. As the comparative exposures were made by the light of a Welsbach incandescent gas burner, which is distinctly yellower than daylight, the results favour the orthochromatic plates in a marked degree. We could point to two plates by the same firm, the speed of which is given by the makers as 1 to 8, but which in these experiments give 1 to 6.3. The slower of the two is an orthochromatic plate, and the more rapid, an ordinary one, is considerably prejudiced by the comparison. We draw attention to the fact, because those who have not studied the subject, might readily infer that the comparative exposures are an index to the sensitiveness of the plates under ordinary conditions of daylight. Although Messrs. Newton and Bull made the necessary reservations, such material is very tempting to those who may have an axe to grind. This is precisely what has happened. The second January issue of the "Photographische Mitteilungen" contains a paragraph giving some of the results of Messrs. Newton and Bull's experi-

ments. The speed list is published without any indication to separate the ordinary from the orthochromatic plates which might have been done for the guidance of the foreign reader; and a German orthochromatic plate has been placed at the head. In the list given by Messrs. Newton and Bull, an English plate, sensitised by dipping, shows to considerably greater advantage, but for some obscure reason it has been omitted. It is in this way that evidence is prepared abroad for the unwary, and we think it our duty to the photographer to publish a warning against such practices.

* * *

Tell-tale Finger-marks. We have recently had the opportunity of learning something more concerning the manner in which the finger-print which led to the discovery of the Conduit Street burglars was photographed, and how that picture led to the identification of one of the delinquents. Burglars are often described as "cool hands," but this term does not imply that their digital extremities are actually at a low temperature. Indeed, we may assume that the work involved to one unaccustomed to labour, must generally afford a example of energy converted into heat. In the Conduit Street case, the incriminating finger-mark, to put the matter in a vulgar tongue, was a sweat-mark, left on a corrugated glass of a skylight. It required abnormal sharpness of eye to detect it, and some knowledge of photography to picture it, and the officials at New Scotland Yard must be congratulated upon both achievements. It is by no means an easy thing to photograph such a mark upon a transparent surface, but the picture, which we have seen, is an excellent one, showing all the delicate surface ridges of the skin. It was procured by throwing a strong side-light on the finger-print, while the glass was placed above a black background. But this was only a preliminary part of the work, it remained to search the finger-print records to find one, out of more than a million which agreed with this particular picture. The search occupied several expert hands for three days, and at length the wanted image turned up. If the burglar had only been considerate enough to have left impressions of his finger-tips of both hands behind him the search would have been complete in about three minutes. The system of classification of finger-prints is most marvellously complete, but quick identification depends upon records in which all the finger- and thumb-marks of an individual are available. Every prisoner who passes through the hands of the police adds his mark to the collection, so that every day it becomes more valuable for identification purposes.

* * *

Cyanide Poisoning. The tragic sequel to the conviction of the late Whitaker Wright once more brings into prominence the deadly poisonous nature of cyanide of potassium. Whitaker Wright was not the first to swallow this deadly salt to escape from justice. It will be remembered that the man Sarti, who was a few years ago concerned in receiving some stolen ingots of silver, managed, while about to be arrested, to drink a solution of the salt with fatal result. At the present time cyanide of potassium has but a limited use in photography, except with those who employ the wet collodion process, as for negatives for process blocks and for carbon or platinotype, enlargements. At the time when the wet process was the only one in vogue cyanide was the almost universal fixing agent, and was to be found in every dark room. Then deaths from it were much more frequent than at the present time—either from accidental design. Solutions of it were frequently left in ves-

ilar to those from which water or other beverage was occasionally drunk, and in the subdued light of the dark room the one was sometimes mistaken for the other, and with fatal result, often within four or five minutes. In the case of Whitaker Wright, according to the medical experts' opinion, some fifteen minutes elapsed between taking the poison and death. This seems a long time, compared with some previously recorded cases. That is probably accounted for by the fact that Wright had not long before eaten lunch, and the stomach was fairly full, also that cyanide was taken in the solid form, and it would take some time to dissolve and become diffused. Unfortunately cyanide of potassium there is no known official antidote, as there is with another deadly poison used in photography—bichloride of mercury. The action of this is slower than that of the cyanide of potassium, and if, after solution of it be swallowed, the whites of one or two eyes be quickly administered no harm will result. The mercuric iodine forms an insoluble compound with the mercuric iodide, which is practically harmless. The best suggested antidote in the case of cyanide of potassium is a solution of sulphate of iron; it, with the cyanide, forms prussiate of iron—Prussian blue—which is an insoluble compound and inert. But it must be administered at once, and before the cyanide has become diffused through the system. We mention this, in case of accident, sulphate of iron is usually at hand, and life may possibly be saved, but not a moment should be lost in administering the antidote.

* * *

The Metric System.

A petition promoted by the Decimal Association is being extensively circulated throughout the United Kingdom in support of the proposed adoption of the metric weights and measures, which will be introduced in the House of Lords by Lord Haversham, and will be seconded by Lord Kelvin. The metric system has already been legalised in this country, and sooner or later, it is bound to become of universal application, but it will only be under compulsion. Our old clumsy system will endure until its abolition is made compulsory by Act of Parliament, as it would be impossible for the two systems to run contemporaneously. The old system will no doubt die hard, for it will not be easy to convince, say, our retail shopkeepers and those who draw their household supplies from them, that the metric system of weights and measures is better than our present one of pounds, yards, quarts, and gallons. England is the only country in Europe where the metric system does not exist, and only those who have travelled on the Continent can realise how simple and convenient it is as compared with our present system. At present all the photographic plates we get from the Continent, of course, come to be written under the metric system, and when translated into our weights and measures often suffer, particularly where small quantities are concerned. Though our "Almanack" has for years past given a table of the equivalents of grammes and ounces and metres and inches, and the method of converting the one system into the other, the matter does not seem to be thoroughly understood by some. Our old friend, the late Mr. J. Traillor, once wrote that the simplest way to convert the scale into the Fahrenheit scale was to have a shilling thermometer graduated with both scales and a glance would show the equivalents. Glass measures are to be graduated with the metric scale on one side and pints and ounces on the other, so that the same measure would answer under the two systems. We have a set of some weights weighing up to three hundred grammes each weight of which, with figure punches, we have had their equivalents in English grains so that both

our weights and measures are serviceable under either system. Most photographers after perhaps the first, will hail with satisfaction the universal adoption of the metric system of weights and measures.

* * *

"A New Force."

A few weeks ago we remarked upon the extraordinary inventive genius of a man with an unpronounceable name, and ventured to remark that the only redeeming feature of his work was the money it must have brought to the Patent Office in the shape of fees. There must be quite a number of men of this type about, and the curious part of the business is that the greater their pretensions the more the newspapers present them with "bold" and free advertisements. As an example of this kind of thing we may refer to a notice which appeared quite recently in the "New York Tribune," which tells how a gentleman of the name of Steele has discovered a new form of force which he has modestly named "Steelecity." If what half we are told about it is true it will come as a boon and blessing to men and especially photographers, for it will furnish them with light, heat, and power at very slight cost. This is what the inventor says about it: "This new force is taken from the most simple elements of nature, and, utilised in connection with special mechanical devices, is capable of producing light, heat, and power, jointly or separately." With a plant of insignificant initial cost, he declares that a light of 158 candle power, similar in quality to the sun's rays, can be produced and maintained at a cost of one-fourth that of running a sixteen candle power incandescent electric light. Moreover, he points out that this same plant will heat a building, run the elevator, and do the cooking, without odour, dirt, or expert attention. After reading this glowing account of "the new force," and after one has recovered the shock of that perusal, it will dawn upon the mind that at last Radium must take a back seat. For Radium is unattainable except by millionaires, and they do not possess so much as an ounce of it between them. But here we have a something—we are not told whether it is a solid, a liquid, or a gas—that will do for us much more than Radium ever promised, and it costs next to nothing. In the account from which we have quoted names of prominent men are freely given, we are told that money has been fully subscribed to the "Steelecity Corporation," and that this Corporation will "cheapen every feature of light, heat, and transportation to owners, users, and consumers." We shall await with much interest further particulars concerning this remarkable discovery, for at present we are told only what it will do. We naturally are curious to know what it is. There is a grandeur and breadth about the American reports of a new invention or discovery which calls to mind the boasting street boy drawn by the late Phil May:—

"My father, 'E once caught a fish as big—as our street!"

"Well, then, it must 'ave bin a whale."

"Garn, 'E were baitin' wi' whales!"

* * *

Vandalism.

Photographers, together with others of artistic aspirations, will join in the cry which is going up continually against the destruction of natural scenery. There are two notable places which are just now in peril, one being the grand gorge through the limestone cliffs at Cheddar, and the other the famous rock-bound and wooded heights of the Avon at Clifton, near Bristol. To take the Cheddar case first. Anyone who has visited that pretty village, it is hardly a town, will remember the grandeur of those precipitous masses of limestone which form such a beautiful background to it. There is plenty of other limestone in the neighbourhood which "never

would be missed." But it has entered into the mind of certain Vandals that as these cliffs are situated at the top of a road which forms an easy descent towards the railway, it is more remunerative to cut them up into road metal, than it would be to procure that material from other less favoured situations. So the navy, and the steam navy, and other modern engines of destruction are at work doing their best to obliterate a piece of scenery which, so far as this country is concerned, is almost unique. The limestone is pierced in many places with stalactite caves, and we presume that these, if the work be permitted to continue, will perish with the rest. The other view, that at Clifton, is the more famous and better known, and we may suppose that few persons who have visited Bristol have failed to step out of their way in order to see the lovely prospect afforded from the Clifton suspension bridge. The cliffs are precipitous, rising tier upon tier above the water-level for a height of some three hundred feet. Their tops are clothed with verdure, and although the stream below is not a very broad one, it is a highway from the docks to the sea, and many noble ships may sometimes be seen on its surface. The whole forms a most lovely picture, and one might reasonably hope that it would be a permanent one, and a perpetual joy not only to those whose lives are passed in its vicinity, but to all England. But, again, the limestone is wanted for road-mending, and although of that stone there is plenty to be had, the River Avon forms a convenient water-way for its carriage, and the ratepayers will be saved quite a shilling per ton. The utilitarian spirit is so rampant among some of the people who have the control of our municipal cash, although they are prodigal enough sometimes in spending it upon costly fads, that the saving of one shilling will far counter-balance in their minds a loss which cannot be measured in terms of £ s. d. We can only hope that the outcry that is being made by those to whom money is not the sole aim of existence, has not come too late to save these gems of English scenery. Photographers, where they have the opportunity, should not fail to enter their indignant protest against the perpetration of such appalling mischief.

DUST-RECORDS BY PHOTOGRAPHY.

A PAPER read before the Camera Club recently by Colonel Crompton, C.B., calls for something more than the usual notice of such proceedings, for the very good reason that it described a new application of photography. But the above title is altogether our own, the paper read being called, "Dust-Raising Qualities of Motor Cars." It was not a subject that promised interest, either for ourselves or for the majority of our readers, but when we heard at the very beginning of the lecture that a series of most important tests had been made which would have been quite impossible without the aid of the camera, we listened with both ears, and were fully rewarded for our pains.

It seems that a few years ago the Automobile Club offered prizes for vehicles which should come out best under a number of trials as to dust-raising proclivities, and Colonel Crompton and Mr. Crawley were appointed as experts to arrange a system of testing which should be as complete as possible. Their first idea was to arrange by the side of a dusty road a number of trays, and to carefully weigh from time to time the amount of dust deposited therein, similar trays to be carried upon the auto-cars sent in for competition. We may mention, in passing, and in order to show that such a scheme was not Utopian, that similar receptacles have recently been used to catch the dust of Glasgow, and as a result it has been shown that the atmo-

sphere of that city deposits no fewer than sixty-four tons of solid matter per diem.

But, for reasons which we need not enter into, the tray system was abandoned, and records made with the camera, or rather with two cameras operated simultaneously, were adopted instead. Preliminary trials were made upon an ordinary high road, and these gave such hopeful results that it was determined to adopt the photographic method of record-making on a far more extensive scale, and at some place where interruptions from ordinary traffic would not occur. The cycle track at the Crystal Palace was the place ultimately selected, and as the concrete road there is free from dust it became necessary to carpet it with pulverulent material. The most satisfactory stuff for the purpose was found to be the fine sweepings from a flour-mill, and in order that the roadway should present the same condition for every motor car tested, the surface was raked over with fresh material added between each test. A standard car, of stated speeds of which could be relied upon, travelled pilot by the side of every car submitted to trial.

In the first tests made one of the cameras employed was put on an eminence at the side of the track, and the other was placed on the track itself, so as to get both a side view and an end view of each car. But the poor photographer who had to stand on the floury way while the car thundered past at eighteen, twenty-two, and thirty miles an hour protested on his own behalf and that of his camera, and the remaining pictures were taken from two points of view on the windward side of the track.

About five hundred pictures were secured and the typical ones were thrown on the screen as illustrations to Colonel Crompton's remarks. They were not pictorial, but they were extremely interesting. Each showed the same view, a small piece of the cycle track, with raised benches at the back, and above all the tops of a group of poplars. But the dust-cloud which was raised by each vehicle showed many points of difference. In some cases the cloud was of the heavy cumulus kind, keeping close to the ground and quite hiding the wheels of the vehicle; while in another it would be raised like a diaphanous veil, so as to fog much of the picture. In each case a man stood in a prominent position, exhibiting a board upon which was plainly scribbled the number of the car under test at the time. At the same time the judges were careful to make note of the height and general appearance of the dust-cloud raised, as they appeared to the eye. But when afterwards the visual impressions were compared with the actual photographs, it was quite evident that the eye was not to be trusted at all. Certainly the cars in many of the pictures were moving too quickly for good detail to be secured, but a dust-cloud is more leisurely in its onward sweep, and the photographs depicted them most admirably. Doubtless the flour caused a little exaggeration of the clouds, for flour is lighter than ordinary road dust, and hence its light tint was favourable to photographic effect.

It was when the five hundred pictures were printed and sorted that the great value of the method adopted came to be realised. They were first of all arranged in the order of excellence, the least dusty of the cars being placed first, and the rest in order of dustiness, until the last showed cars which were all but obliterated in a fog of their own raising. Then the pictures were catalogued in the same order, and when that was done they were once more mixed up, and again sorted out without reference to the list. It was then proved that the different gradations of the dust clouds were so distinctly shown that the sorters adopted exactly the same order as at first, without reference to a catalogue, with only one or two trifling exceptions. The second time the pictures were purposely thrown into confusion, and again sorted out, with the same satisfactory

result, only two or three changing the places originally assigned to them.

It may be asked, Why were these trials made? The answer is that of all the sins laid to the door of the motor car that of dust-raising is one of the worst. People who reside on such favourite motor car promenades as the Portsmouth road or the Ripley road complain terribly of the dust raised by these highway expresses, and a good deal of the prejudice existing against a system of locomotion which has come to stay would disappear if the dust could be suppressed. The owners of cars are also quite alive to the inconvenience of dust, and have a decided objection to carrying a pound or so of the soil upon their unfortunate persons as the penalty for a short run on a dusty day. And, to do them justice, the cars do not make the dust. The horses' hoofs are mainly responsible for it, although the motor car demonstrates the most effective manner of raising it in clouds. Everyone, indeed, is more or less interested in the question of reducing the amount of floating dust to a minimum, for, apart from its disagreeableness, we all know that it carries with it terms of an undesirable character. The low death-rate of the Kingdom for the past year is attributed to the amount of watering the roads have received from the too constant attentions of Jupiter Pluvius.

It is somewhat beyond our province to deal with the conclusions which have been arrived at from a study of the Sydenham photographs, but as we have many motorists among our readers they will naturally expect us to say something with regard to results. For our part, we may express the hope that the photographs referred to may be publicly exhibited as object-lessons, both to the manufacturers and users of motor cars, for at present everyone is under the firm impression that his own car creates less dust than his neighbour's. The general supposition that the tyre of the vehicle is the chief dust-disturber must be abandoned. It is true that a broad tyre will raise more dust than will a narrow one, and solid and pneumatic tyres behave alike in this respect. There is no difference in dust-raising capacity between a high car or a low car, but there is an immense difference between one which has a clear airway beneath it and one that has not. A car with a silencing-box or any other portion of its paraphernalia hanging down low, so as to leave but a few inches of space between it and the ground, is a terrible dust-raising machine. It offers such an obstruction to the air through which it travels that a mighty wind is thrown out sideways, driving out the dust laterally—and another wind is propelled towards the rear of the car to fill the partial vacuum which it causes.

Such are the general impressions which these experts have gained from the trials, but they will not issue a complete report until further tests have been made. These tests will be concerned with the best form of "body" which a vehicle should have to prevent dust-raising, and different shapes and sizes will be fitted to an approved set of wheels. Both Colonel Crompton and his colleague must be congratulated upon the scientific acumen which they have brought to bear upon these tests, and upon the presence which prompted them to call in the camera to aid them in their labours.

THE British Optical Association.—A lantern lecture will be given by Mr. A. W. Oxbrow, F.R.O.A., F.R.M.S., in the lecture hall of Mount Vernon Hospital, Fitzroy Square, W., on Wednesday, January 17th, at 8 p.m. Members of the Association and also of the enrolment scheme are entitled to bring a friend. The slides shown will give some very interesting and original specimens of highly magnified sections of the human eye. There will also be a short discussion on topics interesting to the sight-testing optician.

PYROGALLIC ACID CRYSTALS.

CRYSTALS of pyrogalllic acid give interesting and varied effects when observed under the microscope either with or without the polarising prism. Pyro readily dissolves in ether, methylated spirits, or water, and with either of these solvents picturesque and striking crystals can be easily prepared. If ether is the solvent, the crystals when viewed by the naked eye present

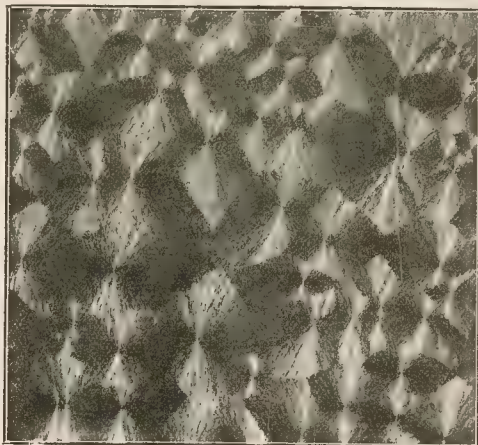


Fig. I.—Group of Pyro-ether Crystals. Natural Size.

a very effective appearance and bear a resemblance to a group of shells; but, in consequence of the rapid evaporation of ether, pyro-ether crystals are lacking in variety and delicacy.

When the pyro is dissolved in methylated spirit a more varied deposit is formed, providing the crystals are allowed to form in a cool place.

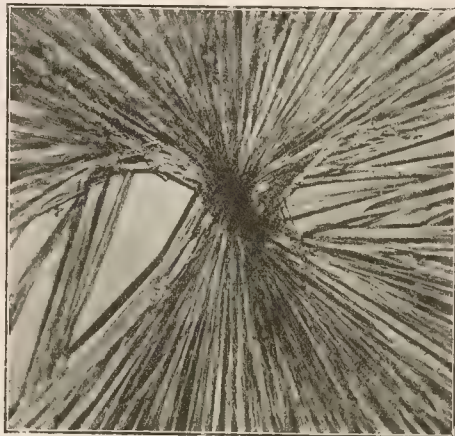


Fig. II. ($\frac{1}{8}$ " Obj.)—Photo-micrograph of Radiating Point of Crystals.

If the pyro is dissolved in water, the crystals are not deposited in such a regular and picturesque formation as when a spirituous solution is used; but, though they are less effective *en masse*, their details offer far more variety in size and structure when viewed under the microscope.

The best effects are obtained when the preparations are

allowed to dry in a cool, damp place. The crystals are prepared by merely pouring a small quantity of pyro solution on a clean piece of glass, the surplus is poured off, and the plate is then placed on end to dry.

The illustration, Fig. I., is a photograph of pyro crystals



Fig. III. ($\frac{3}{8}$ " Obj.).—Photo micrograph of Crystals of Pyro Dissolved in Methylated Spirit.

on a glass plate. The beautiful shell-like formation can be plainly seen in the reproduction. This plate was coated with a solution of pyro in ether.

Fig. II. is a photo-micrograph of the radiating point of the "shells" in Fig. I. It will be noticed that the crystals disperse

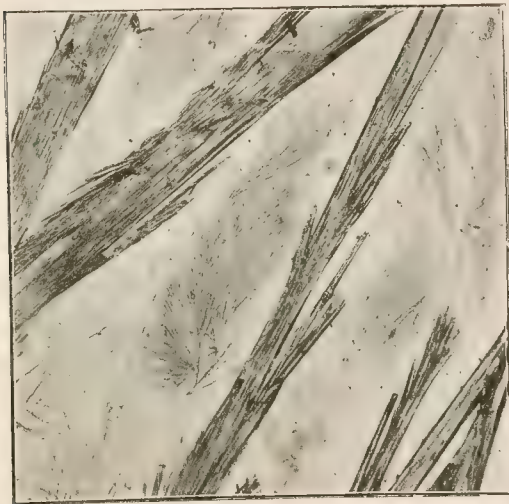


Fig. IV. ($\frac{3}{8}$ " Obj.).—Crystals of Pyro Dissolved in Water.

from a common centre, and resemble a bundle of rods. The effect is more striking than artistic.

The next illustration, Fig. III., is a low-power photograph of pyro crystals from a methylated-spirit solution. The photo-

graph was taken from a group of crystals at the extreme of the deposit.

A group of pyro-water crystals is shown in Fig. IV., though the delicacy of the original formation, as viewed through microscope, has been almost lost in the photograph. It will be observed that large, broad crystals are intermingled with feathery deposits in a remarkable manner.



Fig. V. ($\frac{3}{8}$ " Obj.).—Pyro Crystals Photo-micrographed with Polariscope.

The above illustration is a photo-micrograph of crystals from the same plate as Fig. IV., but in this case the photograph was taken with the aid of the polariscope. Pyro with polarized light gives an endless series of colour effects. Unfortunately the rich colouring given by the polarised illumination cannot be reproduced here, although the variety of light and shadow can be partially seen in the illustration.

The water solution of pyro gives by far the best results with the polariser, and really marvellous effects of colouring are seen in all parts of the deposit. Generally speaking, a power such as a $\frac{3}{8}$ in. or 1 in. objective is the best lens for observing pyro crystals, but occasionally an especially delicate deposit of crystals necessitates the use of a higher power.

J. I. PIGG, F.R.P.

IN the Chancery Division of the High Court on January 23rd (Justice Byrne), Mr. Kerly mentioned the case of Kodak, Limited v. City Sale and Exchange Company, which, he said, was an action for an injunction to restrain the defendants from passing off their goods under the name of "Bull's Eye" as the goods of the plaintiff company. Defendants consented to a perpetual injunction, to treat the motion as a trial, and to pay £10 damages and costs as between solicitor and client. His Lordship acquiesced.

COPYRIGHT Protection for Exhibitors at the Louisiana Purchase Exposition.—Both Houses of Congress have passed a law protecting from piracy works of art and literary productions which are exhibited at the St. Louis Exposition, and it is expected and hoped that this proper provision will receive the President's signature. The Bill provides, up to November 30, 1904, for copyright on "intended" for exhibition at St. Louis, on "interim" copyright for two years from such registry, waiving the manufacturer's clause, with proviso that the regular term of copyright shall be from the date of such registry in case an edition of American manufacture is meantime published.

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A NEW COLLODION EMULSION.

II.

In order to make the collodion emulsion sensitive for yellow and red, ethyl violet (Badische anilin und soda fabrik), first recommended by Valenta, should be used. It is a sensitiser of absolutely ideal quality, for it exerts no prejudicial action on the keeping property nor any other peculiarity of the emulsion, and imparts to it an orange sensitiveness which is at least equal to the sensitiveness to blue. The coloration of the emulsion with ethyl violet also doubles the general sensitiveness, so that a plate thus sensitised is four times as sensitive as a wet collodion plate.

This high colour sensitiveness only appears when the plate coated with the stained emulsion is bathed in water, and it is again for the most part lost when the plate is placed in the developer, which is an extremely valuable property, for a plate so red-sensitive would be extremely difficult to work in the dark room.

Ethyl violet is thus far superior to cyanine, which has previously almost exclusively been used for red sensitising, for the latter is not only uncertain in its action, but gives rise to all sorts of troubles.

Bathing the plate before exposure in a dilute solution of silver nitrate produces no increase of the red sensitiveness, and therefore is not to be recommended.

In order to make the plate sensitive for the yellowish green rays, the eosines should be used. The favourable action of these dyes only appears, as is well known, when a silver salt is used, as eosine, free from silver, is almost without action with ordinary emulsion, and although it acts much better with the new chloro bromide emulsion, it never equals the above described action of ethyl violet.

In sensitising with eosine also, the plate must be bathed before exposure in water, and only then shows a yellowish green sensitiveness, which amounts to about half the blue sensitiveness. It should be noted that commercial eosine is frequently unsuitable for sensitising without free silver; and the chemically pure dye or tetrabromo fluoresceine, which may be easily prepared from the commercial article, should be used.¹ Eosin salts, as already stated, to a very marked degree as a fog preventive, etc.

The eosine plate is specially sensitive for yellow-green, less for the pure green, and not at all for blue-green. When exposed behind a yellow or green filter it reproduces, therefore, blueish-yellow very bright, whilst blueish-green is almost without action, and is too dark.

If an eosine collodion plate is bathed in a 1:1,000 silver nitrate solution, the yellow-green sensitiveness is doubled, and thus about equal to the blue sensitiveness. Dr. Albert's dyes, which consist of silver eosine salts, may, of course, be used, but they possess the above described disadvantage.

Rhodamine may be used in place of eosine; it also gives equally clean, vigorous negatives, and sensitises principally to the yellow rays. The rhodamine emulsion reproduces, therefore, the orange, such as vermillion, relatively bright, but the blueish-green even darker than the eosine sensitising. This dye is, however, worth attention in the reproduction of paintings, and is often preferred to eosine, which reproduces vermillion as black.

Excellent sensitisers are met with in that group of dyes collectively designated as "cyanines." Many of these have been known for some time, but have hardly been prepared; for with the exception of the one dye known as "cyanine" they have had no application.

A short time ago Dr. Miethe prepared a series of other

cyanines, and tested them as to their applicability in photography, and found them of great practical value as sensitisers.

Dr. E. König has entered most fully into the study of the cyanines, and prepared a large number of these dyes, and of these Orthochrom T. has become a favourite sensitiser for gelatine plates.

The ordinary cyanine (lepidin-chinolin-amyl-cyanin) is an energetic red sensitiser; the coloured emulsion, however, will not keep, and the plates fog in development. It is now completely displaced by ethyl violet. A cyanine, introduced by Dr. Miethe under the name of "ethyl red" (chinaldin-chinolin-methyl-ethyl-cyanine) makes silver bromide sensitive for orange, yellow, and green, and increases the general sensitiveness of collodion emulsion to about double that of the undyed film, and at the same time gives no tendency to fog.

Orthochrom T. (p-toluchinaldin-p-toluchinolin-ethyl-cyanine) sensitises in a similar way, but is a dye of a more bluish shade, and therefore its action extends to the reddish-orange. It has proved to be excellent for gelatine plates; in collodion emulsion, however, it tends to the formation of fog, and even with the addition of bromide to the developer a perfectly clean negative can hardly be obtained.

With gelatine plates Orthochrom T. is especially valuable as a red sensitiser, as hitherto a satisfactory sensitiser for these rays has been wanting. It is different, however, with collodion emulsion, for with this ethyl violet is quite unsurpassable; on the other hand, we possess no dye which will give sufficient sensitiveness for pure green and blue-green.

Ethyl red even is not satisfactory in this respect, as its sensitising band only reaches to the blue-green, whilst the particular sensitiveness of the collodio-bromide emulsion only extends to the pure blue.

This hiatus seems now to have been filled up by a purple red cyanine, p-toluchinaldin-chinolin-methyl cyanine, prepared by Dr. E. König. The sensitising action of this dye begins first in the orange, and includes with yellow and green the whole of the blue-green. It gives absolutely clear, vigorous negatives, and is equally as valuable as a green sensitiser as ethyl violet is as a red sensitiser. By the addition of these two dyes in suitable proportions an emulsion is obtained which reproduces with almost equal brightness all pigmentary colours of equal purity and saturation, and without the use of a filter, and which one can therefore designate as approximately "isochromatic."¹ A collodion emulsion thus sensitised is about five times as sensitive as a wet collodion plate.

In conclusion, a few remarks on the use of mixture of the dyes mentioned may be included. As a general rule, a mixture of sensitisers is not to be recommended, and they should be avoided as far as possible. The individual components never hardly exert their full action; the more vigorous sensitiser always predominates, and if equal weights of the dyes are used the action of each is considerably lowered.

For these reasons eosine is not suitable for mixing with ethyl violet. The energetic red sensitiser only allows the eosine to act when the latter is considerably in excess; then, indeed, plates are obtained with equal sensitiveness to red and green, but the former is reduced to a fraction of that which is obtainable by the use of ethyl violet alone. Moreover, some dyes are most unfavourably affected when they chemically react one with another, which is exactly the case with the acid eosine and basic methyl violet.

Dyes of about equal action and similar chemical character may be used together, but a very careful adjustment of the quantities is necessary if they are not to act prejudicially one

¹ A. von Hübl. "Die Kollodiumemulsion," p. 78.

¹ Plates called "panchromatic" are sensitive to all colours, but not equally, so that only by the use of a specially adjusted filter can the above-mentioned result be obtained.

on the other. An important advantage of the new cyanine dyes lies thus in the property they possess of sensitising for an extended colour-range—that is, for a very broad zone of the spectrum, and thus make mixtures of dyes quite unnecessary. They can also be very well combined with ethyl violet, which increases the red sensitiveness.

Substrating the glass with gelatine or indiarubber solution is not necessary; it is quite enough if the edges are roughened or the plate is merely edged with rubber solution. The emulsion should be mixed with the alcoholic solution of the dye and kept in stock, as from the absence of free silver salts it suffers no change.

The following sensitising formulæ can be recommended:—

1. In order to obtain yellow-green sensitive plates 1,000 cc. of emulsion should be mixed with 25 cc. of 1:150 eosine solution, or 15 cc. of 1:150 rhodamine solution.

2. In order to sensitise the emulsion for red 10 cc. of ethyl violet solution 1:500 should be added.

3. An emulsion sensitive to orange, yellow, and green is obtained by adding 44 cc. ethyl red solution 1:500, or 40 cc. of toluchinaldin-cyanine solution 1:500.

4. Finally, if an emulsion is required sensitive to all colours, it should be sensitised with 30 cc. toluchinaldin-cyanine solution 1:500 and 5 cc. ethyl violet solution 1:500.

The plate, after coating with emulsion, must always be washed with water in a dish till the so-called "greasy marks" disappear, or rinsed under a fine rose till the same effect is obtained. During the treatment with water the colour sensitiveness considerably increases, and therefore during this operation, as well as whilst placing the plate in the dark slide, extreme care as to the dark-room light must be observed.

For "orthochromatic" negatives of oil and water-colour paintings, etc., the emulsion may be sensitised with eosine or rhodamine, and the ordinary dark-room illumination is quite satisfactory. If the picture, however, contains much red or brown, ethyl red or the toluchinaldin-cyanine should be chosen, and then in the preparation and development considerable difficulties will be met with. If a fiery purple with saturated yellow are present then the red sensitiveness must be increased with the addition of ethyl violet. In such a case it is advisable, for the sake of safer working, to lower the sensitiveness of the plate by a small addition of bichromate. If bright blue is to be reproduced relatively dark in all cases, a bright yellow filter of picric acid or potassium chromate solution or a dry tartrazine filter should be used.

For three-colour work all the negatives can be taken on the emulsion sensitised according to No. 4 formula through violet, green, and orange filters, or for the yellow-printing negative the unstained emulsion may be used without a filter; for the red-printing negative an eosine emulsion with a yellow filter, or the toluchinaldin-cyanine emulsion with a green filter; for the blue-printing negative the ethyl violet emulsion with an orange filter.

The exposures for these three negatives is about 1 : 2 : 1. The filters should be prepared according to one of the numerous formulæ, and adjusted by trial with a suitable colour-chart.¹

The eosine plate has the advantage that its yellow filter can be very easily prepared. In choosing the same it is only necessary to ensure that the blue of the colour-chart has the necessary density. If, on the other hand, a red sensitive plate is used, these rays must be cut out by the addition of blue or green to the filter, and it is not easy to hit the right thing here.

The plate sensitised with eosine is wanting in, as has already been mentioned, the blue-green sensitiveness, and for this

reason the green in the red-printing negative often appears thin. If the negatives are made with the idea of preparing transparencies this deficiency is of little moment, as one can choose a somewhat fiery blue-green for the blue constituent.

In negatives for trichromatic printing sensitising with toluchinaldin-cyanine, the best of all known sensitisers, green, is to be preferred, for the green formed by the somewhat saddened and slightly greenish Paris blue is so impure that it will hardly stand any more admixture of red.

After exposure the plates should be developed, without preliminary washing, with glycine, and the best form of this is the well-known stock-paste,¹ which should be diluted with 15 parts of water. The addition of bromide, if the temperature of the developer is kept below 18 degrees Centigrade, is not necessary.

Patent News.

The following applications for Patents were made between January 18th and January 23rd, 1904:—

Printing Apparatus.—No. 1,281. "Improvements relating to photographic printing apparatus." William Edwin Hickling.

Printing Frames.—No. 1,282. "Improvements relating to photographic printing frames." William Edwin Hickling.

Apparatus.—No. 1,283. "Improvements in photographic apparatus." Complete specification. George Henry Dorr.

Infinity Catch.—No. 1,425. "A shutter stop and infinity catch facilitating the focussing of photographic cameras." John Barker.

Developing Machines.—No. 1,442. "Improvements in daylight photographic developing machines." George William Lowcock.

FORTHCOMING EXHIBITIONS.

February 10-13.—The Longton and District Photographic Society. Hon. Secretary, T. Mottershead, 43, Stafford Street, Longton, Staffs.

February 13-27.—Scottish National Photographic Salon. Exhibition Secretary, Alex. Mackenzie, 42, Scott Street, Perth.

February 27 to March 5.—Birmingham Photographic Society. Particulars of L. Lloyd Hollies, Church Road, Moseley, Birmingham.

February 29 to March 3.—Cripplegate Photographic Society. Secretary, George H. Depledge, 17, Hazeldene Road, Goodman's Field, Essex.

March 5. Last day for entries February 18.—South London Photographic Society. Entry forms from W. Calder Marshall, F.C. 41, Glenton Road, Lee, S.E.

March 5-12.—Brechin Photographic Association. Hon. Secretary, J. Kirk, 1, Infirmary Street, Brechin.

March 8-9.—G.E.R. Mechanics' Institution (photographic section). Hon. secretary, A. Woolford, 16, Grove Green Road, Leytonston.

March 9-12.—Nottingham Camera Club. Hon. Secretary, Arthur Black, 9, Bowers Avenue, Nottingham.

March 15-17.—Brentford Photographic Society.

March 15-19.—Arts and Crafts Exhibition (Shrewsbury).

March 25 to April 9.—Northern Photographic Exhibition. Exhibition Secretary, Chas. F. Inston, F.R.P.S., 25, South Street, Liverpool.

April 6-13.—Croydon Camera Club. Hon. Exhibition Secretary, C. U. King, Hurst Bank, Selsdon Road, Sanderstead.

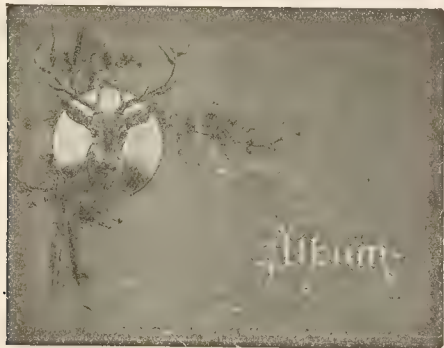
¹ A. von Hübl. "Die Dreifarbenphotographie," second edition, p. 146. (Messrs. Penrose & Co. are now publishing a translation of this work with chart.—TRANS.)

¹ Hübl's formula is, potassium metabisulphite 14 g., caustic potash 14 g., 80 cc., when dissolved add glycine 10 g. This does not keep quite so well as formula, which is, sodium sulphite 25 g., warm water 40 cc., glycine 10 g., and add potassium carbonate 50 cc., and make total volume up to 150 cc. must be exercised in adding the pot. carb., as strong effervescence ensues. for use with 12 parts water.—TRANS.

New Apparatus, &c.

Albums, etc., for Photographs. Manufactured by Ferd. Anthony Horle and Co., 8, St. John's Lane, E.C.

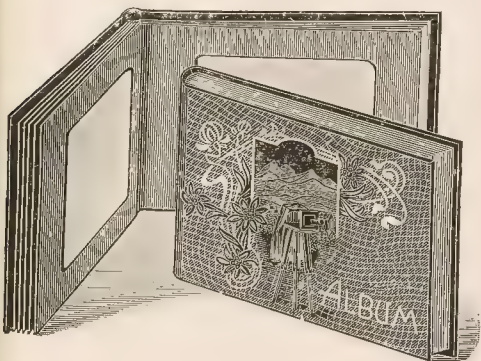
We have received a catalogue, together with samples of albums and other articles of photographic utility, the manufacture of Ferd.



Anthony Horle and Co. The albums are made to take photographs of all the recognised sizes from very small prints upwards, and may have either to slip in or paste in the photographs. The samples we have before us are very varied in their assortment of shapes, but they

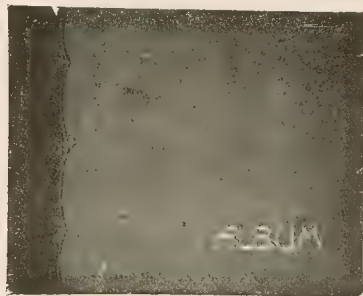


are uniformly tasteful in binding and general get up. There is a wide variety of tints for the leaves, and the various shades seem to have been carefully selected, with due regard to the purpose for which they are intended. The portrait albums have the same good character-



is. A useful contrivance for storing or carrying photographs is a book-form box, having loose leaves which are changeable. Appealing more directly to the professional photographer are translucent envelopes for enclosing prints. These are made for c.d.v.'s, cabinets,

and the usual stock sizes, and are enclosed in various designs or with a pattern upon them in gilt. They are in several delicate tints, and



in style and finish would be fitting accompaniments to the work of a first-rate photographic firm.

The Rystos Electric Lamp for the Dark Room. Manufactured by Reynolds and Branson, Ltd., 14, Commercial Street, Leeds.

To those who have electric current available in their dark rooms we can unhesitatingly commend the Rystos Lamp, both for its convenience and efficiency. The lamp, which measures $8\frac{1}{2}$ inches high by 4 inches wide, has a semi-circular front of ruby glass of a kind which may be relied upon for safety. Within is provided the ordinary incandescent lamp fitting, carrying a lamp hanging downwards. Immediately above this and outside the lantern another lamp is fitted, and there is a lever switch to direct the current to which ever lamp is required for use. Both lamps have ground glass bulbs, so that the light is soft and diffused, and the circular front to the lantern secures a wide extent of illumination. The convenience of being able to convert the light from ruby to white and vice-versa by a touch amounts



to a luxury, and for making bromide prints or contact lantern slides it is a luxury that few would despise. For the electrical attachment a cord is provided with a plug which will fit an ordinary lamp socket and which may be of any length. The lantern is thus portable, and may be moved to any part of the room, or it may be hung upon a wall. In ordering it is necessary to mention the voltage of the current, so that suitable lamps may be fitted. A lantern of the same design is made for gas, the change between ruby and white light being effected by turning a tap, a bye pass preventing either light from being turned completely out while the other is in use. The upper light is so arranged that the small jet of light is concealed when the light is turned on, so that there is no danger of injury to sensitive material.

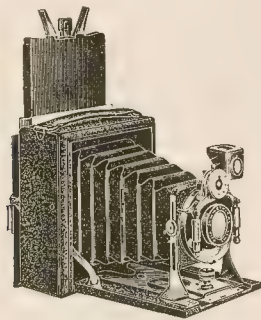
The Barnet Printing-out Cards. Manufactured by Elliott and Sons, Ltd., Barnet, N.

For the printing of post-cards and other purposes, where the use of an extremely stout paper or where card is advantageous, Messrs.

Elliott and Sons have introduced a new grade of P.O.P. The emulsion upon this is of the same character as that upon the ordinary grades of gelatino-chloride papers of the same manufacturers, about which we have had occasion to comment favourably on many occasions. The departure simply lies in the support which, as we have indicated, is sufficiently stout to form a post-card. The material is of a beautifully fine hard grain on both sides. The treatment recommended is the same as for ordinary printing-out paper, and the difference in the material for the support of the emulsion in no way entails additional skill to produce a successful result. Whatever advantages there may be in a printing-out process of course are preserved, and undoubtedly there are many who would prefer to produce their work with the characteristics which are even now associated with the idea of a photograph. The new cards may be had with either glossy and matt surface, and for those who prefer to avoid the trouble of toning a self-toning variety is made. The new cards are supplied cut to all the ordinary sizes, including post-card.

The New Rajar $\frac{1}{4}$ Plate Folding Pocket Camera. Manufactured by the Brookes-Watson Daylight Camera Co., Abercromby Works, Great Homer Street, Liverpool.

The term, "pocket camera," is really a justifiable one in its application to this admirable little instrument of the Brookes-Watson Daylight Camera Co., for it can be carried without any great inconvenience in a jacket pocket of the ordinary size, and, to add to its portability, considerable pains seem to have been taken to omit all useless material. At the same time, there has been no sacrifice of strength or rigidity, and particular attention has been paid to



the mechanism of the front, which is exceptionally rigid for a camera of the kind. This, of course, is an especially important matter in a camera fitted with any of the modern flat field lenses, as the perfect correction necessitates exactness of focussing to a degree that was not required with lenses of the older types. The camera body is made of well-seasoned wood, and is covered with finely-grained leather, and there is a sewn leather handle. The fittings are all nickel plated. The focussing movement is a sliding one, and there is an infinity catch, which enables the front to be set at once. The focussing scale has the Cornex index, and the finder is of the rotary brilliant type. The camera may be had with any of the following of Beck's lenses, fitted with a Bausch and Lomb Unicum Shutter; the symmetrical F 8, double aplanat F 7.7, biplanat F 5.8, or the Beck Steinheil Orthostigmat F 6.8. The camera is specially made to take the Rajar film changer, but it will also take dark slides. It seems to us just the camera for the cyclist, for it takes up very little room, and when used with the Rajar changing system there is the advantage that the space occupied by the packs of films is so small that enough can be carried to satisfy the most assiduous of photographic record makers, and, further, that the plague of dusty plates, which can scarcely be avoided, whatever way the plates are carried, is entirely obviated.

Radios Gaslight Bromide Paper. Sold by The Lumière N.A. Company, Ltd., 4, Bloomsbury Street, London, W.C.

The increasing popularity of what are termed "gaslight" papers has led, naturally, to considerable competition on the part of manufacturers to supply the public demand, and the competition which now

exists has stimulated experiment to the extent that the slight difficulties of manipulation, which occurred in the employment of the earlier samples have been successfully overcome, and moreover the surface of the paper itself and the character of the image producible on it have been vastly improved. It would be of very little use nowadays to attempt to sell a paper of a quality anything far short of absolute perfection. Photographers, both amateur and professional, are now keen judges of materials to render such an enterprise other than hopeless. The prints, which were submitted to us, satisfied us that the paper is capable of results which but a few years ago would have been deemed impossible of production by simple development. Even granting that extremely fine negatives had been used, the long scale gradations, the rich deep shadows, and the perfectly pure high light unaccompanied by any suspicion of hardness or loss of the subtle tint of the higher tones, proved that the paper must have been of exceptional quality to produce such results. That equally good results can be obtained by anyone with the exercise of an ordinary amount of skill we satisfied ourselves by the simple experiment of making few prints according to the directions. The exposure with a negative of average density is about one minute to an ordinary gas flame, and the developer recommended is: Water, 20 ounces; anhydrous sodium sulphite, 5 to 7 drachms; dianol, 40 grains; 10 per cent. sol. of potassium bromide, 25 drops. This developer gives a pleasing black tone, inclining to purple, and there is no fear of fog or degradation of whites. The development is rapid, being complete in less than five minutes.

ROYAL PHOTOGRAPHIC SOCIETY COUNCIL ELECTION.

THE following is a copy of the balloting paper:—

President, *Sir W. de W. Abney, K.C.B., F.R.S.

Vice-Presidents (erase not fewer than five names): *Thomas Bedding; *The Right Honourable the Earl of Crawford, K.T., F.R.S.; *Thomas R. Dallmeyer, F.R.A.S.; *P. H. Emerson, B.A., M.B. (Cantab); *Thomas E. Freshwater, F.R.M.S.; *Chapman Jones, F.I.C., F.C.S.; *Joseph Wilson Swan, M.A., D.Sc., F.R.S.; *Major-General J. Waterhouse, I.A.; *Sir Henry Trueman Wood, M.A.

Treasurer: John Sterry.

Ordinary members of Council (erase not fewer than thirty names): *J. T. Ashby; *T. Thorne Baker, F.C.S.; Arthur C. Bear; *Robert Beckett; *Samuel J. Beckett; *Thomas Bedding; *Henry W. Bennett; George E. Brown, F.I.C.; James Cadett; St. Lawrence Carson, B.A., B.Sc.; *Charles Churchill; Leslie E. Clift; Henry E. Davis; *T. Sebastian Davis, F.C.S.; Alfred Ellis; *Douglas English, B.A.; A. R. F. Evershed, L.R.C.P.; *Thomas E. Freshwater, F.R.M.S.; Thomas K. Grant; Dr. Charles F. Grindrod; Haddon; Ignatz Herbst; Sir W. J. Herschel, Bart.; *John Hodges; E. T. Holding; *Francis Ince; G. Lindsay Johnson, M.A., M.D., B.Sc., F.R.C.S.; Rev. F. C. Lambert, M.A.; *George Lamle; Alexander Mackie; Thomas Manly; *J. C. S. Mummy; Charles H. Oakden; *J. Borthwick Panting; *J. I. Pigg; E. W. Prevost; Ph.D.; H. C. Rapson; *P. R. Salmon; A. R. Sargeant; Leslie Self; *E. Sanger Shepherd; *C. W. Somerville; *John Spiller, F.I.C.S.; H. S. Starnes; *Joseph Wilson Swan, M.A., D.Sc., F.R.S.; *Alexander A. K. Tallent; Walter Thomas; Professor William C. Thorne Unwin, B.Sc., F.R.S.; *H. Snowden Ward; *Major-General J. Waterhouse, I.A.; *Benjamin Gay Wilkinson; *Herbert Young, M.A., D.C.L.

Fellows of the Society are indicated by an asterisk.

Balloting papers may be posted at any time, but only those will be counted which are received at No. 66, Russell Square, London, W., by 12 noon on Monday, February 8th, 1904 (the day preceding annual general meeting).

A MEMBERS' meeting of the Professional Photographers' Association will be held on Friday, February 12th, at the rooms of the Royal Photographic Society. On this occasion a paper will be read by Mr. T. C. Turner on a subject of great importance to professional photographers.

The annual supper of the London and Provincial Photographic Association will be held on Thursday, the 18th inst., at the W. Swan Hotel, Tudor Street, London, E.C., Mr. E. J. Wall in the chair. A few tickets remain unsold, and may be obtained of the hon. secretary, Mr. R. J. Kindon, Burnside, Church Road, Shortland, Kent.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Jan.	Name of Society.	Subject.
5.....	Aberdeen Photographic Assoc.	<i>A Trip in the French Riviera.</i> Illustrated. Mr. Alex. Adams.
5.....	Plymouth Photo. Society	<i>On the Choice of a Subject.</i> Illustrated. Fredk. Johnson.
6.....	Southampton Camera Club	<i>Colour Photography.</i> Mr. E. Sanger
6.....	South London Photo. Society	Shepherd, F.R.P.S.
6.....	Oxford Camera Club	Telephotography.
8.....	Ilford and District Photo. Soc.	Photography Prize Slides.
8.....	Camera Club	<i>The Use of the Spectacle Lens.</i> Mr. H. W. Dunklev.
8.....	Ulster Amateur Photo Society	<i>The Great Dominion.</i> Mr. Edgar Wallace.
9.....	Royal Photographic Society	<i>Halation, its Cause and Cure.</i> Illustrated. Mr. John Brown, F.R.S., A.M.Inst.C.E.
9.....	Nottingham Camera Club	Annual General Meeting.
9.....	Birmingham Photo. Society	<i>English Cathedrals.</i> Illustrated. Mr. W. Mosley.
9.....	Everton Camera Club	<i>The Making of Enlarged Negatives and Work Thereon.</i> Mr. J. H. Fear.
9.....	Aberdeen Photographic Assoc.	<i>North Wales.</i> Part I. Mr. E. Youds.
9.....	Ashton-under-Lyne Photo. Soc.	Silhouette Photography.
9.....	Photographic Club	<i>Majorca.</i> Mr. G. E. Thompson.
1.....	Gainsboro' Camera Club	<i>Bromide Printing.</i> Demonstration. John H. Avery.
1.....	Glasgow Southern Photo. Assoc.	<i>Carbon Printing and Developing.</i> Mr. C. Marshall.
1.....	Southport Photo. Society	<i>In and Around Glasgow Cathedral.</i> Mr. James Jack.
1.....	Liverpool Amateur Photo. Assoc.	<i>Conversations.</i>
1.....	London & Prov. Photo. Assoc.	Lecture Evening.
1.....	Richmond Camera Club	<i>A Printing Process.</i> Mr. C. Winthorpe
1.....	Watford Camera Club	<i>Souerrille.</i>
1.....	Hull Photographic Society	<i>The Capabilities of the X Rays.</i> Illustrated. Dr. Roiman.
1.....	Woolwich Photo. Society	<i>Trimming, Mounting, and Framing.</i> Mr. W. J. Edmonds.
1.....	Camera Club	<i>Hand Camera Work.</i> Mr. A. Horsley
		Hinton.
		<i>More of my Camera Notes on Natural History.</i> Mr. Douglas English B.A., F.R.P.S.
		<i>Perspective from an Architect's Standpoint.</i> Mr. G. A. T. Middleton, F.R.I.B.A.

ROYAL PHOTOGRAPHIC SOCIETY.

The following are extracts from the annual report:—

The principal event in the year under review was the attainment of the fiftieth anniversary of the Society's foundation. The passing of this noteworthy period in the Society's history called for some special celebration, and a congress, reception and dinner were arranged for its honour in the month of May. The proceedings will be familiar to the members through the medium of the JOURNAL. At the reception, which took place at the New Gallery, Sir William Abney, K.C.B., the president, in the course of an interesting address, brought forward a proposal for the institution of a photographic research laboratory, at which, as he pointed out, many questions of great importance to photographic science might be investigated. Further reference to this proposal will be found elsewhere.

At the congress, interesting papers were contributed by Mr. F. E. Jones, Dr. A. Miethe, M. Léon Vidal, MM. Lumière and Seyewetz, and Dr. Jumeaux, and an historical exhibition was opened in the Society's rooms. The celebration of the Jubilee ended with a dinner which was present a large gathering, including some distinguished members of the scientific world.

The Council made the Society's Jubilee the occasion of the election of five Honorary Fellows:—Sir W. de W. Abney, K.C.B., Sir William Huggins, F.R.S., Baron Arthur von Hübl, Dr. E. Valentini, and Dr. S. Czapski, the addition of whose names to the roll marks not only a recognition of the labours of distinguished men, but the Society's more intimate association in the future with prominent workers, at home and abroad, in many fields of photographic research.

The Society was honoured in its turn by the receipt of the gold medal of the Vienna Photographic Society in recognition of its work in the advancement of photography during the past fifty years, with letter of congratulation from its Honorary Fellow, Dr. Josef Maria Herl, writing as president of the Vienna Society. The Council were urged by the members in passing a resolution expressing the feelings of appreciation with which the Society received the award.

The Council are pleased to note a net increase in the membership

amounting to fifty-five. The Society is, however, in need of a much larger membership, and the Council earnestly impress upon the members the importance of interesting in it more of the large body of the public practising photography, with a view to their admission to its ranks.

PRACTICAL DEMONSTRATIONS.

In order to meet the requirements of a section of the members which attaches more importance to practical instruction than to the more advanced theoretical papers brought before the ordinary and technical meetings, the Council have arranged for a series of monthly demonstrations upon printing processes. In view of this decision, the informal meetings, which have not met with the success anticipated for them, have been abandoned and the demonstrations will as far as possible be given on the first Tuesday in each month. Their success seems already assured, and the Council hope that the members will make them known as widely as possible.

THE ANNUAL EXHIBITION.

The Society held its forty-eighth annual exhibition at the New Gallery, which has been secured for a further term of three years. The fiftieth anniversary of the Society's foundation having been attained during the year under review, the Council introduced commemorative features in the form of an invitation pictorial section—as distinct from the established competitive section; and an invitation scientific and technical section—which replaced the ordinary competitive section of that description.

The Council have to thank those members and others who, by their willing co-operation, enabled them to bring together the interesting and instructive exhibits that were shown. The exhibition was inaugurated by a private view and soirée and remained open to the public for thirty-three days, on seventeen of which it was re-opened in the evening, when lantern lectures were given. The Society has reason to be pleased with the attendance, which materially exceeded that of the previous year, and takes first place in the series of four exhibitions held at the New Gallery. The financial aspect is also a gratifying one, notwithstanding the voluntary sacrifice of the south room and balcony which have previously produced a return for space. The selecting and hanging of the exhibits was entrusted to a committee of twelve members, composed of the five judges elected by the members and seven members elected by the Council, instead of by the members, as in the previous year.

The number of entries in the competitive pictorial section was 1,589 from 443 individuals, and the number of exhibitors whose work was accepted therein was 314. There were 25 foreign and colonial exhibitors from the following countries:—Denmark 1, France 2, Germany 3, Holland 1, Italy 2, New South Wales 1, Switzerland 1, Transvaal 1, and the United States of America, 13.

The Council have arranged for the election of seven instead of three judges in the scientific and technical competitive section of the next exhibition, in order that the many different subjects dealt with in the exhibits may find representatives on the jury. The seven judges will also constitute the selecting and hanging committee.

THE PERMANENT COLLECTION.

Several photographs have been acquired for this collection by presentation and by purchase at the annual exhibition. The greater portion was removed to the New Gallery during the autumn to form part of the section devoted to the representation of the progress of pictorial photography.

THE GENERAL PURPOSES COMMITTEE.

Several small committees have been superseded by a larger committee, called the General Purposes Committee, which relieves the Council of much routine work that now comes before them only on report. The committee is composed of eight members and four non-members of Council.

THE PROPOSED LABORATORY.

An important proposal was put before the Society by the president in the course of his Jubilee address. He pointed to the necessity for a research laboratory specially set aside for the elucidation of photographic problems. Such a laboratory ought, he considered, to be found on the premises of the chief photographic society of the country, and he hoped that the Royal Photographic Society would give the matter full consideration. The president was supported at

the Jubilee dinner by Lord Kelvin, who also referred to the proposal. The Council therefore appointed a committee which is devoting careful attention to the question of the possibility of conducting the laboratory as part of the Society's work, and of raising the necessary funds for fittings, instruments and maintenance. The Council are expecting a report from the committee, and a communication to the members will follow in due course.

THE ST. LOUIS EXHIBITION.

In response to the invitation of the Royal Commission for the St. Louis Exhibition the Council undertook to invite exhibits illustrating the scientific and industrial applications of photography for the British section. The committee appointed for this purpose have collected some 250 examples, which should form an interesting feature of the exhibition.

THE MUSEUM.

Many additions have been made to the collection of historical apparatus and examples, and some provision has been made for more effectually exhibiting the various articles now in the Society's possession.

COPYRIGHT.

A new artistic copyright society has been formed with a view to the amendment of the existing copyright laws. The council delegated Major-General J. Waterhouse to represent this Society upon the new body and watch the interests of photographers.

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

JANUARY 28TH, Mr. Drage in the chair. The secretary announced that the prize of two guineas for the best paper read during the previous year had been awarded by the donor to Mr. T. E. Freshwater, and that the donor, Mr. S. H. Fry, had intimated his willingness to continue the award, as an encouragement to members to submit papers. Mr. W. Thomas gave a long and instructive lecture upon hand-camera work, illustrated by lantern slides, giving hints as to the best apparatus, modes of using, development of negatives, the use of isochromatic plates, etc.

CAMERA CLUB.

THE Monday lecture last week was by Dr. G. H. Rodman, and the subject was "Photography of Electrical Phenomena." It has long been known that when the discharge from the secondary circuit of an induction coil is made to traverse the surface of a gelatine plate a very wonderful record of the spark and its innumerable branchings is obtained, that from the positive being quite different to that produced from the negative pole. Dr. Rodman has made a great many variations of this pretty experiment, and the results he showed in the form of lantern slides on the screen.

He explained that he did not profess to be a skilled electrician. The exigencies of his profession had caused him to gain a knowledge of X-Ray phenomena, and the possession of a large coil and accumulator had suggested the experiments to which he now called attention. Some of the effects produced seemed to be quite inexplicable; he hoped that those present would be able to enlighten him as to their cause. The matter was one of absorbing interest to him, and he had come before them in the hope of gaining information rather than with the purpose of affording it to others.

The experiments might be placed under two heads, namely, those in which a single discharge had been employed—a spark, the duration of which is supposed to be about the millionth of a second, and those in which he had used a multiple discharge. In the latter case, he had manipulated the commutator of the coil as rapidly as possible, and he supposed that the exposure of the plate might be taken as being above the twentieth part of a second. He had varied the experiments by using sometimes a point, sometimes a metallic brush, and sometimes a hollow sphere—the hollow brass ball taken from a bedstead—as the terminal for the discharge, which was placed immediately over and touching the horizontal gelatine plate.

The arrangement of the apparatus was as follows: The terminal was brought above the gelatine plate, while the plate itself rested upon a sheet of plain glass of much larger area, which acted as an insulator. This insulating surface rested upon a metal support—a tin

tobacco box. In most cases one pole of the coil was connected as already explained with the gelatine plate, while the other pole was in contact with the metal support underneath. He showed rough diagrams of the way in which the various parts were connected up, and also photographs taken by flash light of the complete apparatus.

It would be impossible to give an idea of the exquisite beauty of some of the pictures shown, and even a reproduction in the form of a half-tone block would do them scant justice. They were certainly seen to perfection by aid of the electric lantern at the Camera Club, which is renowned for its great power and splendid definition. The most remarkable of the pictures were those in which coins were placed on the gelatine plate, for not only were they beautifully defined in themselves, the design and lettering of each being faithfully reproduced, but they were surrounded by miniature lightning of extraordinary ramifications. In some cases one coin or two was connected with a pole, whilst the other one was free, and placed a some little distance off, but both were well defined in the photograph. The current seemed to spread itself over both in its effort to run over the edge to seek the companion pole in connection with the metallic plate below. A curious feature was a kind of nimbus or shadow thrown off by some of the coins, and this was a point upon which the lecturer sought information. Endless variations were made by altering the nature of the coins used, and submitting them to the action of the + or - current, with a point, brush, or sphere as terminal to the wire in connection with the coins. Unfortunately there were no electricians present who could give an explanation of these curious effects, but many ingenious hypotheses were advanced by those who joined in the short discussion which followed the reading of Dr. Rodman's interesting paper. The chairman for the evening was Mr. Inwards.

The lecture on the following Thursday was by the Hon. W. I. Allardyce, who chose for his subject the land and the people of which for a long time he has acted as Governor, namely, the Fiji Islands. Some people may happen to know that these islands are small isolated spots in the Pacific Ocean, and that they are part of the Empire upon which the sun never sets, at least never sets at the same time. Other persons are quite ignorant upon the subject, and give no more thought to the Fiji Islands than they do to the possession of the Equinoxes, or any of the other things which are of no immediate commercial importance. It is, therefore, well that there are good-natured individuals who are willing to tell us about some of our distant possessions, and a better exponent of the condition of affairs at Fiji could not be found than Mr. Allardyce, who has lived among the people since 1879.

The sole photographic interest resided in the quality of the slides which illustrated the lecture, and these were unusually good. Especially interesting was the series which depicted the entire business of fire-walking, that strange semi-religious custom which finds its home in one of these islands. By aid of these photographs we were able to watch the building of the great open-air hearth or oven, upon which the ceremony takes place. First, a foundation of big stones above which are piled trunks of trees to form a mighty bonfire. When the wood is reduced after many hours to a cindery state, the logs or what remains of them, are pulled off by aid of ropes made of green vines, and the red-hot stones are levelled by means of the log-pokers. Then the particular tribe whose members are supposed to inherit the gift of fire resistance, walk over the stones, and come no harm whatever. We are sorry that Mr. Allardyce did not offer a theory to account for their immunity, and that the question did not arise during the discussion. But the proceedings terminated at a late hour that there was doubtless a feeling among the audience much as they enjoyed a singularly bright and informative lecture that they must be chary of asking for more. The chairman for the evening was Mr. Henniker-Heaton, M.P., whose name is so well known in connection with postal reforms. For this reason his presence was welcomed by those present with much enthusiasm.

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION—LIVERPOOL BRANCH.

A MEETING was held on Friday, January 22nd, 1904, at the Alexandra Hotel, Dale Street, Liverpool. Present: Messrs. G. Watmough, W. F. Smith, J. Saronie, W. Warrington, W. F. Smith, O.

Cooper, W. N. Cowper, T. Vanderbilt, A. Priestly, S. M. Hubbert, A. F. Mowll, hon. sec. The hon. sec. then read two letters he had received from the hon. sec. of the Association, and he was instructed to write and thank him for cartoons and answer some questions in reference to a debate held on the 29th of November, on the use of the term, "platinotype." The next business was to appoint the chairman for the next twelve months. Mr. A. Priestly proposed, and Mr. T. Vanderbilt seconded, that Mr. G. Watmough Webster be asked to continue that office, and being put to the meeting by the hon. sec. it was carried unanimously. It was proposed by Mr. A. F. Mowll, and seconded by Mr. W. N. Cowper that Mr. F. Warrington be appointed branch hon. sec., the members voting unanimously. On the invitation of the hon. sec., Mr. Fell and Mr. Hedges, of the Aristo Co., came to the meeting at nine o'clock, and had a long chat on the methods of American photographers. It was most instructing and amusing, and kept the members in the meeting room until a late hour.

RICHMOND CAMERA CLUB.

JANUARY 28TH.—Mr. Gibson addressed the members on the subject of bromide enlarging. He dealt first with making enlargements, both by daylight and by artificial light. His first experience was with daylight, and he then placed his camera against a window, blocking out all extraneous light and having a reflector held outside; afterwards he used a daylight enlarging camera. The difficulty with daylight enlarging lies in the uncertain power of the light, and another strong objection is the small amount of daylight that the amateur has at his disposal, for which he usually has other uses. Artificial light overcomes these objections, but the results are not always so satisfactory as those obtained by the use of daylight. When using an enlarging lantern, the size of the negative that can be used is limited by the size of the condenser employed, and therefore the great drawback is the expense of the apparatus if enlargements are to be made from anything except a small negative. For softening the paper on the board ladies' black pins are more satisfactory than drawing pins, as they show less upon the print, and therefore leave less to be touched up afterwards. With regard to lenses, he advised a rapid rectilinear rather than a portrait lens, because, the former having greater depth of field, any slight distortion in the negative can be corrected by sloping the board carrying the bromide paper, without much loss of sharpness. Mr. Gibson then spoke of toning prints, and showed a number of prints toned in various ways. He considered the hypo-alum process the most satisfactory, as there is no trouble with double-toning or with obscuring the shadows; but, after all, he considered untoned bromides the most satisfactory, as toning tends sometimes to reduce and sometimes to intensify the print. A soft negative is the best to enlarge from; a weak one can be faked, but a hard one is hopeless. In the matter of exposure, although it might be heresy to say so, he did not consider the usual test strip system satisfactory, as lights and shades vary in different parts of a picture, and therefore it is often difficult to compare densities. He preferred to use a whole sheet. As a developer, he considered metol-hydrokinone the best, but no developer can be satisfactory if used in very cold weather. Finally, Mr. Gibson showed his system of mounting prints temporarily, by attaching them at each corner with bicycle-tyre cement, which allows them to be easily removed from the mount if necessary.

EDINBURGH PHOTOGRAPHIC SOCIETY.

At the last meeting Professor Baldwin Brown delivered a lecture "Composition and Light and Shade in Turner's 'Liber Studiorum'."

The lecturer began by explaining the reasons which led to the selection of the subject for the evening's papers. He had tried to find a theme which, without being photographic, would yet have some bearing on the artistic side of the work done by members of the society. When visiting the Photographic Salon in London during the autumn, he had asked himself the question: What were the qualities in which the artistic photograph differed from the ordinary print? and he found that these qualities depended to a considerable extent on manipulation of light and shade. In the artistic photograph the lights and shadows were brought into harmonious relations, and an effect of unity was secured; whereas in the ordinary print, taken just as the subject happened to come, the lights

and shades were all over the place, and there was no harmony. No artist had ever been a greater master in composition in light and shade than the great English landscape painter Turner, and in none of Turner's productions was this excellence so marked as in the series of plates known as the "Liber Studiorum." Hence the selection of the subject as one bearing on practical photographic work.

An account was then given of the origin and history of the "Liber Studiorum," and of its relation to the so-called "Liber Veritatis," or "Book of Truth," of the seventeenth-century landscapist Claude. Claude's drawings were little more than memoranda of his pictures, and he probably called the collection the "Book of Truth" merely because it contained an accurate record of his various completed pictures; but Turner, who, apart from his art, was a somewhat confused thinker, seems to have imagined that Claude intended to represent in his drawings the whole truth of nature in her various aspects. Turner accordingly girded himself to the task of producing a series of plates which should surpass in the representation of natural truth all that Claude had accomplished. The task was easy enough, for in the first place Turner's knowledge of nature in all her myriad aspects was infinitely greater than the knowledge possessed by Claude; and, in the second place, while Claude's drawings, which had been reproduced in slight mezzotints by Richard Earlom, were mere sketches, Turner aimed at producing more elaborate and finished landscape studies, and invoked for aid on the copper plates the best available talent among the engravers of his day.

The technical character of the "Liber Studiorum" was then explained, and it was shown that Turner used a combination of etched line with mezzotint for the light and shade. Some of the etched plates before any light and shade was added were shown on the screen, and it was pointed out how masterly was Turner's use of line in order to convey the truth of the skeleton or structure of natural objects. His mountain drawing in the etching called "Ben Arthur," and his tree drawing in "Near Blair Athole," were especially noticed. In the slides of a number of the completed "Liber Studiorum" plates, which were then thrown on the screen, attention was primarily directed to questions of composition and light and shade, and Turner's constant use of repetition as a means of securing unity and repose was illustrated in many examples. The masterly representation of natural truth in the forms of water and clouds and trees was also illustrated, and the variety of the aspects of nature presented in the work as a whole insisted on. It was evidently Turner's main intention in the work to display nature in all her moods, and this was the reason why he was always so anxious that the work should be looked at as a whole. Reasons were given for dissenting from Ruskin's view that Turner intended to preach in the "Liber" any sermon on the passing away and failure of human achievement, and it was found as the plates were passed in review that some of the most beautiful were those in which there was nothing but pure artistic composition, without any pronounced meaning or intention of an intellectual kind. Plates of this kind, such as "Hindoo Ablutions," "Hindoo Devotions," and "The Bridge in the Middle Distance," were among the most successful in the whole collection.

ROYAL Photographic Society.—The following is a copy of the balloting paper for the election of Judges for the Exhibition, 1904. Pictorial section (erase not fewer than thirteen names): J. T. Ashby, F.R.P.S.; Harold Baker; Henry W. Bennett, F.R.P.S.; W. R. Bland; Walter L. Colls, F.R.P.S.; J. Page Croft; William Crooke; P. H. Emerson, B.A., M.B. (Cantab), F.R.P.S.; John H. Gash; C. Barrow Keene, F.R.P.S.; Rev. F. C. Lambert, M.A.; Percy Lewis; Llewellyn Morgan, M.D.; F. J. Mortimer; J. C. S. Mummary, F.R.P.S.; G. A. Storey, A.R.A.; B. Gay Wilkinson, F.R.P.S.; W. T. Wilkinson. Technical and scientific section (erase not fewer than seventeen names): Sir W. de W. Abney, K.C.B., F.R.P.S.; T. Thorne Baker, F.C.S., F.R.P.S.; T. Bedding, F.R.P.S.; Henry W. Bennett, F.R.P.S.; Thomas Bolas, F.I.C., F.C.S.; W. E. Brewerton; James Cadett; St. Lawrence Carson, B.A., B.Sc.; Douglas English, B.A., F.R.P.S.; T. K. Grant; A. Haddon; Ignatz Herbst; G. Lindsay Johnson, M.A., M.D., F.R.C.S.; Chapman Jones, F.I.C., F.C.S., F.R.P.S.; C. Barrow Keene, F.R.P.S.; E. Sanger Shepherd, F.R.P.S.; John Sterry; Joseph Wilson Swan, M.A., D.Sc., F.R.S., F.R.P.S.; A. A. K. Tallent, F.R.P.S.; E. J. Wall, F.R.P.S.; H. Snowden Ward, F.R.P.S.; Major-General J. Waterhouse, I.A., F.R.P.S.; W. T. Wilkinson; T. E. Freshwater, F.R.M.S., F.R.P.S.

Commercial & Legal Intelligence

SPEAIGHT, LIMITED.—The above-named company has been registered with a capital of £30,000 in £1 shares. Object, to adopt an agreement with F. W. Speaight and R. N. Speaight for the acquisition of the business of photographers, photographic-artists, portrait and miniature painters, and otherwise, carried on by them at 178, Regent Street, W., as F. and R. Speaight, and to carry on the same and the business of manufacturers and importers of and dealers in photographic materials, chemical, industrial, and other preparations, articles, and compounds, etc. No initial public issue. F. W. Speaight and R. N. Speaight are managing directors, and each may retain office while holding £10,000 shares. Ordinary qualification, £100. Registered office, 178, Regent Street.

At the Westminster Police Court on February 1st, William Morrison Crouch, 47, a photographer, of Ebury Street, S.W., was again before Mr. Horace Smith on remand, charged on a warrant with obtaining money by false pretences from a number of young persons who had paid premiums to be taught the profession. Mr. William Lewis prosecuted on behalf of the Treasury. The case has occupied a considerable time, and the allegations against the accused are that he did not adequately teach his business to a number of young ladies and gentlemen. By advertising he was brought into communication with them or their parents, and in several instances premiums of £20 were paid. The pupils had little or nothing to do; for some time defendant had not a camera on his establishment. One young lady said that they played about, the greater part of the day, and that defendant sat in his arm-chair smoking cigarettes and reading newspapers. He obtained a clerk—with a premium of £25—to do the clerical work in connection with a photographic employees' bureau, but the clerk declared that no real business was done. The defendant received a few letters, enclosing half-a-crown as registration fee. There were no books for weeks after the clerk went in, and the defendant never took the trouble to dress his shop window, even when he had a considerable staff in his employment. Mr. Horace Smith again formally remanded the accused prior to committal to the sessions.

At the Sheffield County Court, before his Honour Judge Mansell Jones, on January 29th, Frank Rogers Baker, 42, Daniel Hill, Sheffield, trading as the Atlas Advertising Company, claimed from H. Howard, High Town Road, Luton, photographer, £2 10s., the second year's rent for an advertising space in a cabinet at Luton. A counterclaim was set up by the defendant for damages for breach of contract to erect and maintain a properly protected advertising cabinet in Luton, for alleged damage caused to photographs, and for loss of business by reason of the defective condition of the cabinet. The defendant also claimed the return of the sum of £2 10s., the total counterclaim being £10. Mr. W. Anty appeared for the plaintiff, and Mr. H. W. Lathom (Luton) defended. The evidence on behalf of the plaintiff was to the effect that an order was given by the defendant that he would take a space in a show case at Luton for the purpose of exhibiting photographs. It was alleged that the space was taken for two years, and one year's rent had been paid. A barometer was placed in the case as an attraction, but it was admitted that this had not been regularly attended to. The defence was that the agreement was not carried out, inasmuch as the case was not put in the position indicated, that it was not watertight, and that the weather damaging the defendant's photographs, his reputation as a professional photographer was injured. The defendant stated that he had an idea that he was signing a contract for two years. He did not read the document which he was asked to sign; he thought it was an order form. His Honour gave a verdict for the defendant on the claim, and for 5s. on the counterclaim.

At Bracebridge on January 29th the adjourned inquest was held on the body of William James Pacey, printer, 125, High Street. Deceased was found dead in his house on Thursday week. Mrs. Alice Pacey, widow of the deceased, said her husband had not been working at his trade, that of a printer, since January of last year, when all the printers had to leave. He took a fried fish business in February. Witness had recently lost her father and mother, who lived with them, and deceased had been very depressed. Deceased

was very fond of photography, and kept the chemicals in a cupboard in the room where he died. On Wednesday of last week the thought deceased had gone to the shop, but found after that he had been seen on the Nettleham Road. He looked very bad when he came home at night, nearly 11 o'clock. He got up about 1 o'clock on Thursday morning, but did not touch his breakfast, and on her remark, "It is very cold," made no reply. Witness left in the house reading while she went in the yard, and when she came back he was stretched out on his chair. Dr. Jagger said the poison brought to him a bottle described. It contained a fairly strong solution of cyanide of potassium, and would probably be diluted further for use in reducing or toning photographs. It was an intensely deadly poison. Replying to the coroner, witness said it was the poison of which Mr. Whitaker Wright died. Examining the stomach, witness found it contained a very copious quantity of cyanide of potassium. There were cases on record where a man had had time to drink from a bottle and put it in the cupboard to conceal it before the poison took effect. Witness did not examine the fragments of the cup, his suspicion not being aroused at the time of his being called. Replying to the coroner, witness said the poison would be in a form which would probably be bought by this man without signing for. There was enough poison in the bottle to kill hundreds of people. The Coroner: Rather a dangerous knowledge to get abroad. The jury found that deceased had committed suicide by taking cyanide of potassium while in a state of temporary insanity.

A SOMEWHAT remarkable "scene" took place in Southwark Court on Monday last, the plaintiff being Helen Mabel Henshaw, young lady clerk, and the defendant Florence Neville, also young lady clerk, of Newington Causeway. It appeared that the plaintiff had lived with the defendant, and after she left she entered an action for the return of a picture or its value which was placed at 30s. The defendant, instead of returning the picture, paid 30s. into court, and thus settled the claim. The plaintiff, however, did not want the money, and now she applied to his Honour Judge Addison, K.C., for an order against the defendant to deliver up the picture. She stated that it had belonged to her mother, now dead, and no amount of money would purchase it. The defendant, however, carried the picture in a piece of brown paper under her arm, handed it up to his Honour, at his request, and said she kept it as security for a loan advanced to the plaintiff. "It is not," she continued, "that I wish to keep the picture."—His Honour: No, I don't think anybody would want to keep that picture.—The plaintiff: I don't owe her a farthing, your Honour.—Well, are you prepared to pay 10s., and secure this invaluable picture?—The plaintiff: No, because I don't owe it.—His Honour: Oh, very well then. I can't help you. You entered your action in wrong form, and she has accepted the value you have placed upon it. But nobody in the world, except somebody who had a very particular fancy, would value it at 30 pence. It is a rubbishy photograph—a most dismal picture. How came you to leave the picture with her?—The plaintiff: Because she gave us only half an hour in which to pack up and clear out.—His Honour: You tell me that this picture which harrows your soul is invaluable, and no money would buy it, and yet you won't pay to recover it. The action was dismissed. The parties left the court, but in the passage the plaintiff and her brother tried to snatch the picture from the defendant. The latter called the aid of the police sergeant on duty, and he separated them, ordering the plaintiff to get her brother off the premises. A cab was procured by a lady friend who accompanied the defendant, and they both entered. The plaintiff rushed to the vehicle, and implored the defendant to give her the picture, and accept the 10s. The defendant was obdurate, and drove off with the mysterious but invaluable picture.

At the Sunderland Petty Sessions last week, Mr. T. E. Pamphill, presiding, John Stewart Cree was charged with obtaining by false pretences 5s. and a photograph from Sarah Craggs at Southwark. Mr. W. W. Moses prosecuted, and said that, although only a charge was preferred against the accused, he could have preferred at least a dozen of the same kind. The prisoner set himself up as the managing director of a company he called the Anglo-Scottish Benefit Art Company, and went canvassing for orders, producing cards on which his name and address, 16, Suddick Street, Sunderland, were printed as manager of this company. He pretended to supply an enlarged photograph for a certain figure on a cabinet photograph



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ing lent him, and a deposit paid him. He undertook to deliver the enlarged photograph in fourteen days, and kept on collecting instalments. But the enlargement was never seen. In fact, he worked a grand system of fraud.—Sarah Craggs, No. 1, Broad-street Terrace, Southwick, stated that on September 29th last year the prisoner called at her place at Castletown, and stated that he presented the Anglo-Scottish Benefit Fine Art Co., of which he had previously left her a card which advertised himself as the managing director. He undertook to enlarge for her a photograph for 15s., and, believing the company genuine, and the prisoner what he represented himself to be, she gave him a cabinet photograph and paid him a deposit of 3s. The deposit was entered on a card, and the receipt signed by the prisoner, who said the cabinet would be returned in three days, and the enlargement in fourteen days. On October 10th and 24th witness paid further instalments of 1s. each, and it was entered on the card, but since the last date she never saw him again until the Sunday following Christmas Day, when she met him in Edward Burdis Street. She asked him for the photograph, and he said he had sent away for it, and witness would wait it as soon as he received it. But neither the original photograph, nor the enlarged photograph, nor the money she paid had been delivered.

Amy Nash, 6, Oswald Terrace, said prisoner called at her house on September 29th, and, representing himself as in the previous witness's cases, she gave him an order and photograph and a deposit. He paid several instalments, and eventually paid the whole sum, and was promised the enlargement. She, however, never got it.—Mary Ann Stafford, of Castletown, gave similar evidence.—John Elliott Peace, printer, Stoney Lane, Southwick, spoke to having printed, on September 23rd last, 1,000 cards similar to the one left at Miss Craggs's place. When he ordered the cards, prisoner explained to witness that the "company" was opening out a branch at Southwick, and he was the managing director. The cards were printed and delivered, but witness was never paid for them.—Inspector Cowan, of Southwick, deposed to arresting the prisoner on a warrant at 1.30 a.m. on Wednesday last. Though prisoner repeated his address on the cards at 16, Suddick Street, it was really The Terrace. At the address where witness arrested the prisoner, he found photographs (produced), amongst which was Miss Craggs's. Prisoner pleaded not guilty, and chose to be tried there and then. He said there was no fraudulent intention on his part, and he had dealt fairly with the people. Several photographs were awaiting delivery, but, unfortunately, Miss Craggs's was not one, he having returned her enlargement because it was not satisfactory. He had delivered many enlarged photographs.—The Bench found him guilty, and, in sentencing him to three months' imprisonment with hard labour, expressed their opinion that it was a most impudent swindle. *Sunderland Daily Echo.*

At West Ham Police Court on February 1st, George Sanders, a dealer in fancy goods, etc., of 80, Victoria Dock Road, was summoned before Mr. A. Gillespie to show cause why an order should not be made for the destruction of a large quantity of obscene pictorial postcards, stereoscopic slides, books and writings, found on his premises. Mr. H. G. Muskett appeared for the Commissioners of Police, and Mr. T. Griffith Davies represented the defendant. Mr. Muskett in opening the case said, that according to his own description the defendant carried on "a bazaar of nevelties." Complaints were made to the police as to the nature of the business, and as a consequence, observation was kept on his shop by the police. A great number of boys went there to purchase pictorial postcards of an offensive character. On December 30 an officer went to the shop and brought some of these postcards, with the result that on January 8 a warrant was issued for a search of the premises. When this was executed on the night of January 8th, 750 postcards, 43 books, and a number of other works were seized, and for the destruction of these an order was now asked. He (Mr. Muskett) had a good deal of experience in matters of this kind, and he must say that never before had he seen postcards of such a peculiarly offensive character. In addition to these there were a considerable number of books of an obscene character, and these indicated that the defendant was carrying on the business of an obscene bookseller. Detective-sergeant Eustace deposed to executing the search warrant. The defendant's shop on one side was devoted to the sale of picture postcards and books, and on the other side were fancy goods and china, but there was no counter. From the interior of the shop and from

the windows the witness seized 1,025 pictorial postcards, and he also took away 43 books, some of which were in the window; a home cyclopaedia which had some plates in it, and 30 stereoscopic slides as well as some commonly known indecent books. In an upstairs room were some so-called comic pictures, and a number of rhymes in MSS., which the witness thought were of the filthiest character imaginable. Mr. Griffith Davies submitted that some of the books were really medical treatises, which might be bought by the general public in pursuit of science. Mr. Gillespie: Why should the public require these books at all? He is a china dealer, and sells these things to anybody. After some further discussion Mr. Gillespie said that the question of whether or not things were obscene depended on circumstances. In the present case he should hold that the postcards, stereoscopic slides, and books and writings were obscene, and he would make an order for the destruction of the whole lot. Mr. Muskett asked for costs, and his worship made an order for the payment of £4 4s. costs. Two other summonses charging defendant with exposing 39 indecent pictorial postcards in the shop window and 36 in the interior of the shop were then heard, but after some legal discussion Mr. Muskett said he would be content to rely on the summons for the exposure in the shop window, and withdraw the second summons. Mr. Griffith Davies said the defendant would plead guilty to the exposure of the goods with reference to which he pointed out, his worship had already adjudicated. The defendant had to lose his goods and pay £4 4s. costs; that he submitted would meet the ends of justice. Mr. Muskett said he could not agree with that suggestion. Many of the postcards were "a hundred per cent. worse" than any he had ever seen before, and he asked his worship to exercise his power in such a way as to afford a warning to other dealers in such goods. Mr. Gillespie said he was not going to inflict the full penalty of three months' hard labour, but he looked upon this matter very seriously. The sale of such things was most harmful, and here the sale was general and most deliberate. For exposing these postcards in the shop window the defendant would go to prison for one month with hard labour.

News and Notes.

THE proprietors of the "Graphic" have invited the Applied Art Section of the Society of Arts to visit their new printing offices in Tallis Street, Victoria Embankment, E.C., on Thursday evening, February 18, from 8 to 10.30 p.m., when the various processes in the production of an illustrated paper will be shown in operation. As the accommodation is limited, not more than 100 cards of invitation will be issued. These cards will be issued in order of application to members of the society until the number is exhausted. Any member who desires a ticket should apply at once. Each ticket will admit the bearer and one friend. No one can be admitted without a ticket.

ST. LOUIS EXHIBITION, 1904.—The Commercial, Labour, and Statistical Department of the Board of Trade has prepared a number of diagrams dealing with various branches of labour and trade statistics, to be exhibited in the Social Economy Section of the forthcoming Exhibition at St. Louis. The diagrams (twenty-eight in all) are intended to illustrate the statistics of employment, wages, prices, production, consumption, foreign trade, shipping, railway traffic, trade disputes, trade unions, workmen's co-operative societies, industrial accidents, and pauperism. Those interested are invited to view the exhibits at the Labour Department, Board of Trade, 43, Parliament Street, S.W., on Wednesday or Thursday, between 12 noon and 6 p.m.

MR. SAMUEL P. JACKSON, whose death occurred last week at Bristol, was an artist of some note. He was born on September 12, 1830, his father being an artist and an Associate of the old Water Colour Society. Mr. Jackson became an Associate of the same society in 1852, being the youngest Associate ever elected. His favourite subjects were scenes on the Thames, in North Wales, and on the Cornish coast. He exhibited on several occasions at the Royal Academy, and three of his drawings are in the South Kensington Museum. Mr. Jackson, who was of a retiring disposition, had not painted since 1900. His tastes were scientific as well as artistic, for he was the inventor of an instantaneous shutter which obtained a silver medal awarded by the Royal Photographic Society.

ROYAL INSTITUTION.—A general monthly meeting of the members of the Royal Institution was held on Monday afternoon, the 1st

instant, Sir James Crichton-Browne, Treasurer and Vice-President, in the chair. Mr. W. B. Bryan, Mr. C. E. Challis, Mr. A. F. H. Dick, Mr. W. Gowland, Sir Charles Hartley, K.C.M.G., Miss C. Jones, Mr. C. E. Layton, Mr. C. F. Lan-Davis, Mr. H. Loeffler, Brigade Surgeon Lieut.-Col. C. W. MacRury, Mr. W. M. Ogilvie, Mr. C. G. P. Pownall, Lady Priestley, Mr. C. F. Rousselet, Mr. R. E. Tatham, and Mr. J. Weir. The special thanks of the members were returned to Sir Andrew Noble, Bart., Dr. Frank McClean, Mr. J. B. Brönn-Morison, J.P., and Lord Greenock for their donations to the Fund for the Promotion of Experimental Research at Low Temperatures.

ACCORDING to a Paris correspondent some interesting facts came to light in the first Court when an action for damages brought by the Comte de Leontieff against a cinematograph company was heard. The company in question approached Comte de Leontieff, Governor-General of the Equatorial Province of Abyssinia, on the subject of taking a series of cinematographic views of the Emperor Menelik, his Court, military entourage, and of all the public and private phases of Ethiopian life. Comte de Leontieff, with his staff, which he had brought from Paris waited, but in vain, as he alleges, for the operator which the company had put at his disposal. He further alleges that the non-execution of the contract meant a loss to him of £1,600, without reckoning other benefits if the work had been executed. "I have myself been put to considerable expense," he added. "When I arrived at Addis Ababa, I obtained the consent of the Emperor Menelik for the complete execution of the work, but in accordance with the customs of the country I had to offer the Emperor two guns with their accessories and 44,000 cartridges, which cost £1,200, and to Ras Makonnen 500 Berdan rifles, as well as 50,000 cartridges, at a cost of £1,000. Comte de Leontieff estimated that altogether the loss rose to £8,000. After hearing the pleadings the Court agreed in principle to the Governor-General's demand, but reduced his claim to £1,800."

A Correspondent writes: "There can be no doubt that the trend of events is in the direction of making the metric system of weights and measures compulsory in this country. Whatever weighty arguments, and they are many, that can be advanced against the system on account of its want of elasticity for daily intercourse of buying and selling, and measuring, the fact remains that our chief commercial rivals employ it, and our own system does not stand the test of usefulness when placed side by side. The Journal of the Royal Statistical Society for December 31st last contains an important paper on the system by Mr. Alexander Siemens, together with a report on the discussion. It is illustrated by tables showing the trade of metrical and non-metrical countries for the year 1900, that year marking a culminating point in most countries. Mr. Siemens puts forward powerful arguments in favour of adopting the metric system, and concludes by saying that 'it is quite certain that the action of Great Britain in this matter would immediately be followed by Greater Britain, the United States, and Russia, so that international unity of weights and measures would become an accomplished fact for which James Watt started his agitation 120 years ago.' If only for one cause alone its compulsory adoption would be advantageous in photography in avoiding that terrible duplication of figures which appears to be a necessity in all photographic formulæ. It might lead, though we scarcely dare hope so much, to a simplification of formulæ, especially in the direction of mutual comparability."

SILVERED-GLASS MIRRORS.—The days of the old mercurial-tin-amalgam have gone by, and virtually all mirrors are now made by deposition of metallic silver upon glass; indeed, so low down is the process worked that we have seen mirrors of which the glass itself was so full of streaks and marks that the mercury process would be well-nigh impossible upon it. In the earlier days when large areas were silvered a prejudice existed in favour of the old method on account of the less nearly perfect colour and lustre of the "chemical mirrors," but all those difficulties have been surmounted, though to some extent there are trade secrets governing the use of the process. Any variation in the wrong direction in the colour, for example, of a 3ft. reflector for a telescope would make an appreciable difference of exposure, although in the case of a reversing mirror for process or other work such divergence might be ignored, perfection of surface in the deposit being the main elements of interest. Still some observations by M. Leo Vignon, which appear in the bulletin of the

French Chemical Society on this subject are very interesting. He has observed that very small quantities of copper, such as that present in distilled water made with a copper retort, have an influence on the silvering of glass. The results of his experiments show that the presence of a very small quantity of copper (0.08 milgrm. per litre) facilitates the operation by lowering the temperature at which the mirror is formed. A higher proportion of copper alters the colour of the mirror, and may even prevent its formation.

PHYSICAL SOCIETY NOTES.—At the last meeting in January of the society there were two optical papers read containing many points of interest to those who make a study of the optical aspects of photography, but which are too complex to be capable of brief summarisation, and a third on the all-pervading subject of radium, which has a special photographic interest. This was by Mr. S. Skinner, and though not actually read at the meeting, has been summarised in the "Chemical News":—"It is well known that a photographic plate by exposure to radium rays is affected in such a way that the plate develops similarly to its development after exposure to light. The experiments described in the paper are an attempt to answer the question: Are the actions the same? As far as can be seen, the final results of the actions and developments are the same, and the experiments appear to indicate that only slight differences occur in the early stages. The plates, suitably enclosed, were subjected to the rays from varying quantities of radium bromide for varying times and the results showed that the intensity of the developed image increased rapidly to a maximum value with increase of exposure, then decreased, first rapidly, and, finally, very slowly, until a stage was reached in which there was practically no dark image formed on development. It is found that spark images are, at first, obliterated by radium rays, which do not cause such a great density as that of the spark images obliterated, and that with prolonged exposure the radium rays reverse the spark images."

Correspondence.

- * * Correspondents should never write on both sides of the paper. Notice is taken of communications unless the names and addresses of the writers are given.
- * * We do not undertake responsibility for the opinions expressed by correspondents.

CRISTOID FILMS.

To the Editors.

Gentlemen,—We see that one of your correspondents, "Phil," in the issue of the 22nd ult., is inquiring for a film other than celluloid impervious to damp and noninflammable. You reply that the cristoid film is non-inflammable, but not impervious to water. May we point out that after development and drying the cristoid film may be easily rendered waterproof by a coating of waterproof varnish such as we supply?—We are, yours faithfully,

SANDELL FILMS AND PLATES, LTD.

Norwood Junction, London, S.E.,
January 27th, 1904.

BARIUM HYPOSULPHITE.

To the Editors.

Gentlemen,—In reply to Mr. Trevor Grant's query re the solubility of barium hypo, I beg to state that I have found it to be "practically insoluble." Having washed a quantity of the precipitated salt on filter; the washings on evaporation yielded but a very slight residue. The matter should be of great interest to all photographers, and I am looking forward to further information on the subject.—Yours faithfully,

PHILIP E. BELLAIR.

Royal College of Science, St. Stephen's Green E., Dublin.
January 26th, 1904.

FIXATION IN DAYLIGHT.

To the Editors.

Gentlemen,—In your last issue we notice an extract from a paper read before an American photographic society, advocating the fixation of negatives in daylight.

you may remember that, when we introduced our Pocket Dark, last year, we recommended the procedure in question, and our demonstrations we usually cause some mild consternation by moving developed negatives from the Pocket Dark Room to the light bath in broad daylight. However, providing that the developer has been thoroughly washed off, there is no danger whatever. It is advisable, of course, that there be no undue delay in placing negatives in the fixing solution.—We are yours truly,

The Pocket Photography Co., Ltd.,

J. W. MEER.

The Pocket Photography Co., Limited,

56, Gracechurch Street, and Talbot Court, London, E.C.,

January 28th, 1904.

COLOUR-VISION.

To the Editors.

Gentlemen,—In his thoughts on colour-vision, your contributor, "Festina Lente," introduces the subject of "colour-vision in the light of the doctrine of evolution," and inquires "at what stage in the evolution of man was this power developed?"

May I be allowed to point out to "Festina Lente" that colour-vision is developed and utilised by the lower animals at the present day, and more especially, perhaps, among insects, as butterflies? Before, man alone does not possess this special faculty of colour-vision. Consequently, it has not been specially evolved as a sense of colour-perception with the evolution of man, but already existed among those ancestors from which mankind presumably sprang.

There are also geological evidences of the existence of butterflies and other insects, and also flowers (presumably coloured to attract insects, as at the present day), very, very long ago—in fact, geological ages before the appearance of prehistoric man upon the earth. This at once disproves the suggestions of your contributor—colour-vision was acquired accidentally in man, and also other of your random thoughts.—Yours, etc.,

HARRY QUILTER.

Leicester, January 30th, 1904.

OVER-PRODUCTIVENESS IN PHOTOGRAPHY.

To the Editors.

Gentlemen,—I heartily agree with Mr. J. Page Croft, in what he says concerning the future possibilities of old negatives. Indeed, he reminds me of seeing, in a contemporary, a recent article of mine in which the saving of all rejected negatives and prints, with a view to their examination by the light of a better cultivated judgment, in the future, to come. He is mistaken in thinking that I ever advised a wholesale smashing of past results. I only, half jestingly, advocated a course in the case of a medalled picture, after one print of undoubted permanency has been secured.

I am sorry to trespass on your valuable space any further, but as your printer has unfortunately made nonsense of a sentence in my letter to Mr. Spackman, you will, no doubt, be kind enough to repeat to me I already have had several inquiries concerning it. The paragraph should run as follows:—"It is precisely the fact that the prints obtained from the same negative, if controlled and manipulated as delights the heart of the pictorialist, can be exactly alike, and thus forms one of the strongest arguments against duplication."—

Gentlemen, yours very truly,

A. LOCKETT.

Brook Street, Kennington, S.E.

January 29th, 1904.

EXHIBITION AT BRIGHTON.

To the Editors.

Gentlemen,—I should be glad if you could announce the forthcoming Photographic and Bioscopic Exhibition to be held at the Brighton Aquarium, March 9th to 26th inclusive, under the control of the Corporation.

It is proposed to let spaces for the erection of stands for the sale of the trade to enable firms to introduce their new specialities during the coming season; also competitions, particulars of which are as follows:—

Competitions.—Open Classes.—A. Landscape, river scenery, and marine. B. Portraiture and figure studies. C. Architecture. D. Still life. E. Animal studies.

Lantern Slides.—F. Landscape, river scenery, and marine. G. Portraiture and figure studies. H. Architecture. I. Flowers and still life. J. Animal studies. K. Scientific and examples of colour photography.

Special Class for Sussex Schools.—L. Prints (any subject). M. Sets of four lantern slides.

These classes are only open to pupils at present attending day and boarding schools. Silver and bronze medals and diplomas will be awarded at the discretion of the judges. Entry forms and further information respecting the Exhibition can be obtained from the General Manager, Aquarium, Brighton.—Thanking you for your kindness in giving notice in your journal of this Exhibition, I am, yours faithfully,

WILLIAM J. HARDY,
Manager.

Brighton Aquarium.

January 27th, 1904.

RESIDUES.

To the Editors.

Gentlemen,—Re your remarks as regards saving residues in last week's JOURNAL, I always have thought that it is advisable and profitable even in the smallest business, if we can depend on getting our honest dues from the refiner. But this is the crux. There seems no possibility of knowing anything about it, and yet, one would think dried sulphide, for instance, would contain an assured quantity of metallic silver. My personal experience with refiners has been various and not always satisfactory. If one sends, as I did last year, over a pound of dried sulphide of silver to be melted, and then to receive 5s. 4d. for it, less the fee for melting, the game is not worth the candle. In spite of the editorial "placets" so often given to grumblers over unsatisfactory returns of refiners, I place very little confidence in them, and in future intend to buy a crucible and melt my own residue by way of testing the thing. From my various invoices obtained from refiners, and from my own notes thereon concerning quantities sent, I find that the average of my sulphide parcels is about 1 in 5, that is, 1oz. of silver contained in 5oz. of dried sulphide free from foreign matter. If one could always get this it would pay, as a pound of sulphide would then with silver at, say, 2s. 2d. per oz. produce about 7s. I am extremely doubtful whether ashes of silver paper are worth saving. My record of this is that 29oz. ashes of P.O.P. and C.C. contained .550 silver, valued at 1s. 3d. Perhaps the best way would be to fix out the scraps and reduce the silver from the hypo. I do not think it would be so expensive as paying for melting the ashes. I may say that a pound of liver of sulphur, which costs 9d., should be ample to reduce the fixing baths of a small business for a year, and should easily produce 20 to 30 oz. of sulphide.

—Yours faithfully,

February 1st, 1904.

OTHELLO.

THE METRIC SYSTEM.

To the Editors.

Gentlemen,—I read with great pleasure the item, "How to adopt the metric system," you reproduced from the "World's Work." This new way is very interesting indeed, and it is of not much use to dispute the rough figures of 550 and 450 millions of people. The larger figures may include a few hundred millions from India and Africa, which have no idea of metre or pound; but figures tell, and as China will probably be English some time or other, we may as well add 400 millions to the 550 above mentioned. However this may be, I do not hear of the 450 millions (minority of some account) complaining of the actual state of things. On the other hand, I read of the difficulties the English experience sometimes, and, more and more, in their transactions with foreign countries, just on account of the measures and weights as used by them. It is true, the English will be saved, so it is said, a terrific and useless (why?) sacrifice, but the "World's Work" forgets to give a valuable reason why this terrific and useless (certainly) sacrifice should be imposed on the poor 450 millions of people. So far as I am aware, I have not seen any complaints arising among these 450 millions, and any wants to go to the English system of inches, yards, pounds, ounces, drams troy, etc., etc., etc. I have, however, heard of a very few millions of people in the United States of America (75, I think) asking for the metre and kilo system, as they already have for their

money transactions. I know of a much better way out of the difficulty, and all will save this terrific and useless sacrifice. Let the paltry 450 million people dabble in their mistaken metre and centimetre, and the 550 millions keep aloft with the very shortly universal inch measure. The power is reserved, so the "World's Work" says, to English inch length unit, while the centimetre is doomed to obliviousness. Let us wait with patience, with very much patience, and maybe our great-grandchildren may see it or, maybe the reverse, much sooner.—Yours very truly,

A. LEVY.

Asnières, Seine.
February 1st, 1904.

MESSRS. WELLINGTON AND WARD'S PICTORIAL ADVERTISEMENTS.

To the Editors.

Gentlemen,—As many of our friends have written us asking the meaning of our new pictorial advertisements for 1904, we should be much obliged if you could devote a small space to an explanation.

The plot is as follows, and if you would like to have the original designs for your personal satisfaction we will send them up to you with pleasure:—

Lame Lancelot, being unable, by reason of his affliction, to see the world for himself, the Art of Photography brings it to him. He is so far carried away by the realistic presentiments in the book of photographs which the Genius of Photography hands to him in the first scene that he fancies he personally is taking part in the different scenes brought before him. Pictures of Arctic lands seem to transport him thither; the contents of galleries and museums are brought faithfully to him. It brings crowned heads, politicians, and celebrities of all kinds to him so realistically that he thinks he meets them personally. It was by the means of photography that all the world knows the crown of Soutapharnes.

The Mermaid refers, of course, to the more prosaic inhabitants of the sea. Photography also brings before us the minutest details of certain geniuses, such as botany, etc.

The X-ray discovery of the pebbly heart brings in (an exaggerated fancy, of course) an important branch of photography, and paves the way rather prettily to the last scene, where Lancelot falls in love with the photographic image of his fate.

And so, though Lancelot could not go out into the world to gain his experiences, photography brings it to him.

It is an extravaganza, of course, and so the "long bow" can be drawn with discretion, and we must see only from a photographic point of view.—We are, yours faithfully,

Wellington and Ward,

H. W. HALL, Manager.

Elstree, Herts, January 25th, 1904.

ORTHOCHROMATIC PHOTOGRAPHY.

To the Editors

Gentlemen,—Mr. H. O. Klein's statements are of such a character that we are afraid we cannot allow him to rest "fully satisfied," and we shall be glad of your permission to again point out some of his inconsistencies.

In his letter in your issue of January 15th, Mr. Klein specifically stated, "every operator whom I have had the pleasure to teach the use of these preparations for trichromatic work, and every teacher of collodion emulsion, both here and abroad, with the exception of the lecturers, will confirm my statement, that sensitiser C produces practically the same speed as A sensitiser." On our demonstrating that with arc light reflected from white blotting paper the ratio of A to C, even when at its maximum speed after several weeks maturing, was *not* the same, but as 5 to 9, Mr. Klein actually has the effrontery to say that "this practically confirms my ratio of 1 to 2," and to add that "this corresponds with the tests made to incandescent gas light exactly as I anticipated." But his tests were not made to incandescent gas light, but to incandescent electric light, according to the type-written statement sent to us with the tests, and they did not prove the C to be only half the speed of the A, but about eight times faster!

Then, again, Mr. Klein stated in his first letter that the relative exposure in three-colour work for the red printer (A) to be 0.5, and

for the blue printer (C) $1\frac{1}{2}$ or 2, that is a ratio of 1 to 3 or 4. In his second letter he says, "my ratio is 1 to $1\frac{1}{2}$ or 2"! We cannot see what advantage Mr. Klein hopes to gain by these puerile permutations, for any one interested is certain to read the correspondence carefully, and at once detect the discrepancies.

Mr. Klein states that he is "an absolutely independent worker who has no more interest in the subject than any other person." Now, since we expressly suppressed any reference to Mr. Klein's financial interest in emulsion, this remark is uncalled for, and, moreover, is not true, in the usual acceptance of the words. For surely anyone in paid employment, we believe, almost exclusively devoted to preparing collodion emulsion and demonstrating its working, cannot by any stretch of imagination be said to be disinterested.

It would appear to be beyond our ability to overcome Mr. Klein's peculiar "difficulty to understand why we used the light we did. However, we will try and put it simply once more. We wanted light that was fairly constant, and that would give a continuous spectrum. Then we ascertained the speed values to this light of the various plates tested in order that they might receive an exposure to the spectrum relatively corresponding, so that the comparison of colour sensitiveness, which was our ultimate object, would be quite fair.

Further, incandescent gas light happens to be the very light recommended by the inventor in the pamphlet issued by the maker of the spectrum camera we used, this form being the one with whom Mr. Klein is employed.—Yours faithfully,

A. J. NEWTON.

A. J. BULL.

London County Council School of Photo-Engraving and Lithography
6, Bolt Court, Fleet Street, E.C.

February 1st, 1904.

PHOSPHORESCENCE OF PHOTOGRAPHIC PLATES.

To the Editors.

Gentlemen,—Although this phenomenon may be new to Mr. Vaughton, it certainly cannot be to many of your readers, who once used our old friend pyro-soda, nor is it new in photographic literature. Dr. Eder pointed out the occurrence of this in "Phot. Corresp.," 1887, p. 154. Lenard and Wolff described "Lumineszenz der Pyrogallussäure," "Wiedemann's Annalen" 1888 p. 918.

Dr. Neuhauss, "Phot. Rundschau," 1895, pp. 285, 316, also described it, and said that not only the plate, but the alum bath as well became luminescent, and that the precipitation of alumina was the cause, but that it also occurred when citric acid was mixed with pyro-soda developer. Precht, "Phot. Rund.," 1895, p. 321, confirmed this observation, and showed further that the phosphorescence was entirely independent of the presence of the gelatine plate, for if dilute pyro-soda developer be mixed in a test tube with an equal quantity of 2 per cent. solution of citric acid the tube lights up and may even remain so for a minute. Von Helheim, "Photo. Archiv," July, 1896, records a series of researches on the subject, and found that a plate treated with pyro-soda containing about 1 per cent. of formaline was fogged and laid unfixed on the dark-room bench, when as soon as it was surface-dry it became phosphorescent first at the edges and gradually all over, and was so strong as to be visible even with the lamp alight.

As the developer in the dish did not show any light, Von Helheim concluded that it was due to the absorption of the liquid by the gelatine, and added an equal quantity of alcohol to the developer in the bottle, and at once the whole became strongly phosphorescent. His explanation was that the whole of the sodium carbonate was precipitated by the alcohol. Lenard and Wolff (loc. cit.) obtained phosphorescence by merely adding freshly prepared pyro solution to a saturated solution of alum, and stated that "the alumina is precipitated, and on the surfaces thus formed the pyrogallous acid is condensed, and at the same time also oxygen, and by this condensation the oxidation favoured the phosphorescence." Precht's experiment with pyro-soda and citric acid further proves that the gelatine plate is not an essential, and another experiment by Neuhauss, in which he used glass coated with plain gelatine, and obtained phosphorescence, proves that the silver salts are not necessary. Now as Von Helheim had exposed his plate in the camera and yet got

phosphorescence, it would seem that Mr. Vaughton's statement that exposure to white light destroys this peculiar property requires confirmation or confirmation.—Yours faithfully,
E. J. WALL.
January 30th, 1904.

DIAPHRAGM AND SHUTTER SCALES.

To the Editors.

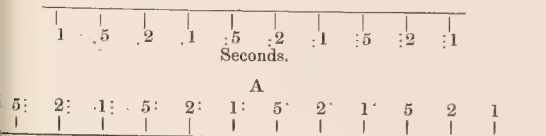
Gentlemen,—I enclose herewith a diagram illustrating an arrangement of iris diaphragm and spring shutter scales devised for my own use, which, after a considerable period of trial, I feel justified in commending unreservedly to others. Although this system is a strictly decimal one, it is also approximately binary.

The area-ratio, A, for any lens and diaphragm, circular, polygonal, elliptical, or otherwise, may be defined as the number of times the effective area of the diaphragm is contained in the area of a circle whose diameter is the equivalent focal distance of the lens. As shown in the diagram, the two scales include values of the area-ratio from 1 to A-5000 (F. 1 to F. 70.7 for equivalent circular diaphragms), and times of exposure from one second to one-thousandth of a second. For any given lens, according to its capacity, the available portion of these scales may be utilised. A greater range will seldom be required, but the system is capable of indefinite extension.

The dots attached to numerals in the diagram represent cyphers, whether on the right-hand side of a significant digit, or (above the decimal point) on the left-hand side; e.g., 2, 2: and 2: signify respectively 20, 200, and 2,000; 2: 2: and 2: are .2, .02 and .002. The digit suffices, therefore, to mark any division, however great, and its small value may be. Dashes may be used instead of dots, if preferred; they are rather more conspicuous, but occupy a little more space. If the quality of an instrument is such as to warrant further refinement, all spaces between digits 1 and 2, and between 5 and 1, may be subdivided into five parts, and all spaces between 2 and 5 into parts—the latter with dividing lines alternately long and short.

Directions for making rigorously correct use of these complementary scales would be superfluous, but in many photographic operations it may be assumed that the position of any numeral upon either scale corresponds to an exposure twice as great, and any position approximately midway between numerals to an exposure one-and-one-half times as great, as that corresponding to the next larger numeral upon the diaphragm scale, or the next smaller if upon the shutter scale. For any three consecutive numerals this assumption is correct.

Diaphragm and Shutter Scales.



In two instances, and is erroneous in the third case only as five exceeds four—a difference which may frequently be disregarded. It is, to the least, likely to be long before the ordinary mechanism of diaphragms and shutters is such as to insure a much greater degree of precision. Starting, therefore, from any pair of positions on the scales for which the exposure is known to be correct, if the diaphragm opening be diminished by one or more divisions of its scale, the same exposure will be given by retarding the shutter an equal number of divisions, and vice-versa. It will be remarked that scale divisions of this system correspond to the denominations which have been adopted, for analogous reasons, in sets of metric weights.

Time and effective diaphragm-area are co-ordinate factors of exposure, and should be expressed in terms which are readily interchangeable, but the utility of this sufficiently obvious principle does not appear to be generally recognised. Upon one of the best shutters offered for sale, four consecutive divisions (not at either end of the scale) are marked 1/10 sec., 1/25 sec., 1/75 sec., and 1/100 sec. Successive ratios of difference are here 2-1/2, 3, and 1-1/3. It is perhaps to be said that shutters are seldom so well made as to justify any great pretension to accuracy in their performance. Properly that view of the subject is not altogether groundless, but if the scales attached to scales are not at least approximately truthful

they are much worse than useless, and should be omitted. We may confidently look for great improvement in shutters, for exact timing is of most importance in the shortest exposures, since objects in motion commonly require all the exposure their velocity permits. Progress in this direction is rather difficult, however, and must not be expected much in advance of an intelligent and appreciative demand for it.—Yours very truly,
JOSEPH A. ROGERS.

556, Chapel Street, New Haven, Conn., U.S.A.
January 16th, 1904.

Answers to Correspondents.

- * * All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.
- * * Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.
- * * Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.
- * * For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

- F. Preece, 24A, Commercial Street, Hereford. Photograph of Organ, and Photograph of Interior of St. James' Church, Hereford.
- A. Watkins, Imperial Mills, Hereford. Photograph of a Political Post Card.
- J. Jarrett, High Street, Keynsham, Somerset. Two Photographs of Landscapes Scene, Empty Dumps, Keynsham.
- J. W. Lockwood, 13, Walfordale Place, Woodhouse Ridge, Leeds. Photograph of the Northern Union Football Cup.
- R. Easley, 35, Liverpool Road, Eccles, near Manchester. Photograph of Monton Bridge, Monton Green, near Manchester.
- J. Bates, 113, North Montrose Street, Glasgow. Five Photographs of Bands: The Royal Horse Guards (Blue), Coldstream Guards, Gordon Highlanders, Scots Guards, and the Royal Marine Light Infantry.
- F. W. Bellby, 116A, Parade, Leamington Spa. Two Photographs of the Swans at Weymouth.
- E. Charleton, Newbridge, County Kildare, Ireland. Photograph of Drummer and Drum Horse, 11th Hussars.
- J. Hudson, 60, Loampt Hill, Lewisham, London. Photograph of Craig Goch Dam Rhayader.
- J. C. H. Balmaln, 69, Shandwick Place, Edinburgh. Four Photographs of Mark Sheridan in "Cinderella," at the Royal, Edinburgh.

OPERATOR.—Not necessary.

R. E. COWAN.—Glasgow is the only address we know. We do not answer questions through the post.

COLOURED LANTERN SLIDES.—C. J. KING asks: "Where he can have lantern slides coloured by hand?" In reply: Wilkinson, Holmeside, Sunderland. See his advertisement in the JOURNAL.

COLLOIDIO-CHLORIDE PAPER.—"S. E." says: "I shall be greatly obliged if you will inform me if you think that self-toning Matt C.C. paper is as reliable in keeping qualities as any ordinary C.C.?" In reply: We should say so.

SUBSTRATUM WANTED.—T. KEYRELL asks: "Could you kindly give me a formula for a substratum to apply to celluloid for gelatine emulsion?" In reply: We should advise you to try a thin solution of plain gelatine. That will possibly answer your purpose.

SALARIES.—"HANTS" says: "I should be glad if you tell me what is about the salary paid to or amount of commission to outdoor operators in the view trade?" In reply: All will depend upon the skill and artistic ability of the operator. Such questions as this it is impossible to answer.

COPYRIGHT QUERY.—"COPYRIGHT" says: "I have a number of engravings, book illustrations, published between the years 1800 and 1880. Can I copy these and sell the photos without fear

of infringing copyright?" In reply: You will have to ascertain if there is any existing copyright in the engravings, and there is little question that there may be in some of them. Those in which there is no copyright you can, of course, reproduce without hindrance.

STUDIO QUERY.—"STUDIO" says: "I am building a new studio, 24ft. long, 12ft. wide, and 12ft. to ridge of roof. Will you tell me what length of skylight and side-light; also, how much should be covered in at end of sitters for best results?" In reply: For a studio of this length and width we should suggest that 4ft. 6in. or 5ft. at each end be covered in, and the rest be glass. Then you will have the opportunity of placing the sitters at either end as occasion may require.

OZOTYPE.—"P." asks: "Will you kindly say if you consider the Ozotype a good practical working process for professional use? Is it easily learned, and are results permanent? Does it compare favourably in these and in general respects with the regular carbon process?" In reply: The Ozotype process is easy to learn, and the results are permanent. It is very much a matter of taste as to whether the results compare favourably with the ordinary carbon process. We should recommend you to get a small supply of the necessary materials and form your opinion on the results you obtain.

BOLTING SILK.—"VULCAN" says: "In the 'British Journal Almanac,' on page 773, is an article on bolting silk to be used when making enlargements. Having many to make up to 23 x 17, I thought I would like to try the effect of the silk, but I am unable to procure it. I write to ask if you could inform me where I could get it; also the price?" In reply: Bolting silk is used by millers, and may be had of those who supply them with sieves and sifting appliances. Probably some miller in your neighbourhood would let you have what you require. We have no idea of the price.

LENS ANGLE.—"WIDE ANGLE" says: "I should be obliged if you will state the difference in distortion, if any, between a seven-inch rapid Rectilinear half-plate lens used on a half-plate, and a seven-inch wide-angle Ross Zeiss whole-plate lens used on a half-plate. I am desirous of information as to whether these two lenses both used on a half-plate would give similar distortion, and, if not, what the difference is?" In reply: With either lens there will be no distortion. As they are of the same focal length, the angle included by each will be the same when the lenses are used for the half-plate size.

COLLODIO-BROMIDE.—"M. I. DUPUY" says: "I should estimate a favour if you kindly inform me in what numbers of the BRITISH JOURNAL or what Almanacs the articles on the making and the manipulations of the collodio-bromide emulsion appeared, as I should be glad to order those books?" In reply: Formula for collodio-bromide emulsions are given on pages 1068-70 of the "Almanac." The back numbers of the JOURNAL in which articles on the subject appeared are now out of print. We should advise you to get Abney's book, "Photography with Emulsions." That will give you a good deal of information on the subject. We do not reply to correspondents by post.

STUDIO QUERY.—"H. COLLINS" writes: "I am about building a studio. The ground is only 16ft. long, if built to get a direct north light, which I intend to do. I should like your advice on the following studio: 16ft. long, 10ft. wide, 8ft. high (to eaves), 12ft. high from floor to top of studio. I intend having glass on the whole of the roof on the north side, and glass full length of eaves, having about 1ft. 6in. blocked above the floor. What I am in doubt about is, how much should be blocked, and should the glass run right to the end of studio where the sitters will sit, or should a little be blocked? Have enclosed a sketch showing what I mean." In reply: The sketch shows a very good design, but the studio will be short for professional work. We should advise you to block out about 4ft., or 4ft. 6in., both top and side, at the sitters' end.

SALARY.—"SAMOHT" says: "I shall esteem it a favour if you would let me know what wage I could draw as (1) operator, (2) operator and retoucher, (3) assistant operator and retoucher,

taking the samples herewith as my average work? Of course you must overlook any slight defects which could be obliterated by finishing off (or spotting) the mounted print. The prints enclosed have been done on "the spur of the moment," as it were, and have not had the attention which "specimens" in the true sense of the word should have; as they are chiefly intended to show pose, I think they will serve your purpose." In reply: The work, on the whole, is moderately good, but you are unable to say what salary you can command, as we do not know what is usually paid for this class of work, but probably about £2 a week in London, and less in the country.

RECOVERY OF DEBT.—"15 x 12" says: "I should be glad if you would advise me in the following matter. Some few months ago, a lady and gent called in my place and brought two cabinet photographs, from which they ordered some Christmas cards, and 15 x 12 bromide enlargement off one. I did not ask for a deposit, as I thought they were all right, and, more so, as a week after they called and paid for the Christmas cards, and asked me to try to get the enlargement through to Christmas. This I did not definitely promise, as I was very busy; but I did get it through, six days before Christmas, only being ordered ten days prior to this. I wrote to say I was ready, but received no reply. I saw the gent. a few days later, and he said he would call for it the next day, and, as he had had it in my window, he had seen it, and said it was splendid. However, he has not been for it; and I have written him again, but with no effect. Can I take any steps to compel him to have it, or what should you advise?" In reply: We should say that the best way will be to send the picture home and if it is not paid for sue for the money in the County Court. We don't see what else can be done.

SINOP.—"TROUBLED" says: "I have bought a Sinop outfit, which I claimed to do good collotype work, and at present (after spending about two dozen plates) in my hands is useless. Kindly say (1) have you seen any work done by that process, and if you consider it possible to turn out good collotype post-cards with that outfit? (2) Where can I get a good book on collotype work? (3) Who supplies machinery and necessary tools for collotype work? (4) What are photo mechanical processes used for? What particular part do they take, and what advantage have they over the ordinary? (5) I think of dealing in photographic materials, chemicals, etc. Kindly say what I can get a schedule of poisons, etc., so that I can know what to can and what I cannot sell without running in danger with the Pharmaceutical Society?" In reply: (1) Yes; certainly. (2) "Practical Collotype," by A. W. Fithian. It may be had through any of the dealers. (3) Messrs. Penrose and Co., 15, Finsbury Road, E.C. (4) The plates are made specially to give extra density and clearer shadows than are yielded by most rapid plates. (5) The schedule of poisons will be found on page 1002 of the "Almanac."

* * We are again obliged, through exceptional pressure on our space, to hold over many reviews, notices of new apparatus, answers to correspondents, and several articles, including one on "The Elimination of Hypo by Means of Barium Chloride."

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*** The Editor can only be seen by appointment.
** We do not undertake to answer letters by post.*

EX CATHEDRA.

Professor Abbe. It will be welcome news to the optician, students of the microscope, and many who are merely interested in the social development of the town of Jena, to learn that a collection of the treatises and addresses by Professor Abbe is in course of preparation. The idea was conceived by Dr. S. Czapski some years ago, but although a beginning was then made by him, the pressure of other duties prevented further progress until the co-operation of some of the younger members of the scientific staff of the Carl Zeiss Works was obtained. The first volume has just been published. It contains a collection of twenty-two papers relating to the theory of the microscope. Typographically the volume is worthy of the text. A portrait of the author constitutes the frontispiece. Of these twenty-two papers no less than nine appeared originally in the Journal of the Royal Microscopical Society. It is characteristic of Professor Abbe's scientific cosmopolitanism that these papers were written in English for an English scientific society, and that it has been necessary to translate them into German for the purpose of this publication. We venture to make the suggestion, that the Royal Microscopical Society should obtain permission to translate the German papers, and publish for the benefit of English students of the microscope the whole collection contained in this volume. It could be a worthy recognition of the valuable work Professor Abbe has done in this branch of optics. The

sympathetic remark, in the preface, by Dr. Czapski, that the collection has been made without the knowledge of the author during his recent illness, will find a warm response in the heart of everyone to whom the name of Abbe is familiar, and we trust the time may not be far distant when he will again enjoy his old capacity for scientific work.

* * *

Celestial Photography. It will be remembered that about fifteen years ago an international congress met at Paris, under the presidency of Admiral Mouchez, to consider the practicability of obtaining by photography a survey of the entire surface of heavens. It was a stupendous undertaking, but it was decided upon, and the necessary conditions were arranged. Plates of uniform size were to be exposed on different sections of the sky by various observatories all over the world, and the work must now be approaching completion. But those who might think that the enterprise has been too long in progress have very little idea of the difficulties involved. The weather of 1903 has been a stumbling-block to the astronomers of Britain, as it has proved to be to nearly all the other subjects of His Majesty. It seems hardly credible that out of a possible two thousand hours or thereabouts, only fifty-two were suitable last year for celestial photography. Possibly users of the camera for its more ordinary work who consider that they have ample grounds for abusing the weather, will feel that the astronomers have still better reason to grumble. In regarding these figures it must be remembered that moonlight nights as well as clouded ones are barred for photographs of the stars. It is for this reason that we place the possible number of hours as low as two thousand. This photographic charting of the heavens is the grandest astronomical scheme which has ever been undertaken, and it aims at securing an accurate map containing two million of the brightest orbs. This is not much more than one per cent. of the stars which possibly could be photographed by extremely long exposures, exposures which would secure images of those distant bodies which the eye has never seen, even when aided by the most powerful telescope. But the two million will be sufficient to afford direction posts which will, it is believed, help in the solution of many abstruse problems. One of these relates to the journey of our solar system through space. It is known that our sun, with its system of planets, is rapidly moving among the stars at a rate of several miles per second; but this is all which is at present vouchsafed to us. We have no idea as to whence we have come, or as to whither we are bound, and we can never know except by such information as a true chart of the universe may be able to afford. In the making of this chart the chief obser-

vatories of the world are taking part, but it could not be done without the potent aid of the photographic plate.

* * *

A New Colour Scheme.

When the prophet Jeremiah asked "Can the Ethiopian change his skin?" he no doubt thought that he had hit upon an unanswerable conundrum; and he little thought that in the twentieth century a man would be so bold as to dare to answer it in the affirmative. The man is a certain Dr. J. W. Hill, of Indiana, and he proposes to prevent infants born of negro parents from reverting to the old condition of things, so far as their skins are concerned. And it is all to be done, just as you would develop a photograph, by red light. We know that red light has proved valuable in the treatment of small-pox; but surely a more curious use for dark-room illumination was never thought of than that to be presently adopted by Dr. Hill. First we learn "that an expectant negro mother has consented to act as patient." It has been written that those persons who expect nothing are especially blessed in not being liable to disappointment, and we sincerely hope that this negro lady does not expect too much from this experiment. She is to remain in a room furnished in red, lighted by red, and will be ministered to by physicians and nurses dressed in red. We should have thought, in our sweet photographic simplicity, that red light would have been sufficient without all this dressing-up, but the Indiana doctor evidently wants to do the thing thoroughly. He is going to pull the leg of Jeremiah or he will know the reason why. His theory seems to rest upon the assumption that the negro's skin in particularly sensitive, more sensitive, he asserts, than that of any other human being. And that for this reason Nature has provided it with a pigment which will enable its owner to withstand the intense heat of the sun in those portions of the world from which the negro race originally sprang. Now a negro child is generally born white—again we quote from Dr. Hill; we do not assert this of our own knowledge—and it turns darker under the action of sunlight. Dr. Hill, in fact, seems to believe that the negro skin is like an unexposed chloride of silver surface—keep it under red light, and it will not turn black. It is not stated how long the baby is to be kept under this protection, but we might suggest that before it is allowed to make acquaintance with the unfiltered light of day, it might, as a precautionary measure, be dipped into a bath of strong hypo. We do not know whether this valuable suggestion has occurred to Dr. Hill, but we present him with the idea. His experiment is a most interesting one, but we might venture to remark that negro women have been known to give birth to white children before now, without any help from ruby light.

* * *

The Theory of Photographic Processes.

Such is the title under which Dr. Lüppe-Cramer gives in the "Photographische Mitteilungen" a resumé of his work upon the subject since the close of 1902. He thinks it is established that the alteration of the silver haloids by exposure to light is not of a simple nature. Chloride, chloro-bromide, and unripened bromide plates may be physically developed after fixing, even if the exposure is normal, as for ordinary development. But if such plates are treated with solvents of silver, after fixing, they can no longer be developed, which is proof that traces of silver must remain in the film. These traces of silver entitle us to infer that exposure causes a chemical change. Extra rapid plates differ. They require much longer exposure for physical development, from which Dr. Lüppe-

Cramer infers that exposure causes molecular change at an earlier stage than liberation of bromine. The high sensitiveness of bromide of silver depends upon ripening wherein lies its greater usefulness. Chloride changes quicker visually by exposure, and it is more susceptible to development, if ripening be excluded. Digestion and action of silver solvents produce exceptional sensitiveness of bromide, but although chloride acquires increased sensitiveness in ripening, fog is produced at an early stage and satisfactory results are no longer obtainable. The microscope reveals that fog may be assigned to isolated particles, and that every sensitive particle of silver bromide does not contain a minimal nucleus of reduction. Some far-reaching experiments by the author with mercuric iodide emulsion point to the fact that the colloidal medium also plays a part, and it cannot be denied that modifications occur in the ripening process. The difference between collodion and gelatine emulsion was for a long time ascribed to the sensitising action of the latter medium, but experiments have shown such is not the case. It is probable that the process of ripening does not proceed in alcohol as it does in aqueous solutions of gelatine. Solarisation still remains unexplained. Abney's theory of oxidation was accepted for many years, but the fact that solarisation takes place in the absence of oxygen, and that the substance of the solarised image differs from the normal quantitatively, instead of qualitatively, deprives the theory of any foundation. An hypothesis of less general acceptance is, that solarisation is caused by the tanning action of bromine on the film, but it is excluded by the fact that solarisation occurs in the collodion and daguerreotype processes. Photographic processes contain many enigmas and it must be admitted that practice and theory do not proceed hand in hand. The investigator is not only hindered by the microscopic nature of the chemical processes, but by the endeavours which are made to set up hypotheses prematurely on the strength of isolated observations. These often in the course of years acquire the sacred character of dogma.

* * *

Phantasmagoria.

This word, which is now almost obsolete, was familiar enough to our fathers. It is defined in Nuttall's Dictionary as "Representations made, as by a magic lantern." A few decades ago, before photography had turned the nursery toy into an extremely valuable scientific demonstrator, there was a distinction between a magic lantern and a phantasmagoria lantern, the latter running on a kind of trail line so that the image of any ghost, hobgoblin, or other uncanny creation of the slide-painter's art might be made to wax or wane upon the sheet or screen provided for its reception. There are probably few persons in a civilised community who would be frightened by any manifestation of this kind; but it was not so in a more ignorant age, and a quotation from the "Times" of one hundred years ago will show. We will not give the extract verbatim, for it is too long; but we are informed that on a certain night in January, 1804, one of the Coldstream Guards, on duty at St. James's Park, saw the figure of a woman without a head rise from the earth close to him. He described the dress minutely, and says that the figure was enveloped in a cloud. "In about the space of two seconds, while my eyes were fixed on the object, it vanished from my sight. I was perfectly sober and collected at the time, and, being in great trepidation, called to the next sentinel who met me about half-way, and to whom I communicated the strange sight I had seen." Another soldier gave a solemn declaration much to the same effect, and the "Times" evidently gave full credence to the statement.

However, certain other papers seem to have charged the "Times" with having fabricated the story, and to this gives, in a subsequent issue, an indignant denial. It is evident that the alleged appearance of this headless ghost in such a public place as St. James's Park made an immense sensation, and a good clergyman "entered the Bird Cage Walk, and patrolled it for several hours, in the hope that he might meet the figure, when, he trusted, he should detect some person, who, through wantonness, was endeavouring to alarm the neighbourhood." But this midnight vigil had no result whatever. The ghost who was not afraid of armed men refused to tackle the parson, and so things remained unexplained for a week, when a small paragraph appears in the "Times," which laid the ghost to rest for ever. "The ghost in St. James's Park, we understand, originated in an application of the phantasmagoria, by two unlucky Westminster scholars, who, having got possession of an empty house on the side of Bird Cage Walk, were enabled to produce the appearance which so greatly alarmed the sentinels on duty in the immediate vicinity of the spot, and has given such an extraordinary subject to the curiosity of the public." Those who can look back upon the escapades of their repressible boyhood with pleasure must feel a pang of regret that they could not have shared the intense joy of those two Westminster scholars, who set the whole of London by the ears with their pranks. There is not so much fun in the world now that magic lanterns and such familiar things. And as to ghosts, they seem to have forsaken us altogether; we do not even get any spirit photographs now. The episode in St. James's Park, with the ghost and the sentinels, recalls to the mind the first scene in Hamlet, but with a decidedly comic dénouement.

THE OLD PHOTOGRAPHY AND THE NEW.

In concluding the article in our issue of the 22nd ult., which the question was mooted as to whether photography, as regards the stability of its results, is progressing, considering prints that were made several decades ago, we intimated that we might recur to the subject, and point out the differences in the condition of working then and now. Many who have only entered the ranks of the photographer since the introduction of gelatine photography have a faint idea of the processes that were in vogue before that period, and the wide difference there is in the principles involved in their working. Take, for example, negatives. The light sensitive salt is quite different, the principle of development was different, and the fixing agent is also different. We, of course, are, for the moment, referring to the wet collodion process.

With the wet collodion process the sensitive salt is a mixture of silver plus a very small proportion of the bromide. With gelatine plates it is bromide of silver plus (generally) a very small proportion of iodide. In the collodion process an iodide—say, of ammonium or cadmium, or both—is dissolved in the collodion. This, by immersion in a solution of nitrate of silver, is, by double decomposition, converted into iodide of silver in the plate. The plate, when taken out of this bath, is exposed in the camera with the free nitrate of silver, both on the film and on its surface. The developer, instead of being alkaline, as with gelatine plates, is strongly acidified; and its action, after exposure, is to reduce the silver present to the metallic state, and deposit it where the light has acted. After the image is brought out by the acidified iron developer it is intensified with an iron pyrogallol solution to which more nitrate of silver

has been added, the intensification being merely the deposition of more silver on the image. Hence we have in the finished negative the image consisting of metallic silver embedded in a quite inert material, as the collodion forms no compound with the silver. The fixing agent is also different from what is used for gelatine plates, cyanide of potassium being what is almost universally employed in the collodion process, hypo being but very rarely used. The cyanide of potassium and the cyanide of silver formed, are very soluble salts, and have no affinity for collodion; consequently they are quickly removed from the exceedingly thin film, with two or three minutes' washing under the tap. When finished, collodion negatives are always varnished—indeed, they cannot be printed from before without great risk of their being ruined by abrasion of the film.

Let us now consider the gelatine process. Here the sensitive agent is the bromide, and not the iodide of silver. The bromide of silver is formed in the emulsion, and there is no free nitrate of silver in the film. The developer is an alkaline one, and its action is to reduce the silver in the bromide to the metallic state in proportion to the light's action. There is no deposition of silver from what may be termed outside sources, as in the case of the collodion process. The image is formed entirely of the silver reduced from the bromide. The fixing agent here is always hypo, and, by reason of the great thickness of the gelatine film, as compared with the collodion one, its action is much slower and also after fixation the negative requires a much longer washing to remove the last traces of the hyposulphite and the hypo silver salts than is the case with collodion. Again, by far the larger proportion of the gelatine negatives now produced are not varnished at all; consequently when they are dealt with under adverse conditions—such as being stored in a damp place, or printed from in contact with damp paper—they frequently suffer serious deterioration.

Prior to the invention of the collodion process the negatives were on paper, or on albumenised plates. But with them the same principle obtained as in the collodion process. In the case of the calotype process, for example, the paper was prepared with an iodide, such as that of potassium, and dried. It was then sensitised with an acid solution of nitrate of silver, containing a reducing agent, gallic acid, and iodide of silver was formed in the paper. This was exposed wet, as with collodion. The action of the developer was to reduce the silver in the free nitrate to the metallic state in the parts acted upon by the light. In the waxed paper process, after the paper had been sensitised, the free nitrate was washed away, but it had to be restored for the development of the image.

In the albumen process the conditions are similar to those obtaining in the wax-paper process. The albumen was iodised with a potassium or ammonium iodide, dried, and then sensitised in an acid bath of nitrate of silver, when the iodide of silver was formed by double decomposition. The free nitrate was then washed away and the plate dried. After exposure the image was developed with an acid developer containing nitrate of silver which was reduced and deposited in proportion to the light's action, as in the processes just referred to. The fixing agent in all these processes was hypo, and in the last-named, by reason of the thinness of the film, it was easy of removal. But in the case of paper negatives it was different, and more care was necessary, and it was usually bestowed upon them. This was the method usually followed. When the negative was taken from the fixing-bath, it was carefully pressed between blotting-

paper to remove as much as possible of the solution. It was then soaked in water, and washed under the tap for a time, and again blotted off. These operations were repeated until it was judged that the paper was freed from the hypo. In this way the last traces of it were effectually removed in a comparatively short time. Calotype negatives, it should be mentioned, used to be waxed before they were printed from, and that was practically equivalent to varnishing them.

We have here in simple language, without going into the chemistry of the subject, explained for the benefit of those who are not familiar with the theoretical part of photography the difference in the principle involved in the processes in vogue prior to gelatine photography and wherein it differs. We had intended to have dealt with positive processes as well, but space will not permit in this article.

RANDOM THOUGHTS ON EXHIBITIONS AND EXHIBITORS.

By THE AMATEUR OPTICIAN.

ALTHOUGH I have not ceased to take photographs, nor abated any of my early zeal for the art—excepting only the physical discomfort of carrying heavy apparatus—it is fourteen years since a frame of mine appeared in competition at any exhibition of photographs. I have a frame of medals, some of which I feel reasonably proud of, and one or two of them I never look at with any degree of pleasure because of the circumstances surrounding their bestowal. I do not suggest, of course, that there was any deliberate “hanky-panky” about the business—the particular judge here was a noted man, above suspicion, and has been off the mortal sphere some years—for all that, there was, to my mind, and others, I think, must have thought the same, an element of absurdity about certain awards; whether traceable to the hard and fast rules and classes laid down and fixed, and, as a natural consequence, the somewhat restraining influence on the judge, this I cannot say positively; the one obvious fact remains that there were pictures shown on this occasion—the class not being considered—to which I would gladly have yielded up my medal.

It is ordinarily said in reference to various matters that “lookers-on see most of the game.” This applies, in a very small way only, to exhibitions, in the case of which those behind the scenes are nolens volens often made cognisant of, or participators in, incidents calculated to cause a feeling of discomfort, if not to actually raise a blush. My firm conviction is that the system of classifying exhibits is a pernicious one; also, that the appearance of officials in the competitive arena is a great mistake. The contrariness of human nature is a point one need not discuss here; enough to say that men have been known to go to strange lengths for the sake of a medal, which, awarded or given under such circumstances, can surely convey no satisfaction whatever.

I had rather a curious experience on one occasion bearing somewhat on this particular point. A certain exhibition was in view, and a customer of mine was one of the organising secretaries; he put in a lot of hard work over this, so much so that within a fortnight of the opening of the show he had nothing of his own ready for hanging—as a fact, he had not even exposed any plates; however, there was one weekly holiday intervening, and it was a case of now or never, whatever happened in the way of weather—wet, shine, or fog—the thing must be done if the medal in view was to be got. Well, this gentleman bought some plates of me, borrowed a whole-plate camera from the same party, and went off to expose his plates. Now, what the identical pictures were I cannot remember, but I know that he pulled off the medal, which was, to say the least, an unique piece of work.

The same gentleman subsequently informed me, quite gratuitously, that “I had spoilt my chances because of the frames”; this was in allusion to a few rather successful things (elsewhere) I had sent in, just as received from a previous exhibition. What has always been a puzzle to me is what framing had to do with it? Secondly, how he came to know this momentous decision of the judges, and what, anyway, business it was of his?

Your correspondent in the JOURNAL of the 15th of January has evidently been stirred by some vagary in the way of judging. “Give credit where it is due” may be all very correct as an abstract proposition, but we must not be too particular. Some persons prefer the other old saying, “You scratch my back, I’ll scratch yours.” I do not intend to imply that our judging at the present time is unfair, though it is often manifestly incomprehensible; the gross and palpable mistakes, if made, are the natural result of putting men who are known to hold extreme opinions, if not actually exponents of a cult, into a position which, above all, requires an evenly-balanced mind, not strongly inclined to one side or the other. I have known more than one quite estimable young fellow to be inordinately puffed up by elevation to the bench of judges, and so conceited thereby, as to be positively insufferable.

Our friend has probably concluded that the mere photograph is only one part of the business. There are judges apparently who have acquired a great dislike to certain bits of English landscape. I once had a letter from a secretary in this strain: “It’s no use sending photographs of —, and —, and —, and — on. We are sick to death of them, and they stand no chance! Now, how is the innocent and well-meaning exhibitor to know anything about this strong feeling which, likely enough, exists in some quarters to-day?”

Apart from these little pitfalls, the method of printing is to be gravely discussed; indeed, this is probably the most important part of the whole intricate business, of vast importance and not to be lightly considered or put on one side as a frivolous import. One may say at once that a nice, clean, and healthy-looking platinum or bromide print is severely handicapped from the start, while a vulgar P.O.P., matt., or otherwise, is out of the running altogether; in fact, cleanliness and technique generally—one may almost add, newness—count for very little, as our correspondent clearly anticipates. Something may, however, be done at times with an over-exposed bromide, or one rather thin and yellow; in the case of the former, a good plan is to develop the print with a minimum solution, applying it with a camel-hair brush; if, now, we arrange for a few splashes of hypo—or a piece of sunlight suddenly dropped in will do at a pinch—we may, perchance, obtain some striking effect of light and shade which will not fail to appeal to some judges. But, of course, the process par excellence “gum-bichromate.” In this case the negative is a detail of no great significance. I am assured that the expert “gum” man can produce a portrait study, a landscape, or seascape from one negative; it all depends upon how much sawdust you rub into it; this is a matter I do not vouch for.

As for mounting and framing, the exhibitor must move slowly and tentatively. The print should be trimmed with scissors; a straight edge is an abomination, as also is a straight edge. The mount itself is a serious concern; coarse brown paper seems to be popular and effective, though there are possibilities. The direction of sugar paper one could not make a grocer-mean, grosser mistake than to neglect such artistic colours are obtainable from such a source. With regard to framing, it may be said at once, and without fear of contradiction, that no amount of time, labour, or money spent upon a mere frame will affect the judges to any extent worth mentioning, always supposing that the object in view is the annexation of a medal. In one sense this is as it should be, and I have already made mention of a little personal experience bearing upon the matter.

on the other hand, it may be truthfully set down that a neglect of the proprieties in the matter of framing in any way acts against the exhibitor, but is rather in his favour; gems of art as we have been thinking and talking of are no elaborate setting. Our correspondent's remarks with regard to "carelessness," "air-bells on the surface," "uneven development in the shadows," etc., are really harsh and crude. The highest form of art is to conceal art—and we are told it is so—the author or perpetrator of the work referred to doubt had all this in view as part of his "colour scheme"! Bells, forsooth! These are, without doubt, intended for flowers. But, apart from that, I say at once that a man can put in a good air-bell, and simulate what our friendly terms uneven development, is no Snifter! With regard to such artists as I have quite inadequately referred to, it is professional only who has a chance on rare occasions of turning his own back, so to speak. Now and then we meet with one of these soi-disant artists and medal-hunters who takes a little of his own; he will probably sink his own name, and come forth as, say, "Solazzi et Cie."; but if he wants to get out of the Official Receiver's hands he takes care to select some competent man on the premises to do the work and please the public. More often he condescends to do the work for a professional, with dire results to both parties. The situation usually is of the nature pathetically described by our correspondent. One passable print out of twenty is a average, I believe, or one lantern-slide in twelve; but the variety of tone complained of is obviously not a mere accident, but a studied effort of genius.

It is an unexpressed but common consent, the subject of the war, in the case of our brother Boer, is rarely referred to now, and the affair would not have cropped up here but for the reason that an old customer of mine has just been informed that I have not seen (but often thought about) for three years or so, at a time when the iniquities of the War Office are popular subjects for casual talk. I remember the time distinctly, because the familiar topic came up as usual, and eventually I said something about "red tape." "Ah," said he in a slow, exasperating way, "I've often heard of that red tape, but I've never seen any!" It is curious how one drops the track of this class of ignorant person in unexpected places. A business friend of mine is a manufacturer on the small scale, and a man of note locally, has a strong political leaning and has more than once "put up for" guardians and councillors—therefore presumably a man with some knowledge of affairs of any rate, I gave him credit for so much. Well, we were sitting together a short distance. I called his attention as a man to a strong speech by Sir John Gorst in the day's paper. I thought would please him. He read it through carefully and with evident appreciation, then said, "Who is he?" I said not often that speech fails me, but this kind of person I never over quite.

I started about the late war because, rummaging about, I found up a photo of a friend who, being on the Reserve, was called upon to serve. I must say that, in total ignorance of what was in store, we did the thing very handsomely—presented him with revolver and field-glasses—fit for a Field-Marshal—and sundries generally enough to make a happy man for a year or two; and he was, of course, photographed at a rig in the midst of all the paraphernalia. Handling the photograph reminded me of the sequel: how he was detained at a dépôt for some weeks prior to starting for the front. How these presents got to be little better than a nuisance; how one or other of them got lost, strayed, or stolen, and arrived at his destination, he was rather worse off than when he started; and, finally, how on his return I and two or three friends met him, and shook him carefully by the hand—carefully, because he came decidedly within the meaning of a clause of the Act of Parliament which I need not further specify.

We had arranged to preserve the clothes he stood in as a memento of a glorious campaign, but it was thought best to burn them *instantly*. The next time he goes to the wars we have decided to drop the revolver and spy-glass business, and present him instead with a seven-pound tin of *Unguentum Hydrargyri mitius*—i.e., the rightly-named troopers' ointment of the unofficial pharmacopœia, as being more to the point! *Sic transit gloria belli*.

FIFTY YEARS AGO.

[From the *Liverpool Photographic Journal* (now *THE BRITISH JOURNAL OF PHOTOGRAPHY*), of February 11th, 1854.]

WE have the gratification of recording that our first efforts have been greeted with a kindly welcome from all parts of the Kingdom of Great Britain, and a friendly hand has also been extended to us from Ireland. In addition to the report of the last meeting of the Liverpool Photographic Society, we are able to redeem our promise of giving an extensive notice of the London Photographic Exhibition, which is of such a character as we hope will stimulate our local photographers to great exertions on behalf of the exhibition proposed to take place here in the autumn. It will be seen by our advertising columns that Dundee will, in point of time, take precedence of us, as the Committee of Management—which includes Lord Kinnaird, Sir David Brewster, and all the leading people of the neighbourhood—have resolved to open in the middle of March next, and continue the exhibition into the middle of April; the proceeds, after the payment of expenses, to be handed over to the Dundee Royal Infirmary. They invite and solicit the loan of specimens from the members of the Liverpool Photographic Society and elsewhere, and they have our good wishes in the course they are adopting. At Plymouth there has been a great gathering of the Devon and Cornwall Photographic Society. Everything concurs to arouse the energies of the members of the Liverpool Photographic Society, to enable them to hold a prominent position in the art when they will be subjected to the criticism of the British Association. The weather has not been favourable for photographers of the moon, but some few experiments, we hear, have been made with tolerable success.

ECONOMICS IN PHOTOGRAPHY.

No. 1.

SILVER.—It is recommended in most manuals to soak the paper positives in distilled water before fixing in the hyposulphite bath. We may go a step further, and (where the photographs are large) save a considerable portion of the silver used, by the following process:—Save the water in which the proofs have been washed, and after putting in a few drops of nitric acid, to neutralise any ammonia in excess, pour in a solution of common salt; stir well together, and allow the white precipitate of chloride of silver to subside; the water may then be poured away, and the chloride washed out into a basin, or other small vessel, and put aside. This process being followed continually, the quantity of chloride of silver collected will soon become very considerable, and when in sufficient quantity to render a reduction to the metallic state advisable, that operation may be performed, and metallic silver of almost absolute purity is produced, which may be dissolved in nitric acid and converted once more into nitrate of silver.

DIOGENES.

TECHNOLOGY.—The absence of a compendious Glossary of the Technicalities used in Photographic works has been so much felt by amateurs, and especially by those who have just commenced their noviciate in the fascinating study, that we have decided upon devoting at least one column monthly—more, should space permit—to supply this desideratum. This work has been entrusted to one of the members of the Society, who will, where necessary, be assisted by the experience and opinions of others; and no pains will be spared to make it worthy of

the attention of all. It will not be a mere dry dictionary, but will be interspersed with numerous remarks, hints, and cautions of the utmost service to beginners, and perhaps not unwelcome to more advanced practitioners. We propose to divide it into four sections:—

First.—Of Terms as applied to Processes. These will be arranged as nearly as possible in the order of their discovery, without regard to alphabetical arrangement. The minutiae of each process will not be entered into, as that would be unnecessary; but merely the general distinctive marks, and the discoverers', names will be given.

Second.—Of Technical Terms as applied to Apparatus.

Third.—As applied to Manipulation.

Fourth.—As applied to the Chemicals employed.

Each of the three last sections will be separately alphabetically arranged.

For the benefit of those who have the opportunity of reading French works on photography, but who find neither their own knowledge nor their dictionaries any assistance in elucidating the new nomenclature introduced by recent discoveries, the French terms will, wherever practicable, be introduced after the English, and printed in italics, to catch the eye more readily.

In the chemical section, besides the English and French names every name each substance is usually known by will be given; together with a general indication of its uses in photography, and in all instances where there is any risk attending the use of a chemical, whether from being poisonous in itself or in its combinations, these points will be noticed.

Accordingly, we will present a portion of the first section in our next sheet.

DEVON AND CORNWALL PHOTOGRAPHIC SOCIETY. — A very interesting meeting—the first meeting—of this Society took place in St. George's Hall, Stonehouse, at which a great number of specimens of the various styles of photography and daguerreotype, with stereoscopes, microscopes, and photographic apparatus, were exhibited, and some photographs taken in the presence of the company by artificial light. The meeting was attended by all the most distinguished people in the neighbourhood, and gave great satisfaction to all who were able to be present. We intended giving a full report of the proceedings, but an extra pressure of matter compels us to be brief. Capt. R. E. Scott, the President of the Society, concluded the evening with a very admirable speech on photography.

PHOTOGRAPHS OF THE MOON. — We understand that Dr. Edwards and Mr. J. A. Forrest are engaged with Mr. Hartnupp, at the Royal Observatory, in attempting to obtain photographs of the moon. In connection with the subject, we may refer such of our readers as take any interest in it to an article in the *Dublin University Magazine* of this month, on "The Lunar World and its Wonders, of which, if our space would have admitted, we intended giving a short abstract. At present can only say that it fixes 500 as the highest power that can be applied with advantage in obtaining photographs of the moon, any higher power tending to distortion of form or indistinctness of detail.

THE EXHIBITION OF PHOTOGRAPHS AND DAGUERREOTYPES, BY THE LONDON PHOTOGRAPHIC SOCIETY.

We are enabled to give an original critique on the exhibition of photographs, in London, by one of our own members, who has very recently visited it.

The number of photographs, of all kinds, from the daguerreotype to collodion, wax-paper, albumen, etc., nearly reaches one thousand specimens. These fill the large room of the gallery in Suffolk Street, as well as two small rooms at the south end. The centre of the large room is occupied by a number of stereo-

scopes of both kinds—the common form, and that of Mr. Wheatstone; specimens of exceedingly minute copies of prints on papers, with microscope to view them, sent by Mr. A. Rosling; daguerreotypes and calotypes, by Mr. Mayall; photographs by Mr. A. Rosling; a negative photograph by Mr. Sanford, taken on 19th December, 1851; etchings, by George Cruikshank; Bartholomew, on glass, covered with collodion and guttapercha, and printed by P. W. Fry, also on the 19th December, 1851; the first protonitrate positive upon glass, by Dr. Diamond; three stereoscopic pictures, taken from the actual head of Henry Grey, Duke of Suffolk (the father of Lady Jane Grey), who was beheaded in 1554; in which No. 2 shows the incision made by the first cut of the axe, the executioner having failed severing the head at that blow, and requiring a second stroke for that purpose; the head has been preserved in a tanned state by the antiseptic properties of the vault in which it was deposited, at the Church of Holy Trinity, Minorities, near the Tower of London. There are collodion positives, by Mr. Ripplingham. Five portraits, collodion positives, by C. Richardson; nine stereoscopic collodion positives, by Stewart; a view of Solent, from Osborne, Isle of Wight, on collodion, by J. Becker, showing the natural impression of clouds; a daguerreotype of a snow scene, by R. Lowe; a series of photographs, illustrating the various tints acquired by a shorter or longer exposure in the old hyposulphite of soda bath, by T. Williams, and some prints from steel plates, which have been etched by the bitumen process of M. Niepce, by Bisson, exhibited by Mr. Solomon.

These are arranged on screens and stands. From end to end the walls are covered with photographs, indiscriminately mingled, rather with a view to the general effect of the exhibition than to scientific classification, or experimental comparison of the various methods employed. The most striking example on entering the room is a very large calotype, from a negative on iodised paper, by E. Baldus, a view of the Amphitheatre at Nismes. It is about three feet six inches long, perfect in perspective, rather reddish in tone, but very minute in detail, and altogether a very favourable example of the power to produce representations on a large scale by photography. It is probably enlarged from a smaller view, taken by means of a camera, but the catalogue does not give us any information of the subject. There are three or four large copies of busts, of them life-size, by Counsellor Auer, exhibited by the Photographic Society, which are also very favourable instances of the capabilities of photography to produce works of large size, though we cannot think that the subjects in the last-mentioned examples are such as to do justice to the peculiar advantages afforded by the photographic art. Counsellor Auer's are fine negatives on wax-paper, the tints very solid and even in quality, too much so, indeed, to afford the brilliancy that is required for such large work. The painters find as they increase in work in size they are obliged to open the texture of the execution, or the shadows will become heavy, and the mid-tints rapid or dirty, as they may be light or dark.

There are a number of copies of engravings of various degrees of merit, by P. Delessert and Mr. Aguado, some from negatives on wax-paper, some from collodion, others from the talbotype, which in these instances appear to have been the most successful. There is a beautiful copy of a crayon drawing, by Richmond, printed from a negative or collodion, by C. Thompson; Mr. James Contencin has also been successful in applying the same process to the same purpose, but we cannot speak so favourably of his copies of pictures. Sir Thomas M. Wilson has been more successful in his calotype and talbotype copies of pictures by McIan. There is a very good copy by Bisson Brothers, of the Hundred Guilder print, from Rembrandt's etchings, so called, because a single impression of the original was sold for that sum; but by what process a copy is produced is not mentioned. Mr. F. Bedford exhibited

copies of the lithographic prints, from Roberts's sketches the Holy Land; but, except as trial of skill, these cannot be considered an advisable proceeding in photography. Copies of rare or valuable engravings, such as the Hundred Guilder print and the Annunciation to the Shepherds by Bisson, on collodion, also from Rembrandt, are very legitimate exercises in the art; but not such works as are existing on stones or plates, and capable of being produced in a direct way as perfectly by another process. The substitution should be for the purpose of skill in copying on to the stone or plate, not for the purpose of that stone or plate, where the labour of placing there has been undergone. The object of the photograph from an original drawing, as in Mr. C. T. Thompson's beautiful reproduction of Mr. Richmond's head, is to avert the risk of error in copying, by the lithographic draughtsman or the engraver. If they have been successful, the photographic copy of their work will not be superior to the original; if they have made any error, or failed in any part, the photographic copy will not remedy or remove them. On the other hand, in this substitution, there are some beautiful specimens of photolithography of architecture, by Mr. Lesecq, from wax-paper negatives, and of the stained glass windows in Cologne Cathedral, Marable, on the same method; and of photographic engraving on steel, of objects of natural history, from collodion negatives, by Bisson Brothers, which are exquisite in detail completeness, and obviating the possibility of mistake or error, form the most legitimate and most valuable exercise of photographic art.

Mr. Fox Talbot exhibits some beautiful specimens of engraving on steel plates, by the influence of sunshine, on a preparation of chromium and subsequent etching by chloride of ammonium.

The Rev. W. J. Kingsley and Counsellor Auer exhibit some remarkable examples of the application of photography to the microscope, from negatives or wax-paper; and we think we have some reproductions of similar microscopic objects by the electro-chalographic process, than which nothing could be a more perfect application of photographic art, as human eyes and hands can scarcely be minute enough, and certainly cannot be adequately remunerated for the work, if they have the opportunity to prepare it. In one instance the Rev. W. J. Kingsley has been very successful in obtaining photographs of microscopic objects, by artificial light, on wax-paper negatives.

Mr. C. T. Thompson and Mr. F. Bedford have applied the photographic process very satisfactorily, in general, to still life, objects of furniture, plate, and vertu, which are never worth the time and talents of an artist upon to produce the accuracy that usually constitutes their chief value.

Comte de Montizon has devoted his operations in the photographic process to the equally legitimate and valuable, though more difficult, task of fixing indisputable representations of objects of natural history, at the Zoological Gardens, Regent's Park, London. The backgrounds sometimes interfere with these otherwise admirable specimens of photography, as they do with science and the embodiment of truth.

The photographic reports of the engineering commissions in Russia, by Mr. C. Vignoles, taken by Mr. Roger Fenton, and of the progress of the Crystal Palace, at Sydenham, by Mr. C. Delamotte, exhibit another highly valuable application of photographic art as preserving an indisputable record of facts.

William Crookes—to whom the art is indebted for a very important process on waxed paper, and the means of restoring degraded collodion, referred to in our last number—exhibits the results of some experiments on light by means of photography, which may be of great importance. He first gives a photograph of the solar spectrum; then the effect produced by exposing the spectrum on a sensitive surface of iodide of silver, and developing.

"The action is due only to the indigo, violet, and invisible rays; no effect taking place where the red, orange, yellow, green, or blue rays fall."

3. The effect produced on bromide of silver under the same circumstances.

"The action is here due to the upper three-fourths of the green, together with the blue, indigo, violet, and invisible rays; no action being produced by the red, orange, yellow, or lower part of the green."

4 and 5. Photographs of the solar spectrum after having submitted it to the absorbing action of sulphate of quinine.

"The only rays which this substance allows to pass are those below the violet, limiting the photographic action, in the case of iodide of silver, to a narrow band about the centre of the indigo; and in the case of bromide of silver to the upper portion of the green, the blue, and indigo rays."

These results deserve the serious consideration of the scientific photographer, as they appear to involve a partial action of light that may account for many of the failures we find in the most successful operations, and some means may be discovered whereby the action of the light may be made more uniform; for, until that is done, it will be hopeless to make the practice of photography so universal as it deserves to be.

Mr. W. Crookes' photographic copies of the phenomena of polarised light in crystals of nitrate of potassa, and of calcareous spar, though interesting, do not appear to bear so directly on the progress of photography, though the difference of effect on iodide of silver producing the normal figure, and on bromide of silver producing an abnormal figure, may suggest a hint to our scientifically inquisitive readers.

The applications of photography to portraiture and to landscape and architecture, as might be expected, are very numerous. Mr. Roger Fenton takes the lead in point of quantity and variety of subject, and many of the specimens are of very high quality. But the large photographs of the cloisters of St. Trophimus, at Arles, and other architectural views by M. Baldus, must be admitted to surpass him; and in the instance of Burnham Beeches, Sir W. Newton has been more successful. Mr. Hennah's portraits are the best in the exhibition, excepting a frame of exquisite productions—portraits and groups—from collodion negatives, by the Ladies Neville. The Hon. H. Kerr also takes a distinguished position with a view of the High Street, Guildford, and three other views in Surrey, from talbotype negatives, which are first-rate. Viscount Vigier exhibits a number of large views in the Pyrenees, many of them of high character; but our space will not allow of special comment in this number of our Journal, either on these or numberless beautiful examples by Mr. Rosling, Mr. Owen, Mr. Sedgfield, Dr. Diamond, and other distinguished photographers who have contributed to make this exhibition so attractive and interesting. We should warn our readers that it will close at the end of the month, as the galleries will be required for other purposes.

A new weekly paper has just been started in Paris, principally devoted to photography, under the title of *Le Propagateur*, which apparently proposes to become the censor of the Parisian photographers, as the prominent feature in it is a crusade against what it considers the abuses among them.

M. Duboscq has introduced a modification of the refracting stereoscope, which he calls the Cosmorama Stereoscope. It greatly enlarges the views, and is said to be very advantageous to the general effect.

A PETITION in support of this bill for the adoption of the metric weights and measures, which will be introduced in the House of Lords by Lord Belhaven and seconded by Lord Kelvin, is being extensively signed throughout the kingdom.

ON SIMULTANEOUS DEVELOPMENT AND FIXING.

THE question of dichroic fog recently raised by Messieurs Lumière and Seyewetz has an indirect connection with the subject on which these notes are to be written. They stated in the communications made to the Société Française de Photographie and elsewhere that dichroic fog could be caused by minute quantities of thiosulphate in the developing solution. It is well known that traces of a thiosulphate cause extraordinary results when judiciously introduced into the reducing solution, and that MM. Lumière's statement has some truth in it seems obvious from many common results that occur in everyday work; but it is a noticeable feature of combined developing and fixing that no dichroic fog whatever is evinced. Nor does the introduction of hypo into the developer cause any great increase in the speed of action of the latter. The two main features to be aimed at in the experimental work were (i) to equalise the times required for complete development and fixation, or, at any rate, to arrange that development is complete before fixing, and (ii) to obtain a developer which would act energetically in the presence of so potent an agent as sodium thiosulphate.

The rate of fixing, as is well known, depends upon the thickness of the film and the amount of silver iodide which it contains; both these are matters of importance at first sight, because it would seem that not a great quantity of hypo could be combined with the developer. Experiment has shown, however, that as much as 25 per cent. can be employed, provided a suitable developer be used in conjunction with it.

It is hardly necessary to say that the developer must be one particularly free from fog in its working; it must also be one which will act well with sodium or other hydroxides, and the number available is, therefore, considerably limited.

As the use of a caustic alkali is almost essential, it is clear that pyrogallol, amidol, and other developing agents which are similarly sensitive to caustics cannot be employed, more especially as the quantity necessary is large.

The agents which gave the most promising results were (i) edinol, (ii) hydroquinone, both of which gave negatives almost free from general fog.

A typical formula is composed as follows:—One part of the developing agent, ten parts of sodium sulphite or one and a-half of potassium metabisulphite, two to three of caustic soda, ten of sodium carbonate, and 100 parts of water. It is possible to use a caustic alkali entirely and dispense with the carbonate; but this is not advisable even in the case of hydroquinone. To such a solution as this is added from ten to twenty-five per cent. of the total bulk of sodium thiosulphate.

The method of working most useful in practice is to keep stock solutions containing everything except the reducing agent, which is added just before use, as no developer containing caustic potash or soda will keep for any length of time. The two following formulæ are the best out of a considerable number made up in the course of experimenting:—

A.	
Water	200 cc.
Hypo	20 grams.
Caustic potash	10 "
Potassium metabisulphite	3 "

B.	
Water	200 cc.
Hypo	20 grams.
Sodium sulphite	10 "
Sodium carbonate	20 "
Caustic soda	4 "
Potassium metabisulphite	3 "

A form of A., to which attention must be drawn, and which may be termed C., is the same as A., save that for the ten grams of caustic potash two are substituted, together with ten

of sodium carbonate. The proportion of carbonate to caustic is thus 5:1, and this ratio seems in every instance to give the best results.

Just before use add to A. two grams of hydroquinone, to B. two grams of edinol, and to C. two grams of edinol. We then have three combined developing and fixing solutions sufficient to show the experimenter to what extent they will answer the double purpose. Before proceeding to describe the actual operation, however, it will be interesting to look at the subject from a theoretical point of view, as the entire process is apparently unorthodox and difficult of explanation.

The following seems the only theory which stands examining from all points of view, and is probably correct in part, if not in its entirety. If we consider the two outermost layers of an exposed film, say, n thousandths of an inch thick, n probably being small, and that the film is immersed in the combined solution, then these two layers will at a certain time be moist with the absorbed liquid. Hypo being the most active agent, it will dissolve out the silver bromide, and probably the light-affected silver bromide or "photo-bromide" as well; but to accomplish this the minute quantity of thiosulphate present in the amount of liquid absorbed will be exhausted, and hence the reducing agent left will be free to perform its work upon the layer immediately underneath the top one. If this be not true for successive layers, it may, at any rate, be so for neighbouring granules of silver gelatino-bromide.

In any case, development proceeds, as a rule, very rapidly; that is, the image appears much more quickly than when using an ordinary solution. During the discussion that followed the reading of my paper on this subject at the Royal Photographic Society, surprise was expressed by more than one that it should be possible to develop with so much hypo in the solution as even 10 per cent. But up to 25 per cent. can safely be employed, and by placing the formula of an ordinary all-round developer and that of a "combined solution" side by side, the slight difference necessary to render this possible is seen to be almost trifling.

Ordinary Developer.	Combined Developer and Fixer
Edinol	2 Edinol
Pot. metabisulphite	3 Pot. metabisulphite
Sod. sulphite	10 Sod. sulphite
Sod. carbonate	20 Sod. carbonate
Water	200 Water
	{ Sodium hydroxide
	{ Sod. thiosulphate

The formulæ A. and C. appeared to give the best results with dry plates, whilst for lantern-plates B. was more satisfactory, the smaller amount of hypo being advisable where thin film exists.

The two most noticeable things in connection with the working of these combined solutions are as follows:—First, the edinol-caustic formula is so vigorous that only a fraction of the normal exposure is necessary for a plate to give a good result; and, secondly, the image appears quicker than with an ordinary developer.

In some cases lantern-slides which had received only one-quarter of the exposure requisite under ordinary conditions came out just as though fully exposed, and the detail evident in the shadows, and throughout the whole picture, indicated that the exposure had been sufficient. Another thing worthy of notice in this connection is that if four or five lantern-slides be exposed varying lengths of time, say, for fifteen, eighteen, twenty, and thirty seconds respectively, and these be all treated in the same bath, the results will be very similar, this showing that control in development is not an easy matter.

There is a universal fog over the whole picture, which is slight in some cases, but always apparent. Experiments were made in which bromide was added in different strengths,

was readily observed that it assisted in producing a more contrasty image.

For the dry-plate work exposures were made by means of a Chapman-Jones plate-tester, and this gave a good idea both of excessive density which could be obtained and of the amount of fog produced. Plates exposed in the Hürter and Driffield sensitometer were then examined, and it was found that gradation of the plate was produced in a very even form. The plate was cut into two parts, both of which (strips) were exposed at the same time. One was developed with "Standard" citric oxalate, the other with a combined solution like C. The curve of the first portion was steep, the merging from excessive density to clear glass being abrupt, whilst the latter portion showed a regular stepping of the densities, and gave an almost ideal curve. This was also borne out as nearly as is possible by the Chapman-Jones tests.

Optimising the above work, it may be stated that it is quite possible to have 20 per cent. of hypo present in a developer, though caustic soda or potash is almost essential in that case; simultaneous development and fixing is not only possible, but practicable; that the number of agents which can be employed for the purpose is limited, those which work very free from fog alone being of use.

A few experiments in the direction above indicated will be very interesting, and, if necessary, convincing as well.

T. THORNE BAKER, F.C.S.

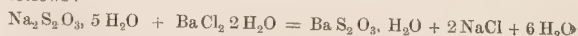
THE Kodak Catalogue.—In sending us a copy of their new price of general photographic goods for 1904, Messrs. Kodak, Ltd., state:—"This first issue of our list contains upwards of 800 pages of 1,000 illustrations. As well as including our Kodak goods, it sets forth every well-known line of photographic apparatus, films, and accessories. We have prepared this list in response to many requests from our dealers, and have specially stocked a large section of our premises at 41-43, Clerkenwell Road for the purpose. As a further convenience, we have arranged to keep a stock of these general goods at our Liverpool and Glasgow houses, also at our City, West-end, and other branches, so that dealers may use these depots to secure the most prompt supply possible. Anything which is either necessary or useful to the photographer will be found in this list."

The use of the Cinematograph for Scientific Purposes.—By means of the cinematograph it is possible to show to the eye the whole course of a visible phenomenon, either at the rate at which it actually happens or at any faster or slower rate that may be desired. Already it has been made use of to exhibit many phenomena the actual rate of happening of which is too rapid to admit of direct visual perception, as in the case of sound-waves and the flight of bullets; but it would seem to be as great possibilities of useful application to the progress of slow motions perceptible. For example, in R. F. M., in "Nature," the changes in a cloudy sky are so gradual that it is difficult even for a close observer to form a definite mental picture of what has happened in the upper air, say, a few minutes or a few hours. This difficulty is due, not only to the slowness of the changes, but to their complexity. But if we take under favourable conditions a good cloudscape could be photographed, say, 500 times in an hour, and the results put through the cinematograph in one minute, it could hardly fail to help the astronomer to get a clearer idea of what really happens above, especially as for purposes of study the same phenomena could be made to pass before the eyes of the student as often as he might wish. Perhaps our meteorological observatories may carry this idea far. Again, suppose a similar application made to the growth or flowering of a plant. I imagine that few botanists have the patience and power of concentration that would be required to clearly define an idea of such a process by direct observation. One could easily acquire by the aid of the cinematograph; even supposing a botanist possessed a perfect mental grasp of the process, if he wished to describe it to an audience would he not find the kinematographic representation of it an invaluable aid? Doubt many other possibilities will suggest themselves at once to the reader.

ELIMINATION OF HYPO BY MEANS OF BARIUM CHLORIDE.

THE suggestion made by Mr. John Noton in your issue for January 1st, page 18, that barium chloride is an efficient eliminator of "hypo" is not only valueless, but actually prejudicial to the life of the "photos," whether they be prints or negatives.

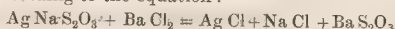
In the first place, the reaction that occurs when barium chloride and thiosulphate of soda are mixed together is as follows:—



Now, sodium thiosulphate is an extremely soluble salt, approximately, at 15 deg. C., one part is soluble in 1.5 parts of water; but barium thiosulphate is a comparatively insoluble salt, one part being soluble in about 250 parts of water, and therefore it is extremely possible that it would be thrown out on the "photos." But as one cannot ignore the fact that not only is the sodium thiosulphate on the surface of the print or negative, but also in the image-bearing film itself, it is obvious that the barium thiosulphate would be formed in the image-bearing film, and therefore we should have to remove a much less soluble salt than the sodium thiosulphate, and if a salt is less soluble it must obviously require more water, or, in other words, longer washing to remove. I think the above considerations prove that there is no advantage in forming barium thiosulphate.

Now, to prove my second statement, that the use of barium chloride is actually prejudicial to the life of the prints. Mr. Noton seems to have entirely ignored the existence of any other salt than "hypo"; but this one cannot do. Hypo is used to dissolve insoluble salts of silver, which are sensitive to light, and which, if left in the "photo," would gradually darken on exposure to light. Now, all printing-out silver papers depend primarily on the light sensitiveness of silver chloride.

When a print or negative is fixed, thiosulphates of silver are formed. I do not propose to enter into this question, but merely state the fact, and, taking but one of them, $\text{Ag Na S}_2\text{O}_3$, if barium chloride were added in sufficient quantities, we should have silver chloride, sodium chloride, and barium thiosulphate formed, according to the equation:—



The silver chloride might or might not dissolve in the barium hyposulphite; from a superficial test I have made I should say it would not. Anyway, a pure chloride lantern-plate was fixed with hypo solution made with distilled water, rinsed in distilled water, and then immersed in 5 per cent. barium chloride solution made with distilled water, and thoroughly well washed with distilled water. A comparison plate was treated in the ordinary way—that is, with an ordinary fixing bath, and washed by repeated changes of tap water. The plate treated with barium chloride is decidedly milky, and on exposure to light for 4 hours shows a brownish tinge, whilst the other plate is perfectly clean and clear.

Mr. Noton's heavy insoluble precipitate, which can be swabbed off, may be the comparatively insoluble barium thiosulphate, or insoluble carbonate or sulphate of barium, due to the hardness of the water that is used.

The conclusion I arrive at is, therefore, that the process is not one that commends itself to the practical man who wants to save time in washing or to produce permanent prints.

E. J. WALL.

THE Camera Construction Company have removed to a new factory, Eagle Works, Durham Grove, Morning Lane, Hackney, N.E. (seven minutes from Hackney Station, North London Railway).

THE Ansco Competitions.—Messrs. Charles Tyler and England Brothers, Limited, of 79, Copenhagen Street, Caledonian Road, King's Cross, London, N., inform us that the competition in connection with their Ansco paper closes on the 29th inst.

THE DECIMAL AND METRIC SYSTEMS.

[A paper read before the London and Provincial Photographic Association.]

INTRODUCTION.

IN order to appreciate the metric system of weights and measures it is necessary to be thoroughly at home in the decimal system of notation, for it renders the reading and calculations of metric weights and measures so simple that the one may be looked upon as the natural sequence of the other. That the decimal system should have been so long in being generally taught and adopted is really remarkable, seeing that our system of notation is based upon the figure "10," and is in fact a decimal system not carried through to fractional decimals, but so ingrained in our manner of writing and handling figures that we are apt to overlook the fact, and we should no more think of adopting another system than we should of changing our alphabet. It is, indeed, but a small step further to adopt the decimal notation throughout, and it seems singular that a decimal system of sub-dividing measurements of length, area, space and weights should not have been adopted much sooner and brought into harmony with the system which we have used from time immemorial.

The superiority of the one over the other is evident when we write

1849

instead of writing as the Romans did

MDCCCXXXVIII.

Multiplication or calculating the square or cube root of such a figure with the Roman system must have been a delightful operation. Now we all know that if the 9 in our example means 9 units only the 4 means 4 tens and the 8 means 8 hundreds without any further specification. When we extend that same system, which is as old as the hills, and is said to have been invented by the Arabs, denoting quantities of less than one unit of anything we follow exactly the same plan, and we obtain instead of tens, hundreds and thousands, tenths, hundredths, and thousandths of the unit or last figure after which they stand. In other words fractions of which the denominator is always a ten, a hundred or a thousand. It will not be necessary to work this out by any special examples. I expect an intelligent audience like the present one to be acquainted with the facts, and more or less with the decimal system; but I lay stress on this because it will lead us up to a thorough understanding of the metric system of weights and measures, which is based on these facts, and there is now hardly any exact calculation of any scientific subject undertaken, except by the aid of the decimal system. It has been urged by some opponents that the figure "10" does not divide as well as the figure "12," which is divisible by four figures, while ten is only divisible by two. These people are not free yet from the incubus of the vulgar fraction, and have not grasped the nature and value of the decimal system. A duo-decimal system would be better if our system of notation were duo-decimal, but nobody thinks of proposing such a change, and the two systems in conflict would be worse than putting up with vulgar fractions and undecimal divisions of measurement. They are in fact missing the point entirely, for it is not a question of computing a perfect system of counting, but of bringing existing systems into harmony. In a duo-decimal system we should have four single figured duo-decimals, viz. :—

- $\frac{1}{2}$ would be expressed by 0.2
- $\frac{1}{3}$ would be expressed by 0.3
- $\frac{1}{4}$ would be expressed by 0.4
- $\frac{1}{5}$ would be expressed by 0.6

while with the decimal system we have only two single figure decimals, viz. :—

- 1.5 which is expressed 0.2
- $\frac{1}{2}$ which is expressed 0.5

but we have no difficulty whatever to express any other fraction in decimals, though they may require two or sometimes three figures.

The argument is a superficial one, and can only be supported by those who have not grasped the principle of a decimal system. Other opponents urge the long array of figures against the decimal system, but I can prove that for all purposes it requires less figures to write a quantity in decimal figures than in vulgar fractions, and that calculations, such as multiplication and division are infinitely shorter and simpler. Let us take a simple case of calculating the area of a half plate—say for the purpose of a block—we have $6\frac{1}{2} \times 4\frac{1}{2}$ —in

decimals we have 6.5×4.75 . Not only is the latter written more quickly, but the multiplication is much simpler; we have one operation, plain multiplication, while with vulgar fractions we have reduction to one denominator first, and then division for multiplication by fraction is really division.

It will be seen presently how the handling of metrical measurements is intimately connected with the decimal notation which is the backbone of the metric system, facilitating calculation in every way and giving us always one kind of figures only, which always stand the same definite relation to one another; the relationship of "10" on its multiples—giving us the easy estimating of percentages, solutions, and of the absolute estimation of the strength of the essential ingredient. The early teaching of decimal fractions and closer acquaintance with them should be the precursor of the teaching and adoption of the metric system generally, according to the old adage: Acquaintance softens prejudice. Attempts to introduce the metric system in England have been repeatedly made. Legal speaking it is now a permissible system. We are not obliged, but we may use it. I for one have made extended use of this permission of Parliament, though I cannot say whether I used it before or after the permissive Act was passed; and I only hope the Act has retrospective consequences on those who did use it before it was passed, as I might become a martyr to science!

There is a Decimal Association in London, composed of Englishmen, many of them not knowing a word of French, but advocating the adoption of the metric system of weights and measures as compulsory system in Britain. I have to thank their secretary for the help they have given me to bring this matter before you. They have laboured for years, and are still doing all they can to get the system adopted in England, as it has been in every civilised country in Europe, and by many beyond. In the United States of America the system is also a permissive one, but is more largely used than in Great Britain. I have here a small instrument, made in America, illustrating one of those Yankee notions showing how they quickly grasp the neatness of the system. It is a steel ruler one decimetre long, one centimetre wide, one millimetre thick, and subdivided in cm. and mm. Its body or volume is exactly one cubic cm. Its weight is the specific gravity in grammes. The present Secretary of State for War, the Right Hon. H. O. Arnold-Forster, is one of the Parliamentary advocates of the metric system, and has obtained the support of over 200 members of Parliament for making the metric system legal and compulsory in Britain. He quotes in his book "The Coming of the Kilogram," the acknowledgment of Mr. A. Balfour, our Prime Minister, of the superiority of the metric system as follows:—"There can be no doubt that the judgment of the whole civilised world, not excluding the countries which still adhere to the antiquated system under which we suffer, has long decided that the metric system is the only rational system."—House of Commons, 1895. There are reports of many British Consuls abroad pointing to the fact that we are losing trade in many quarters through the retention of the old system of weights and measures which are not understood by these would-be buyers, and which always they will not take the trouble to study in the face of their own intelligible, simple, and rational system. For us photographers the system is in every way deserving of attention.

A few weak efforts have already been made. Some time ago the Photographic Club made the heroic resolution that all measurements and formulæ should be stated in the metric quantities, drams and ounces being banished out of sight—in fact, decreed the adoption of the metric system. I was not of the committee charged with investigation and drawing up of this momentous proclamation. I was probably the only one who constantly used the metric system and no other, and who has used it ever since, while I have not since heard anyone in that enlightened body state any formulae in metric quantities, every one thinking that his was an exceptional case. So far, the success amongst us photographers. I recollect an instance which illustrates the want of understanding on the part even of the leading lights. It was urged—and justly so—that solutions should be made up in correct percentages, containing a given quantity of the dry salt, not in (say) 100 or 1,000 of fluid, and holding it in solution, but in so much that the total should make up a definite measure of solution—say, 100, 500, or 1,000. A well-known platemaker interjected that he did not see the difference, and that one was as good a 2 or a 5 per cent. solution as the other.

was a platemaker: what would you expect of an amateur? Another instance shows how little acquainted we still are with metric quantities. A lecturer at the Royal Photographic Society described the volume of water that could be stored by the new Nile dam at Assuan, lately built, as so many millions of cubic centimetre, instead of cubic metre—an error of only one million times less! The remark passed unnoticed, except, probably, by the speaker. The public visiting the lantern entertainments at the R.P.S. is naturally more artistic than scientific. Such instances show that we are not over-conversant with the metric system, and our acquaintance with it will stand strengthening considerably. My object is to strengthen that acquaintance amongst my fellow-photographers. It is only in a very limited degree. I propose, therefore, to use a few examples of illustration, and to sketch to you a few comparative figures under both systems.

THE METRE.

We have now to come to close quarters with the actual metric measurements of length, surface, capacity, and weight, and I must now claim your attention for a short time in order to analyse the system and study its advantages as compared with the one we are now using. The metre—from the Greek "metron," a measure—is the basis of the system, and was established in 1795, after the French Revolution. Its length was intended to be one 10-millionth part of the quadrant of the earth, from Pole to Equator. This point has been disputed, but it is not of any consequence. The normal metre is exactly 39.371 inches, or 39 $\frac{3}{4}$ nearly. We now come to a feature of the system. The divisions and multiples of the metre are named in one plan.

The divisions are designated by Latin prefixes and the multiples by Greek prefixes. Thus the metre is subdivided into 10, such as a tenth is called decimetre. The decimetre is divided into 10 centimetre. The centimetre into 10 millimetre.

The multiples proceed on the same plan. The decametre is 10 metres, the hectometre is 100 metres, and the kilometre is 1,000 metres each, one being 10 times the former. Thus we have on one plan a system by which we can measure from the minutest dimension used in optics or the science to the distances of a geographical description. I will at once show you that the decimal notation is the backbone of the whole system, and that without being conversant with it, the charm and simplicity of the metric system cannot be taken advantage of to the full extent. If with our present Imperial system we wish to express a measured distance from one point to another we do it in miles, furlongs, rods, yards, feet, and inches. Taking an example at random, we may say, 1 mile, 3 furlongs, 20 rods (or poles), 2 yards, 1 foot, and inches.

This distance measured by a surveyor may be stated in yards, but there are no means of assimilating the various measurements into one figure except by stating it in feet or inches. If we were to express a similar distance in metric measurement we should not write 2 kilometre, 5 hectometre, 4 decametre, 8 metre, 6 decimetre, and 3 centimetre; though perfectly correct this would appear ridiculous. The whole figures would be linked together and treated as kilometer and fractions (decimals) of it, or as metres and decimals, and it would stand thus:—

2.548.63 m.

The decimal point put between the 2 and the 5 would denote kilometre, and between the 8 and the 6 would be stating it in metres, while we should at once know that we have a distance of 2 $\frac{1}{2}$ kilometer, roughly speaking, or 2,548 meter and 63 decimals. The relationship of these figures, though they denote definite lengths, is the same as those in the number 1848, and the handling of them is equally easy as compared against the Roman MDCCCXXXVIII.

I think I have shown you that the decimal system must be thoroughly understood in order to fully appreciate the metric system. The advantage of being able to treat the minor length simply as a decimal of the larger is again not only in brevity, but also in simplicity, ease of calculation, and precision. The same principle applies to surface measurement, the basis of which is the square metre. The subdivisions are in tenths of the base, and the resulting superficial areas as the square of ten. The square metre is equal to 10.764 feet, or approximately 10 $\frac{3}{4}$ square feet. The square decimetre based upon the one-tenth is therefore the 100th part of the square metre. The square centimetre by the same logic the 100th part of the decimetre, or the 10,000 part of the square metre. The multiples of the square metre

increase in the same manner as the square of 10. One decametre is 100 square metres, one hectometre 10,000 square metres, and one kilometre 1,000,000 square metres. The reduction of any of these into its components or multiples is as easy as that of the linear measurement. The usual way to express a surface of land is by the "are," which is equal to 10m. square containing 100 square metres. It is, compared with our acre, about $\frac{1}{4}$ of it, and equal to 119.603 square yards. The multiple of the are, used for large surfaces of land, is the hectare (hecto-are), 100 ares or 10,000 square metres. The hectare is equal to 2.47 acres, roughly 2 $\frac{1}{2}$ acres.

We now proceed to consider the cubic measurement. It is built upon the unit of the metre, and progresses on the same plan by the multiples of "10." The volumes or capacities resulting are progressing by the cube of 10, or 10 \times 10 \times 10. A cubic metre is a large measure used for measuring big volumes, such as water, fodder, earth, and so on. Its capacity is equal to 35.32 cubic feet, or 27 $\frac{1}{2}$ bushels. It divides into 1,000 cubic decimetre. The cubic decimetre is the 1,000th part of the metre, and divides in its turn into 1,000 cubic centimetres, a small volume with which most of you will be somewhat familiar through reading chemical formulæ from French, or, perhaps, German papers. Its sign is ccm. or cc. We shall presently make the closer acquaintance of these two subdivisions, for one is the basis of our weights, the gramme, and represents as a unit the weight of so much water at its greatest density, 4deg. C. or 39deg. F., and under normal barometrical pressure. The other is, consequently, a thousand times larger, and has the weight of one thousand grammes, or a kilogram. It is the well-known kilo of commerce. This at once establishes the connection between the weights which we use with the measure of length as well as of area and capacity. In fact they are all instances of the same system based upon one uniform, simple, and intelligible plan, the simplicity of which becomes more potent as we advance, and which stands out strongly against our disjointed system of unsympathetic and muddled-up crowd of weights and measures.

I have here a model of cardboard. I may at once say that it is a home-made model of the cubic decimetre. Its capacity is the litre, its weight when filled with water would be the kilo—1,000 grammes. The other model is the gramme or cubic centimetre, being 1,000th part of the first in capacity and weight of any equal substance. We have now to consider first, measures of capacity, and second, measures of weight. The basis for the cubic measurement for liquids, corn, grains, and the like, is the litre. The litre, as I have already pointed out, is the same volume as the "cubic decimetre." The litre is equal to 1.76 pints, or 35.20 ounces. The cubic centimetre being only 1,000th part of the former, it is necessary to make another subdivision without, however, at all forsaking our principle, the decimal scale of gradation.

We have seen that the cube built upon the next metric sub-division, the cubic centimetre, is in capacity 1,000 times smaller than the cubic decimetre. We require, however, in order to measure liquid quantities a handy measure for two or for three-tenths or five-tenths of the litre. Hence the litre is divided into 10 decilitre, the decilitre into 10 centilitre, and the centilitre into 10 millilitre, and we have arrived at the capacity of a cubic centimetre, which is, as its name denotes, the 1,000th part of the litre, and the weight of its contents in water is one gramme. The unit of our system of weights. The multiples of the litre are the decalitre, or 10 litres, hectolitre, or 100 litres, and kilolitre, or 1,000 litres. Again I may remind you that the kilolitre, or 1,000 litre, has the capacity of one cubic metre, a measure used for large quantities of fluid, such as the contents of a lake, a reservoir, and the like, while for such liquids as wine or beer the hectolitre is used. In writing down a given quantity again the decimal system would be used, and instead of writing say, 36 hectolitre, 4 decalitre, and 7 $\frac{1}{2}$ litre, the one set of figures, 3647.5 would denote the same thing, the decimal stop between the 7 and 5 marking the number of litres and fractions of it. As a handy measure there is such a thing as a double decilitre and a half or 5 decilitre. The latter is still known as a pint, which, indeed, it is near to in size, standing as it does between the reputed pint of 16 and the Imperial pint of 20 ounces. When we come to compare this system with our system of pints, quarts, pottles, gallons, pecks, and so on, it shows more than any of the previous comparisons have done the superiority of the metric system.

MEASURES OF WEIGHT.

You know already that the unit of weight is the gramme. By an ingenious device the system of weights is brought into harmony with the system of measures for length, surface, and, above all,

capacity. The "gramme" is the weight of so much water as can be got into the space of a cubic centimetre taken at 4deg. C. or 39deg. F., at a barometrical pressure of 30in. It is then that water is at its greatest density. This plan brings the system of weight into complete harmony with the system of measures, and enables us to treat solutions on a rational basis, because the weight of the body in solution weighed in gram agrees with the dissolving fluid—1 gram of a salt dissolved in, say, 99 of water makes a 1 per cent. solution, and the quantity of solution will weigh exactly 100 grams. This is accomplished without any calculation, and, moreover, cannot be done with any unit of weight or measure that we use in our antiquated system.

The subdivisions of the gramme are—

0.1 gramme	Decigramme.
0.01 gramme	Centigramme.
0.001 gramme	Milligramme.

The multiples are—

The decagram	10 grammes.
The hectogram	100 grammes.
The kilogram	1,000 grammes.

The kilogram is the weight of a litre of water at 4deg. C., the capacity of which, again, is that of the cube model before you, which, when filled with water, will weigh one kilo. There remains only to add that the "metric tonne," which is 1,000 kilogrammes (and equal to ten times our double hundredweight) is used for large quantities of heavy matter, such as earth, coal, etc. It is almost needless to say that the same treatment is applied in writing out figures of combined weights by simply placing them together and treating the fractions of the unit as decimals, as shown you with regard to surface and cubic measurements. The tables herewith presented show the whole system at a glance. The equivalents, having a common basis, are placed on one line, so that anyone not conversant with the names can always trace their exact comparative value. We have now described the principle upon which the metric system is based, and it only remains to compare points in the metric system with our own. This cannot be done at all in a thorough-going manner, as the time for such a task is beyond that allotted to such an address as mine; but a few instances will serve to illustrate it and to show you the disadvantages under which we labour with our present antiquated system.

[Tables shown.]

We have now sufficiently satisfied ourselves that the metric system is better, simpler, and more rational than our broken-up and disjointed conglomeration of systems, and I have shown that hand-in-hand with a metric system must go the teaching of the decimal system which is its backbone. The teaching, as far as we are concerned, should be taken up by our polytechnics and all teaching institutions, whether for young or adult, and no photographic school or instructive system of any kind should be without it. There would be an excellent opportunity for the Royal Photographic Society to help in spreading the knowledge amongst photographers by not only recommending the metric system, but by publishing tables and general information on it amongst its affiliated societies. It is only by such action that the change, which is openly acknowledged to be desirable and badly needed, can be brought about. I have now to touch upon a subject which is usually treated as a sort of an appendix to the decimal system. It is the measuring, not of length or areas or weight, but of *value*. It is urged that when changing our measurements, the measure of values should be included. All civilised countries have adopted a decimal system of dividing their coinage. We alone adhere to a system with three values—pounds, shillings, and pence—and we divide them in a non-decimal manner.

No one desirous of seeing another system of dividing our monetary values thinks of advocating the abolition of our excellent standard or an adoption of a mixed standard like the French; but the point on which all are agreed is a decimal division, so that in many calculations the same advantages could be enjoyed as are present with a decimal system. S. Jackson, M.A., advocates in his metrical tables a system of coinage in which the pound (£) is divided into 10 florins, the florin (fl.) into 10 cents., the cent. (c.) into 10 mills. The standard would remain gold, all silver coins would remain except the 3d. piece. The bronze coins would disappear and be replaced by 5, 2 and 1 mills. This system, no doubt, would have its merits. It leaves us,

however, with three divisions. A simpler system would probably be one with two divisions. This would be accomplished by retaining the pound as a coin only, and not using it in accounts as a unit. It would not affect the money standard, which might remain gold, and the silver coins would still be token coins as they are now, and the copper coins could be retained as they are in such a system the divisions might be dollar or crown and cent. The crown equal our present 4s. piece would be equal to 100 cent, our present half penny would be the cent, the penny a double cent. The 1s. and 2s. pieces would still be as useful as they are now. The sovereign would be five crowns or dollar, and a double sovereign would be ten dollars. Accounts would be kept in crowns and cents., or dollar and cents., as they are in Canada, where for the matter of that the (£) sovereign is held in as high estimation as at home, while all money calculations would be enormously simplified; such a figure as £45 12s. 8d. would read \$183.16, the 16 being decimals of the 3, the unit of the dollar or crown column, and the only change would be that instead of the crown having as now 96 halfpennies it would be equal to 100 cents; in other words the halfpennies would be serving a cent, and 100 would be equal to one dollar or whatever the coin might be called. What the silver coins would gain the bronze coins would lose. Both are only token coins.

I have now only to conclude. In the present day of fiscal agitation there is one point I wish to press home. If we are to regain the trade we have lost through hostile tariffs of Continental and other nations we shall not regain it unless we can present British made goods in money values and in measurements that are entirely incomprehensible to those whom we wish to be their purchasers. We shall never do it with pds and pounds, nor with furlongs and feet, or gallons and gills. And if we have lost much of the trade formerly held by our manufacturers, who can tell how much has been lost by the very fact that we have not up to now seen our way to change the antiquated system under which we ourselves still continue to suffer?

J. R. Gorz.

SOME PECULIARITIES OF COMETS' TAILS AND THEIR PROBABLE EXPLANATION.

[A paper read before the Chicago Meeting of the National Academy, November 18, 1903.]

BEFORE the application of photography to the investigation of cometary phenomena the study of these bodies was beset with many difficulties. In fact, most of the changing phenomena of the tails of comets were then wholly unknown, and, hence, their study impossible. The study of the physical condition of comets' tails may be said to have had its beginning in the past ten or twelve years. In that interval, though no great comet has appeared, the photographic plate has faithfully portrayed some of the most extraordinary phenomena, such as have to a great extent revolutionised our ideas of these erratic bodies. This, too, has occurred in the case of comets which with the older method of observing would have promised little or nothing of interest. The remarkable phenomena presented by Swift's comet of 1892 were the beginning of these revelations. These were followed by similar appearances in Rordame's comet of 1893 as photographed by Professor Husey. But a new series of phenomena appeared in Brooks' comet of 1893, which were suggestive of a wholly different explanation to those of Swift's and Rordame's comets. They suggested an outside influence foreign to the comet itself and of an extremely important nature. The last comet sufficiently active to produce anomalous features was Borrelly's, of the present year. This object, though it failed to fulfil the promises of a spectacular naked eye affair, showed a remarkable change in its tail on July 24th, which will perhaps throw more light on cometary phenomena than any other comet has yet done. Though, unlike, Brooks' comet of 1893, it suggested no outside influence, it yet presented an appearance that seems to offer itself to a satisfactory explanation, and which leads to a definite knowledge of the motion of the particles composing the tail, and of the interval of luminosity of these particles when free from the comet.

In the case of Swift's comet a large mass of matter—several times larger than the head of the comet—was shown in the tail drifting back from the head. This seemed to be due to the separation of an unusually large portion of the cometary matter by the disruptive

repellent force of the sun. Perhaps the most remarkable part of this phenomenon was that the mass looked like a secondary comet with several tails of its own. From an inspection of the photographs it is clear that this object had its origin in the head of the comet, being simply a cloud instead of a stream of the repelled particles. Its system of tails was doubtless produced just as in the case of the parent comet, by the repellent action of the sun. The numerous tails frequently shown in the photographs of this comet (and in others since) were, it would seem, produced by different centres of emission in the nucleus of the comet—jets or streams of matter, shot out from the different parts of the nucleus from different centres of activity. According to the general theory of a comet's tail, the action of the sun upon the nucleus of the comet produces a repellent action in the nucleus on the sun-ward side, and the particles are expelled by the comet are met by the pressure of the sun's light and driven back behind the comet to form the tail. This theory is sufficiently comprehensive to account for essentially all the visual phenomena of a comet's tail. But it does not satisfactorily account for the great number of thin diverging rays and thread-like streams shown by photography so often to be the main feature of the tail. Indeed, there are cases where a straight secondary tail or streamer makes a very large angle, 45 degrees—or more—with the main tail. It does not appear that the repulsive force of the sun alone can account for this feature. And there are other peculiarities in the tails of comets shown by photography which rather suggest that a comet has been to do with the production of its own tail than has generally been supposed to it, further than simply supplying the material for the making of the tail.

Brooks' comet of 1893 presented phenomena unique in character and not susceptible of the explanation offered for the previous comet. Indeed, the singular freaks of that comet's tail compel us to seek an explanation in some outside cause—inherent neither in the comet nor in the sun. The tail which one day was in a normal condition, was on the next broken and disturbed as if it had encountered some resisting medium in its flight through space. The disturbance seemed to come from the direction towards which the comet was moving. The succeeding morning it was badly broken and hung in cloud-like masses, some of which were entirely torn off from the tail and appeared to be drifting away in space. On another occasion the tail was concave towards the direction of motion, and had the appearance of beating against a current of resistance. It was disjointed in places, and near the end was abruptly bent at nearly a right angle, as if at that point it had encountered a stronger current of resistance. One examines these pictures there seems no escape from the conclusion that this comet's tail did actually encounter some resisting medium about the 21st of October, 1893, and for several days subsequent to that date; whether this was a swarm of meteors—such as we know exist in space near the sun, or some sort of resisting matter of which we as yet know nothing is a subject of time to settle. Photographs of Borrelly's comet on the night of July 24th showed a large section of the tail apparently completely broken off and displaced from the direction of the remaining portion of the tail; there was nothing in the appearance of this to suggest any outside disturbance. The section was straight and apparently uninjured. Other photographs made four hours earlier and three hours later showed that this section was receding from the comet and that the normal tail was growing in length. Determining the motion of the fragment from these photographs, it was shown that it must have separated from the head at 2.30 p.m., G. M. T. of July 24th. Photographs of the comet on July 23rd showed nothing of this phenomenon.

The explanation of this feature appears to be a very simple one. It would seem that, for some cause, between two and three p.m. of July 24th, there occurred a slight but sudden change in the direction of emission of matter from the comet. The first tail would then separate from the comet—as its supply of material would be cut off—and a new tail would begin in the new direction and grow to the normal length, while the section would drift out and dissipate to space. Thus would the phenomenon of July 24th be produced. The actual velocity of separation, determined from the photographs, was 29 miles a second. As the comet was approaching the sun at the rate of 22 miles a second, the real motion of the particles away from the sun was 7 miles a second. This is a rather small velocity

compared with some of those attributed to the particles composing a comet's tail.

This comet showed us that the tail actually moved out from the head as a luminous stream which remained visible for hours after its supply from the head had ceased. At the same time this section had a progressive motion laterally, which would partake of the original motion of the comet when the separation occurred. Let, therefore, this drifting stream encounter, say, a dense swarm of meteors, or some other resistance, and a disruption of its symmetry would occur—just as seems to have happened in the case of Brooks' comet of 1893. This feature of Borrelly's comet seems to have been unusually well photographed both in this country and in Europe. By a combination of measures of three photographs—the first at Nanterre, France, by F. Quénisset, the second and third at the Yerkes Observatory by the writer and Mr. R. J. Wallace, respectively, the following values of the hourly motion of separation of the tail from the head was obtained:—

Nanterre and first Yerkes Observatory plate, 10'.1. Interval 4h. 35m.

First and second Yerkes Observatory plates, 10'.7. Interval 2h. 59m.

The mean of these is 10'.4 for the hourly motion of separation. I am convinced now that the slight difference between the above two values is due to the uncertainty of the measures. The small scales of the photographs and the ill-defined condition of the comet would not permit any closer agreement if the motion were uniform.

It appears, therefore, that there is no evidence of acceleration in the motion of separation. This is contrary to what would happen if the particles had been driven away from the comet by the repellent action of the sun alone. For previous to its free existence the particle would be moving towards the sun with a velocity of 22 miles a second—as a part of the comet. After it had become independent and subject to the repulsive action of the sun, it would still approach until the repulsive force checked its speed, when for a moment it would become stationary and then begin to recede, at first slowly, and then with rapidly accelerating velocity. This would be its action if due alone to the repulsive force of the sun—or the pressure of the sun's light. Assuming the correctness of the generally accepted theory of cometary tails, the want of acceleration in the motion of the fragment is puzzling, and would rather show that the sun had little to do with its flight into space. Some exception may be taken to the explanation I have offered for the cause of the phenomenon of July 24th in reference to the sudden change of the direction of emission of the particles from the head. It is only necessary, however, to examine the series of photographs of Swift's comet—or, indeed, of almost any other comet—to see that changes vaster than this rapidly take place in the form of the tail. One day it will be made up of a dozen thread-like strands, and the next of but one broad stream. Small divergent tails will form and rapidly die away, and others spring forth in some other direction to take their place. I can see no objection to the supply of the main tail itself being suddenly stopped to break out afresh at some adjacent point, producing a phenomenon like that of July 24th. The facts still remain, however, and there seems to be no other satisfactory explanation of them.

PROF. E. E. BARNARD.

Yerkes Observatory.

PHOTOGRAPHERS IN THE UNITED KINGDOM.

FROM time to time we have published the numbers of persons following the profession of photographers in the various counties of England and Wales, as ascertained at the last Census, and we are now enabled to give the totals for England and Wales together with Scotland and Ireland, which are as follows:—

	Males.	Females.	Total.
England and Wales	11,148	3,853	15,001*
Scotland	1,187	1,082	2,269†
Ireland	449	228	677‡
Totals	12,784	5,163	17,947

* Including 264 persons of foreign birth. † Including 18 persons of foreign birth. ‡ Including 16 persons of foreign birth. Total, 298.

DR. D. H. SCOTT, F.R.S., has been elected President of the Royal Microscopical Society for the ensuing year.

THE FOURTH CHICAGO PHOTOGRAPHIC SALON.

[From the Official Catalogue.]

CONSIDERING the inconstancy of the "Salon movement" in other cities it may be inferred that four consecutive annual exhibitions establish a permanent custom in Chicago. At least it certifies that the Chicago Society of Amateur Photographers and The Art Institute regard the Salon as much more serious and important than a passing fad or divertissement. In plain fact it shows that the Society has faith in the "pictorial photographic" propaganda—faith of a much more lasting and sterling quality than anyone can appreciate who has no knowledge of the responsibilities, labour and outlay involved in the assembling of such an exhibition as that now on view in the galleries of the Institute. And the kind of faith which actuates the Society and The Art Institute must produce—is producing—praiseworthy fruits.

It will be recalled that the First Salon of this joint management, that of 1900, was a frank experiment, designed to discover what talent the Central West had in high camera craft. It was a Salon of the "Eastern cult," with only a few Chicagoans and Westerners adjudged worthy to enter the galleries. There was, true, much humiliation among our workers sincere men and women who had laboured in ardour and patience for many years to bring forth that which could command the hall-mark of "Art." The rejection of their cherished works and the hanging in their stead of utterly dissimilar pictures from the studios of the New Yorkers was a bitter disappointment to them; indeed, many thought it was a deliberate affront, a cruel snub at the hands of self-styled superiors whom chance had placed in the jury room. But thanks to the virility of the West this hasty opinion did not long endure. It was worthy only to die.

On reflection, our ambitious "camerists" were able to find, in the prints that came *hors concours* to the 1900 Salon, qualities which undoubtedly did justify their preferment over the home product. It was clear, after a little honest seeing and thinking, that the works of Mrs. Käsebier, Mr. Stieglitz, Mr. White, Mr. Dyer and Mrs. Schütze had great distinction of style and immense intellectual strength, as well as splendid artistry of technic and effect. The spirit of the West asserted itself. Incipient envy was snuffed out instantly. Generous praise of the great camera artists of the East was heard on every hand. What was best of all, serious, thoughtful, efforts were undertaken by all our home workers to emulate the excellencies of our New York fellows. Never was there more earnest, honest, fruitful self-educational work anywhere than in Chicago after the Salon of 1900.

Then came the Salons of 1901, 1902 each showing what the West could do—what had been done and learned since the Salon of 1900. By all testimony, it is competent to say, these exhibitions gave proof of growing power, and artistic grasp beyond anything which could have been anticipated. These Salons produced some truly master-workers—Willard, Lawrence, Detlefsen, James, Mrs. Gatch, Monteverde, D'Arcy Powers, Mins, Field, Clute, the lamented Bourke, the neo-Newark enthusiasts, and a score more in Chicago, San Francisco, Minneapolis, Cleveland, Akron, and elsewhere. All of them are working in the direct and unaffected manner of the prairie states to attain "those things which are more excellent" than mere "detail" or fatuous "finish." They, and all of us, are thinking with our lenses where we were wont to employ them mechanically. And there is springing up here in Chicago and the West a school of pictorial photography which is individual and distinct—no mere idle echo of New York and Philadelphia, but the strong, original note of a Western life and activity. There are no dawdlers and "button-pushers" among us now. Each in his own way, each after his own ideals, each limited by his own mental horizon—we are, one and all, striving to produce worthy works, photographs which are true children of the Muses. What is better, there is a general improvement that cannot be denied.

Now comes the Fourth Salon with a distinctively Western exhibition. Note in it the absence of superficiality and mannerism. Observe that it is frankly photographic, yet entirely subservient to the canons of art, obedient to the laws of arrangement in all branches, artistic in purpose, artistic in technic, artistic in ensemble—yet truly photographic. No sham at all anywhere; no pretence; no tinsel. We

have here a noteworthy advance toward the fulfilment of that Statute which is written:—

"In a fine art it is criminal to go beyond the means used in its exercise."

A sculpture needs no paint; a painting calls for no plastic comitants; an etching is rightly held sternly to the limiting condition of the needle point free from mezzo stipple; the mezzotint likewise scorns aid from the pure incised line and glories in the work of the wheel; and, finally, a photograph needs no concealment of its parentage—its father the lens, its mother the bromide plate, its quickening spirit the soul of the camera worker!

The Chicago Salon of 1903-4 marks a great advance in the long struggle toward the goal of the consummate art of the future; that art in which the soul of the artist is truly wedded with the genius of the chemists and opticians; that art in which the humanity to our day and generation is disclosed in all the beauty of the truth; in which human life, hopes, struggles, aspirations, failures and successes are written in that highest of all truth which is beauty!

LOUIS ALBERT LAMB.

THE R.P.S. ELECTIONS.

At the annual general meeting of the Royal Photographic Society on Tuesday last, the 9th inst., the result of the ballot for Officers, Council, and Exhibition Judges was announced as follows:—

President.

Sir William Abney, K.C.B.

Vice-Presidents.

The Right Hon. the Earl of Crawford, K.T., F.R.S.

Thomas R. Dallmeyer, F.R.A.S.

Major-General J. Waterhouse, I.S.C.

Sir Henry Trueman Wood, M.A.

Treasurer.

John Sterry.

Ordinary Members of Council.

Thomas Bedding.	Rev. F. C. Lambert, M.A.
Henry W. Bennett.	J. C. S. Mummery.
James Cadett.	Charles H. Oakden.
St. Lawrence Carson, B.A., B.Sc.	E. Sanger Shepherd.
Douglas English, B.A.	John Spiller, F.I.C., F.C.S.
Thomas E. Freshwater, F.R.M.S.	Joseph Wilson Swan, M.A., D.Sc., F.R.S.
Dr. C. F. Grindrod.	Professor William Cawthorne
A. Haddon.	Unwin, B.Sc., F.R.S.
Sir W. J. Herschel, Bart.	H. Snowden Ward.
John A. Hodges.	Benjamin Gay Wilkinson.
G. Lindsay Johnson, M.A., M.D., B.Sc., F.R.C.S.	

EXHIBITION JUDGES.

Pictorial Section.

Henry W. Bennett, F.R.P.S.	William Crooke.
P. H. Emerson, B.A., M.B. (Cantab), F.R.P.S.	J. C. S. Mummery, F.R.P.S.
	G. A. Storey, A.R.A.

Technical and Scientific Section.

Sir W. de W. Abney, K.C.B.	Chapman Jones, F.I.C., F.C.S.
Thomas Bolas, F.I.C., F.C.S.	F.R.P.S.
D. English, B.A.	E. Sanger Shepherd, F.R.P.S.
A. Haddon.	Major-Gen. J. Waterhouse, I.S.C., F.R.P.S.

Patent News.

The following applications for patents were made between January 25 and January 30, 1904:—

Int Trimmer.—No. 1,856. "Improved appliance for cutting photographic or other prints, or paper." James Davenport.
Sensitised Copying Papers.—No. 1,857. "Further improvements in the manufacture of sensitised copying papers." John Hawke.
Lenses.—No. 1,883. "Improved photographic lenses for cameras." Complete specification. Ferdinand Stark.
Cameras.—No. 1,902. "Improvements in photographic cameras." Complete specification. Maximilian Herz.
Dry-plates.—No. 1,925. "Photographic dry-plates." William Jerome Harrison.
Camera Attachment.—No. 1,977. "Process and apparatus for fitting a film-strip to a photographic camera intended for wider films." Complete specification. Maximilian Herz.
Envelopes.—No. 2,195. "Improvements in envelopes for developing photographic plates and the like." Alfred William Southey.
Printing Frame.—No. 2,219. "Improved photographic printing frame." John Batty.
Shutters.—No. 2,224. "Improvements in or applicable to photographic exposure shutters." Alfred Woods.
Apparatus.—No. 2,280. "Improved means for use in developing, fixing, washing, and drying photographic plates, or films." Alexis Olivier.
Shutters.—No. 2,363. "Apparatus for operating the shutters of photographic cameras." William Taylor.

FORTHCOMING EXHIBITIONS.

February 13-27.—Scottish National Photographic Salon. Exhibition Secretary, Alex. Mackenzie, 42, Scott Street, Perth.

February 27 to March 5.—Birmingham Photographic Society. Particulars of L. Lloyd Hollies, Church Road, Moseley, Birmingham.

February 29 to March 3.—Cripplegate Photographic Society. Hon. Secretary, George H. Depledge, 17, Hazeldene Road, Goodmayes, Adwell, Essex.

March 5. Last day for entries February 18.—South London Photographic Society. Entry forms from W. Calder Marshall, F.C.A., Glenton Road, Lee, S.E.

March 5-12.—Brehin Photographic Association. Hon. Secretary, Kirk, 1, Infirmary Street, Brehin.

March 8-9.—G.E.R. Mechanics' Institution (photographic section). Hon. Secretary, A. Woolford, 16, Grove Green Road, Leytonstone.

March 9-12.—Nottingham Camera Club. Hon. Secretary, Arthur Mack, 9, Bowers Avenue, Nottingham.

March 15-17.—Brentford Photographic Society.

March 15-19.—Arts and Crafts Exhibition (Shrewsbury).

March 22 to April 5.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.

March 25 to April 9.—Northern Photographic Exhibition. Hon. Exhibition Secretary, Chas. F. Inston, F.R.P.S., 25, South John Street, Liverpool.

April 6-13.—Croydon Camera Club. Hon. Exhibition Secretary, U. King, Hurst Bank, Selsdon Road, Sanderstead.

An Edison Memorial.—Steps are being taken to celebrate the twenty-fifth anniversary of the introduction and commercial development of the incandescent lamp by founding a Thomas A. Edison Medal, which will be entrusted to the American Society of Electrical Engineers. The Institute, through its Council, has already accepted the trusteeship of this fund, and the circular which is being issued by the Edison Medal Association announces that it is the intention that the medal shall be awarded each year to the graduating student who shall present the best thesis on some original subject from the universities and colleges of the United States and Canada which give regular courses in electrical engineering. Mr. Edison's mother was a Canadian.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Feb.	Name of Society.	Subject.
11.....	Aberdeen Photographic Assoc.	Print Competition.
12.....	Watford Photographic Union	Portraiture. Mr. Harold Baker.
12.....	West London Photo. Society..	Members' Lantern Slides.
13.....	Ashton-under-Lyne Photo. Soc.	Chess Match, "B" League, Rochdale, home.
13.....	Burton-on-Trent Photo. Soc. ...	<i>The Eye Compared with the Camera.</i> Mr. A. W. Butterfield.
15.....	Glasgow & W. of Scotland P.A.	<i>A Month in Jamaica.</i> Mr. George E. Thomson.
15.....	Southampton Camera Club.....	Lecture Competition.
15.....	Bowes Pk. and District Ph. Soc.	Lecture Competition.
15.....	South London Photo. Society	<i>Some Notes on the Chemistry of Photography.</i> Mr. W. Marshall, B.Sc., F.C.S.
15.....	Hilford and District Photo. Soc.	<i>Trimming and Mounting.</i> Mr. J. Watson.
15.....	Royal Photographic Society	Lantern Meeting.
16.....	Rotherham Photo. Society	<i>Hand Camera Photography.</i> Mr. Wallis.
16.....	Glasgow Southern Photo. Assoc.	<i>Rotograph and Rotoz Bromide Papers.</i> Demonstrated. Mr. W. A. Sims.
16.....	Birmingham Photo. Society ...	<i>Two Holidays with the Camera.</i> Mr. W. A. Clarke.
17.....	Photographic Club	<i>English Gothic Architecture.</i> Messrs. J. Mann and T. A. Coyle.
17.....	Ashton-under-Lyne Photo. Soc.	Chess Match, "B" League, Oldham, away.
17.....	Bath Y.M.C.A. Camera Club..	<i>Developing by Tim's.</i> Illustrated. Mr. W. J. Hallett, M.P.S.
18.....	Hull Photographic Society.....	<i>Elementary Ootype.</i> Mr. W. J. Williams.
18.....	Richmond Camera Club.....	<i>A Comic History of Photography.</i> Mr. Davis.
18.....	Watford Camera Club	Lantern Evening. Members.
18.....	London & Prov. Photo. Asso. ...	Annual Supper.
18.....	Liverpool Amateur Photo. Asso.	<i>The Theory and Practice of Development.</i> Demonstrated. Mr. Fred. Anyon.
18.....	Southport Photo. Society	<i>Orthochromatic v. Ordinary Plates.</i> Illustrated. Mr. T. W. Charlesworth.
18.....	Gainsboro' Camera Club	Members' Night.

CAMERA CLUB.

AN extremely well thought out and practical paper was read on the 1st inst. by Mr. Nelson K. Cherrill, with the title, "A New Departure in Control Printing," and he had come all the way from Lausanne for the purpose of addressing the Camera Club of London. The paper really resolved itself into the description of the advantages to be gained by the employment of a new kind of printing frame which has been invented by Mr. Cherrill to meet the modern need for so dealing with a negative that the best "pictorial" effects can be gained from it. He starts with the assumption that no such thing as a perfect negative exists, and that better things can be obtained from the best by judicious treatment. The new frame makes it possible to do this in the most convenient way, while it abolishes the sundry rough-and-ready expedients which have hitherto been in vogue among photographers. It presupposes that the man who wishes to obtain the best results from a given negative is in the position of him who exclaimed, "Time was made for slaves," for there is no doubt that the processes recommended must consume much of that valuable commodity.

The essence of the matter rests upon such a perfect method of registration between negative and print which is in the frame that the print can be bodily removed any number of times for examination and immediately replaced in its proper position without any risk of shifting. And this is brought about by the use of two rigid pins and a A-shaped notch. The pins were placed a few inches apart on the lower edge of the rebate of the printing frame, and the notch is on the movable inner frame to which the negative is affixed, and fits over one of the pins, while a similar notch is provided on the wooden back to which the printing paper is temporarily fastened. The inner frame is made of thin aluminium, cut like a passe-partout mount, and the negative is fastened to it temporarily by strips of Alcock's porous plaster—a material which clings to both surfaces with great tenacity, while it strips off readily without parting with any of its adhesive composition. Mr. Cherrill may be congratulated upon this discovery alone, which should be valuable for various other photographic operations.

The wooden back of the frame is in one piece, without the custo-

mary hinge, and is covered with felt, on the top of which is a piece of waterproof sheeting. On this is smeared some indiarubber solution, slightly diluted, and it is found that the back of the printing paper can be firmly attached to this adhesive surface, and can be easily removed when the printing process is complete. As an example of the perfect manner in which registration was preserved, the lecturer handed round a print from a negative upon which three tiny scratches had purposely been made. This print was the result of thirty different exposures in three different frames, but the fine scratches were quite sharp and distinct.

We will now consider some of the uses to which Mr. Cherrill proposes to put this new printing appliance, which he abundantly illustrated by specimen prints handed round for examination.

Modern lenses, he pointed out, give almost painful sharpness of definition, and where it is desired to reduce this so as to obtain a more "pictorial" effect a sheet of celluloid can be interposed between negative and paper during part of the exposure, and subsequently removed, the remainder of the exposure being conducted while the negative is in actual contact with the printing surface. Several different thicknesses of celluloid can be thus used on one print. Or a celluloid sheet bearing a grained image can be interposed—e.g., a canvas grain or a paper grain (examples of each were shown). Or if it be desired to increase diffusion in certain parts of the negative, paper shields can be employed in conjunction with the celluloid mask.

The lecturer next dealt with the control of values, and he made a distinction between what he called "fixed control" and "progressive control." The first is secured by the old method of darkening parts of the negative by backing it with paper and working upon the paper with stump and chalk, and he considered it very difficult by such means to get the exact result aimed at. In "progressive control" he uses a sheet of celluloid to interpose between negative and print, and paints upon its surface with burnt sienna water-colour the parts to be made lighter. This is inserted as a shield during part of the exposure, with the result that the painted parts are blocked out. Then the shield is removed, and printing is completed without it.

For darkening certain parts of a picture the reverse operation is necessary. In this case he employs a sheet of gelatine which has been flowed over with a stained collodion. When dry, the parts to be treated are scraped away. These parts then get a start in the printing, and of course they come out darker in the end. In certain cases lines can be etched out of the coloured surface with a needle, so as to get small accentuated shadows. It is evident that this work could not be done without a perfect system of registration. The lecturer also advocated the employment in certain cases of a positive made by photographic means on celluloid to be used in conjunction with the negative in printing—a suggestion which has often before been made and put in practice. He claims for these various methods of control printing that, although they consume some time, they do away with the necessity of that elaborate retouching which, from the professional point of view, is very costly.

In concluding his paper, Mr. Cherrill pointed out that the new frame would be found very valuable in all kinds of combination printing, that it would be welcomed by gum bichromate workers, and, lastly, that, because of its true registration, it would especially appeal to those who worked the trichromatic method of printing. He trusted that its use would help to raise photography to a higher plane of excellence than it had yet attained, by removing several of the difficulties which beset the pictorial worker.

Mr. Horsley Hinton, who occupied the chair, said that he considered that the frame offered a very ingenious and simple method of helping photographers in their printing operations, and alluded to his own method of dealing with large negatives by printing them on a drawing-board and securing registration by the use of pins. He thought that the new frame would prove very serviceable for smaller negatives. Various questions were raised by other speakers, in reply to whom Mr. Cherrill said that the printing work on the interposed sheet of celluloid was done while the negative rested on a desk furnished at its lower edge with the necessary registration pins. The frame would, he hoped, be soon obtainable commercially.

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.
FEBRUARY 4.—Mr. Anthony in the chair. The Hon. Secretary read

a letter from Mr. W. D. Welford, offering a set of lantern-slide portraits of photographic celebrities, taken at the various conventions, to the Association, an offer which was gratefully accepted. Mr. Gotz read a paper on the decimal and metric system, illustrating his remarks with models of how the metric system admits of comparison between solid and liquid weights and measurements, on remarkable exhibit being a set of weights at 1s. 3d. Mr. Haddon gave the historical method of fixing the English units, and endorsed all the lecturer's arguments in favour of the metric system. Mr. Child Bayley was opposed to any such change. Mr. Drage was also opposed to change, and thought that Britain and America were strong enough to get along with a system of their own.

CROYDON CAMERA CLUB.

FOR some little time past it has been generally felt that disturbances were in the air, and something in the nature of a spirit of division was arising between the members. The first open indication of this was shown at the annual meeting, when, as already recorded, a contested election for the presidency took place, Mr. Hector Maclean, F.R.P.S., being re-elected. This meeting was adjourned to January 27th to further consider other matters which could not be dealt with at the time, and on its resumption, to say the least, very plain speaking was indulged in, the principal target being the president himself. A resolution was also carried to the effect that no member should in future hold the office of president for more than two consecutive years.

On Wednesday, the 3rd inst., Mr. F. W. Sticks gave a capital demonstration on transparencies for enlarged negatives, and as this is to be followed by instructions as to how to make the latter, both can be conveniently dealt with later. Prior to the lecture, Mr. Maclean arose and read a written statement, in which he made a brisk counter-attack upon his opponents, and announced his intention of resigning the presidency forthwith. He also laid down certain alternative and stringent conditions which would have to be carried into effect before he would entertain any suggestion of resuming his presidential duties. Mr. Maclean then left the meeting, his place being taken by the vice-chairman, Mr. E. A. Salt, who alluded to the great services rendered to the club by Mr. Maclean, extending over a period of thirteen years. He regretted his resignation, and particularly the circumstances which had led up to it, but thought the conditions laid down were most ill-advised. He had, therefore, no option but to entirely dissociate himself from them, and finally urged all members to forget past differences and to pull together for the good of the club. Other speakers followed, and the line taken up by all clearly indicated this would be so, and an "entente cordiale" in future would reign. It also became plainly evident that the next president, whoever he may be, will have no lack of energetic and willing helpers.

The fifth annual exhibition of the Cripplelegate Photographic Society will be held at Cripplelegate Institute, Golden Lane, E.C., from February 29th to March 3rd, opening at 6 p.m. on the 29th until 10 p.m., and 1 to 10 p.m. on the other days. An attractive programme is being arranged, including practical demonstrations of enlarging by artificial light, platinotype and carbon processes, etc., and the latest novelties of the various manufacturers will be on show. By special request the closing of entries for pictures has been postponed until February 19th, and all entry forms must be in the hands of the hon. secretary, Mr. George H. Depledge, 17, Hazeldene Road, Goodmayes, Chadwell, Essex, by this date. Pictures must be sent to Cripplelegate Institute as in previous years.

A "GRAND Kodak" Exhibition will be held on February 15, 16, 17, 18, 19, at the Public Hall, Croydon. The exhibits will comprise pictorial enlargements, cinematograph and lantern displays, novel and ingenious apparatus, technical exhibits, and continuous demonstrations illustrating the simplicity of modern photography. It will be open from 10 a.m. to 10 p.m. daily, and bright and attractive lantern lectures will be delivered at 4 p.m. and 9 p.m. by Dr. Dixon. Admission will be free, and complimentary tickets and full particulars can be obtained from all local Kodak dealers, or from Kodak, Ltd., 41-43, Clerkenwell Road, E.C. The Exhibition will be opened at 7.45 on Monday evening, February 15th, by Sir F. T. Edridge.

Commercial & Legal Intelligence

ELL'S PHOTO COMPANY, LIMITED.—This company has been registered with a capital of £2,000 in £1 shares. Object, to carry on business of publishers, photographers, stationers, photographic general printers, and engravers, etc. No initial public issue. First directors (to number not less than two nor more than five) T. E. H. Bullen, chairman and managing director, and Mrs. D. Bullen. Qualification, £10. Remuneration as fixed by the company.

At the West London Police Court, on February 2nd, Arthur Copus, a baker's assistant, living at 46, Percy Road, Shepherd's Bush, was charged with being in the unlawful possession of a camera and photographic accessories. Mr. Oswald Hanson defended. Detective-Sergeant Nurse stated that the camera was advertised for sale in the "Exchange and Mart," and the accused, it was alleged, was giving the advertisement in the name of "J. Youngly," giving an address at 123, Approach Bridge, Shepherd's Bush, offered to hand a concertina in exchange. The advertiser despatched the camera, and the Detective-Sergeant, who had received certain information, kept watch, and saw the prisoner call at the address at Approach Bridge, a tobacconist's shop, and emerge with a box containing the camera. Subsequently, the officer went to the prisoner's lodgings, but could find no concertina. The Magistrate granted a warrant, offering to accept bail for his appearance.

CHARLES JOSEPH JONES, Photographer, 75, Essex Road, Islington, N.—The public examination of the above-named debtor took place at the London Bankruptcy Court on Thursday, last week, before Mr. Registrar Hope. In reply to questions put by the Official Receiver, Mr. Chapman, the debtor stated that he commenced business as a photographer at 75, Essex Road, Islington, in 1892, with a capital of £50 of his own. He carried on the business with fair success until two years ago, when, owing to his inability to attend his customers, through a long and severe illness, the business failed. His expenses had exceeded his profits for some time past, owing to his being compelled to draw heavier than usual through illness of himself and family. He was pressed by creditors about five months ago, and he then realised that his assets were insufficient to pay his debts. The petitioning creditor, Mr. Ketch, obtained judgment against him, and filed the petition in bankruptcy next witness. He offered his creditors a composition of 10s. in the £, but they refused to accept it. He alleged his failure to have been caused through loss on trading during the past two years. He should think he made a profit of £300 in 1900, but in 1901, 1902, 1903, he did not make more than about £150 per annum. His expenses exceeded that amount, as his medical expenses came to about £100, and then he had to employ a competent assistant to manage the business whilst he was ill. He should think that during the last three years he had overdrawn his profits by about £500. It would include medical expenses and extra assistance. He also made a loss through taking a house in Canonbury Park. He took the house for business purposes, but after he had taken it, he was told that he must not carry on business there. The agent to the landlord told him that he might carry on his photographic business there, but shortly afterwards the landlord died, and he was stopped. The landlord, as a matter of fact, died before he took possession of the premises. He was not now liable for the rent of those premises, as he had been relet. When he found he could not carry on business as a photographer there, he used the place for printing purposes. He was liable for two quarters' rent there, and there was no claim for dilapidations. He had disclosed all his assets, and had not concealed anything. He was not entitled to any reversion in any property of that kind. He received certain property under his father's will in 1901. In that year his father died, leaving certain leasehold and freehold property, to which he was entitled. The property was mortgaged for £500 by him, of which he retained £200. He handed £50 to his brother, and the remaining £150 went to pay law costs, and other expenses. Afterwards he handed the equity in the property to his mother. He did that because he knew that his father was carrying out his father's wishes. Questioned by Mr. Strouts,

who appeared on behalf of the petitioning creditor, debtor said he formerly used three cameras in his business. He did not hire them, as they were his own property. He only had one at the present time, the remaining two having been pledged. He pledged them about fourteen months ago, and gave the name of the pawnbroker to the Official Receiver. The value of the camera he still had was about £4. That was about the price it would fetch under the hammer. The reason he was still using it was because his wife had purchased it of the Official Receiver. His wife was also paying the rent of the premises at which he was now carrying on business. She had obtained the money from her friends. The electric light apparatus that he used in his business was obtained of Messrs. Still, of Hatton Garden. He obtained it on the hire system. The price was to be £50. He had paid £38 on account, so that there was still £12 outstanding. The examination was eventually ordered to be closed.

News and Notes.

ERRATUM.—In Messrs. The Metotype Company's advertisement which appeared in our issue of February 5th, the word "Pure" should have preceded the word "Aluminium" only.

MR. THOMAS BEDDING, F.R.P.S., Editor of *THE BRITISH JOURNAL OF PHOTOGRAPHY*, is to deliver a lecture at Staines on Thursday, February 25th, the subject being "Animated Photography in Theory and Practice."

THE ST. LOUIS EXPOSITION.—Amongst European savants who have accepted invitations to deliver addresses at the International Congress of Arts and Science at the St. Louis Exhibition are the following:—In Department 9 (Physics)—Professor Dewar, the Royal Institution, London; M. Becquerel, Member of the Institute of France. In Department 10 (Chemistry)—Professor Moissan, Paris; Professor Fittig, Strassburg; Professor Van t'Hoff, Berlin; Professor Kossel, Heidelberg; Professor Mendeleeff, Technical School, St. Petersburg.

A CORRESPONDENT writes:—I am sorry that your kindness in sending me the *JOURNAL ALMANAC* has remained so long unacknowledged, but it has been lying here waiting my return from the U.S.A., and has only just come into my hands. I am much obliged for it. It is almost big enough to satisfy Yankee requirements! By the way, I was entertained one evening in Boston by the president of the ——— Camera Club, who discoursed in a piquant manner on the Ho'land Day School. He ended by saying, "I do think that British journal of yours is a dandy paper; its remarks on the American school have pleased us here immensely!"

THE first annual dinner of the Cardiff Windsor Amateur Photographic Society was held at Barry's Hotel, Cardiff, on Thursday, February 4th, Mr. Harold Lloyd presiding, when nearly one hundred members and friends sat down to dinner. The chairman in his opening remarks spoke most favourably of this Society, which, formed in November last, has already made a name in the local photographic world. He himself was surprised at the progress made, and he made up his mind on the spot to become an amateur photographer and join the Society. Also for the sake of further encouraging the Society he intimated his desire to present to the Society a challenge cup to be competed for.

RUSKIN EXHIBITION at Manchester.—An exhibition is to be held at the Manchester City Art Gallery, opening on March 23 next and closing on May 14, of pictures and other works of art illustrating the life and work of Ruskin, including the Early Italian painters, Turner, the Pre-Raphaelite Brotherhood, and also Ruskin letters and manuscripts. The committee will be glad to hear from anyone possessing such works and willing to lend them for the exhibition. Early communication from those who are willing to help the committee in this way, addressed to the curator at the Art Gallery, is desirable. The exhibition is being organised for the committee by Mr. W. G. Collingwood.

DEATH of Lady Pullar.—Members of the Photographic Convention of the United Kingdom who were at the Perth meeting in July

last will hear with regret of the death of Lady Pullar, which occurred at Tayside on the 3rd inst., and sincerely sympathise with Sir Robert and his family. Although Lady Pullar's illness has for some months been regarded as serious, it was hoped that the constant care of those about her would enable her to rally, and continue to help her husband in the many good works in which he is engaged. It has, however, been willed otherwise, and the people of the city of Perth have lost a kind and sympathetic friend. The funeral, which was a public one, took place at Welshhill Cemetery on Saturday last, and was very largely attended. Among the flowers was a large anchor sent by the hon. general secretary (Mr. F. A. Bridge) on behalf of the members of the P.C.U.K. Lady Pullar was in her seventy-fifth year.

"As Others See Us"—Why is it that men, otherwise altogether above reproach, will, whenever they get, or think they get, a chance, take a sly dig at their American brethren? The latest offender in this direction that I have come across is in the old, reliable *BRITISH JOURNAL OF PHOTOGRAPHY*, where the editor, in telling of Denmark and the Faroe Islands having entered into the Berne Convention, so as to get and give the benefits of the Copyright Union, adds: "America has always held aloof from this (and more's the pity, say I), with the result that English works are pirated through thick and thin in the United States, as British and Continental publishers know to their cost;" and then he rather ungraciously adds: "Of course, American works can be reproduced here, but then there are comparatively few that English publishers would care to copy." And on another page, after telling of an unusually large enlargement that has been made in Germany, a copy of which will be sent to the St. Louis Exhibition, he adds, less ungraciously, of course, but looking as if it carried with it something like a sneer, "Will the Yankees be eclipsed?"—*American Amateur Photographer*.

THE Late Mr. W. L. Thomas.—In response to the desire expressed by the many friends and admirers of the late Mr. W. L. Thomas, the founder of the "Graphic" and "Daily Graphic," that some fitting monument should be raised to the memory of one who contributed so largely to the advancement and elevation of the illustrated Press, an influential committee has been formed for this purpose. It is proposed to place in the Church of St. Clement Danes, in the Strand, the vicinity of his labours for the past thirty years, a memorial in the form of a portrait in bronze relief or a marble tablet with a suitable inscription. Sir James Blyth, 33, Portland Place, W., and Mr. Luke Fildes, R.A., 11, Melbury Road, Kensington, W., are the hon. treasurer and hon. secretary respectively, and will gladly receive and acknowledge all subscriptions. The following gentlemen form the committee:—Sir William Agnew, Sir John Aird, M.P., Sir Lawrence Alma-Tadema, R.A., Lord Avebury, Major-General Baden-Powell, C.B., Mr. T. J. Barratt, Sir James Blyth, Sir Edward Clarke, K.C., Mr. Luke Fildes, R.A., Mr. W. S. Gilbert, Lord Glenesk, Mr. Augustus Helder, M.P., Mr. H. Rider Haggard, Sir William Ingram, Mr. C. E. Jermyingham, Sir Harry Johnston, Sir Edward J. Poynter, P.R.A., Mr. V. C. Prinsep, R.A., Sir Cuthbert Quilter, M.P., Mr. H. C. Richards, K.C., M.P., Admiral Sir E. H. Seymour, the Hon. W. F. D. Smith, M.P., Mr. Gordon Thomson, Sir Henry Trueman Wood, and Mr. Henry Woods, R.A.

GLASS and Glass Bottles.—At a recent meeting of the Poor-Law Dispensers' Association Mr. G. W. Lindsay, M.P.S., read a paper on "Glass and Glass Bottles." The ancient history of glass was first dealt with, from Egyptian and Roman times. Afterwards Venice, Germany, and France were pre-eminent respectively in glass manufacture. It was not until the sixteenth century that glass was manufactured in Britain. Before 1773 all the plate-glass was imported from France; but British manufactures were now superior to any other nation in Europe. Glass is formed by the fusion of silicious matter, such as powdered flint or fine sand, together with some alkali, alkaline earth, salt, or metallic oxide. Five kinds are usually recognised in commerce—(1) Bottle, or coarse green glass; (2) broad spread, or sheet window glass; (3) crown, or the best window glass; (4) plate-glass, or glass of pure soda; (5) flint glass, or glass of lead; and coloured glass may be mentioned as a sixth kind. The modus operandi of the glass or bottle blower may be shortly summed up as follows:—The melted glass, which has already been calcined in

the "fritting furnace," is transferred on iron shovels to the working furnace, where, under the action of great heat, it becomes fused and fit for being blown. A long hollow iron rod, about 5ft. in length, is taken and dipped into the pot. A sufficiency having been taken up, the workman blows into the other end of the tube, rolls it up and fro on a smooth slab, then slips it into a mould, still blowing through the rod; after which other deft operations form the neck and rim of the bottle, and it is then carried off on an iron rod to the annealing furnace, from which, when cooled down, it emerges as a perfect bottle.

ACTINIC Quality of Sky-Light.—Mr. Gavin J. Burns has recently published the results of some experiments made by him in order to determine the relative actinic qualities—not intensities—of the light received from the star-lit sky near the zenith on a clear night, moonlight, of sunlight, and of the light received from the zenith during the daytime. With ordinary, bright light-sources the usual method of procedure in determining the ratio of actinic to non-actinic rays (i.e., the actinic quality) in the total radiation is to analyse the latter in detail, spectroscopically; but in the experiments performed by Mr. Burns the total radiations were far too faint for the application of this method. He therefore divided the spectrum generally into two parts, actinic and non-actinic, and in order to obtain comparative results used layers of two liquids as screens, the first a solution of bichromate of potash, which totally absorbed the blue, violet, and ultra-violet rays; the second a solution of methyl-violet which absorbed the orange, yellow, and green. In each experiment a layer of known absorptive effect was placed between the photographic plate (Edwards's isochromatic) and the light source. The plate was then exposed to the light for a known period and developed, and then the various results were reduced to standard conditions and compared. From the results thus obtained Mr. Burns concludes that the actinic quality of the light which reaches us from the zenith sky by night, when the sun is at least 18deg. below the horizon, is greater than that of moonlight from the moon on the meridian, or sunlight when the sun has an altitude not greater than 36deg. It is also greater than the average value for the light of the blue, cloudless sky by day. On the other hand, the observations give no information as to the real relative actinic qualities of sunlight and skylight, for observations of both sources at equal altitudes must be made to determine this ratio (*British Astronomical Association "Journal,"* vol. xiv., No. 2).—Reprinted from "Nature."

RAPID Photographic Manipulation for Newspaper Illustration.—An example of how the latest apparatus for quick photographic manipulation can be used to advantage in a novel way was demonstrated last summer by a representative of the "Newark Evening News." He was commissioned, writes the "Scientific American," to be stationed on the revenue cutter Gresham, to photograph the international yacht race on August 25th, 1903, the second day of the race. He took with him a Kodak camera, a Kodak developing machine, the material necessary for developing film negatives, a number of carrier pigeons. The yachts were photographed as they crossed the starting line at 11 o'clock a.m. Immediately after taking the picture he placed the developing machine, containing the developer, upon a table on the deck of the vessel, and in broad daylight developed and fixed the roll of exposed film. This was completed in about ten minutes. The finished film negative was hurriedly dried, then rolled up in small compass, and securely wired to a carrier pigeon under the tail, where it would in no way impede its flight. The pigeon was then released, and in exactly an hour and a half arrived at its loft in Newark, N.J. The negative film was found upon it in good condition, and was at once removed forthwith to the newspaper office, where a print was made, and by 3.48 p.m. a half-tone plate was completed by the usual half-tone process, placed on the press, and a few minutes later the paper appeared containing a picture of the morning's yacht races. It was quite a novel idea to utilise the carrier pigeon for transporting photographic films for purposes of quick reproduction, and, in its way, is more positive than wireless telegraphy. We believe during the siege of Paris in 1870 letters reduced by photography down to extremely small size were transported by carrier pigeons to the outside world, and then enlarged by a lantern upon a screen large enough to read. But that was prior to the days of rapid photography or dry-plate or film machine daylight development.

Correspondence.

Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.

We do not undertake responsibility for the opinions expressed by our correspondents.

A CORRECTION.

To the Editors.

Gentlemen,—I shall feel obliged if you will kindly correct a slight error in your report of my lecture at the Camera Club upon the photography of some electrical phenomena. You speak of a single electrical discharge as occupying about 1-1,000,000 of a second. I said it was about 1-20,000 part of a second; or, in other words, about 500 times the amount your report states.—Yours faithfully,
GEO. H. RODMAN.

Green Gate House, East Sheen, S.W.
February 8th.

ORTHOCHROMATIC PHOTOGRAPHY.

To the Editors.

Gentlemen.—Messrs. Newton and Bull have opened up an entirely new subject, when they pointed to my "inconsistent statements," and this probably to divert attention from the fact that the original speed ratio of 21:480, as given in their paper to the B.S., has now been corrected to a ratio of 5:9. However, I may point out that I have taken the precaution in each of my letters to make a definite statement, but to say that the speed ratio is practically 1:1; and again, after reading the full particulars of tests and repeating my own with incandescent gaslight—tests which have nothing in common with those Mr. Newton speaks of—stated that I find the ratio to be practically 1:2. Was it "effrontery" to state that this ratio is confirmed by Messrs. Newton and Bull's corrected ratio of 5:9?

Using the not scientific expression of "practically," I expected that Newton and Bull to be sufficiently familiar with collodion emulsion as to know that to make a definite statement as to the comparative speed of such emulsion—especially if sensitised with aniline compounds—is an utter impossibility, and that a fair latitude must be given, which may permit a doubling or trebling of a ratio, never a correction of a ratio of 21:480 to that of 5:9, whatever the illuminant may be.

The latitude I speak of is permissible, as age of the emulsion and other conditions cause variations of speed.

A similar concession must be granted to the ratio of trichromatic filters adjusted for such emulsions.

Professor von Hübl has obliged me by making practical speed-tests, with special reference to this discussion, and give the ratio as 1:2 if electric light is used. He further states that if a weak silver is used, the speed of the ethyl violet sensitized emulsion is reduced.

I have also communicated with Dr. E. Albert, who expresses surprise at Messrs. Newton and Bull's speed tests, referring to unsensitized and "A" sensitized emulsion (eosine silver), which, he says, is sufficiently contradicted in Professor Dr. Vogel's Handbook of Photography, Part III., page 183, and supposes that the statements are based on some error.

Professor Dr. Valenta's letter points to a forthcoming publication early issue of the "Photographic Correspondence," which will have some bearing on this matter.

The rest of Mr. Newton's letter is of a personal character, and irrelevant to the subject.—Yours obediently,

HENRY O. KLEIN.

London, February 8th.

OLD LENSES.

To the Editors.

Gentlemen,—The excellent "Ex Cathedra" columns of a recent issue contained a note on the difficulty of securing a representative selection of photographic lenses, as inaugurated by Dr. Rohr for the R.P.S. I am in possession of a very primitive and massive landscape lens, with a peculiar circular stop, fitting in a

small projecting diaphragm tube, with a spring ring and a brass cap. The objective is not scratched or damaged, beyond the natural effect of wear and tear. The mount is slightly corroded, but altogether the lens is in excellent preservation. With your permission, I will shortly publish details of maker's name, focal length, and other particulars.

I should be happy to afford your readers an opportunity of viewing this old instrument, by arranging a tour of it to photographic, optical, and other scientific societies, whose secretaries or responsible officers will communicate with me. Other readers may obtain cabinet photographs of it from me. After the tour I shall ask the Council of the R.P.S. to do me the honour of accepting it for their collection.—Yours faithfully,
FRED. W. EDWARDS.

Swadlincote, near Burton-on-Trent.

THE BRENTFORD EXHIBITION.

To the Editors.

Gentlemen,—Might I ask you to make it known through the medium of your paper that there has been an unfortunate delay in the preparation of entry forms for the forthcoming Brentford Exhibition; but some are now ready, and can be had on application to the Exhibition Secretary, 7, Clifden Road, Brentford, Middlesex. The Exhibition will be held in the Baths Hall, Brentford, on March 15th, 16th, and 17th. There will be five classes in the open section, and the awards will take the form of specially designed plaques in silver-gilt, silver, and bronze. The judges are Messrs. R. Child Bayley, R. W. Craigie, and J. C. S. Mummery. The society undertakes to collect exhibits free of cost from the South London Exhibition, and same can also be sent on to Croydon Exhibition free. Entries close March 3rd.—Yours, etc.,

FRANK H. READ, Exhibition Secretary.

Ferndale, Clifton Road, Brentford,
February 6th.

At the next Royal Photographic Society lantern meeting, on Tuesday, February 16, at 66, Russell Square, at 8 p.m., the affiliation competition slides will be shown.

The Stereoscopic Society is entering upon its twelfth year. Since its foundation it has circulated and divided among its members from 350 to 400 slides per annum. One or two more members will be heartily welcomed. The joining fee is 1s. 6d., and an annual subscription of 2s. The secretary, Mr. B. Diveri, Huntly, N.B., will be pleased to furnish further particulars upon application.

GLASGOW Southern Photographic Association.—Messrs. Archibald Cochrane, J. W. Eadie, and Tom McEwan, R.S.W., have consented to act as the judges for the third annual open exhibition of the Association to be held in the club rooms, 1, Eglinton Lane, Glasgow, from 22nd March to 5th April. Entries close on 1st March. A copy of the prospectus, which is now ready, may be had on application to the honorary secretary, 28, Bank Street, Hillhead, Glasgow.

LONDON County Council School of Photo-Engraving and Lithography, 6, Bolt Court, Fleet Street, E.C.—A course of seven lecture demonstrations on half-tone work will be given by the Principal on every Thursday evening, from February 11th to March 24th inclusive, commencing at 8 o'clock. Syllabus.—February 11th.—Introductory. Half-tone: Its meaning and object. Various methods of obtaining typographic blocks having half-tones. The original: Its nature and treatment. February 18th.—The negative. Apparatus required, types of cameras and lenses, screens, cross-line, chess-board, grained, metzograph. Methods of holding the screen, and its adjustment. February 25th.—The negative. Principles governing exposure. Optical considerations in the formation of the half-tone dot. Finishing the negative. Respective advantages and disadvantages of wet collodion, collodion emulsion, and gelatine dry plates. March 3rd.—The printing on to metal, fishglue and dry enamel processes. Rough etching and fine etching. March 10th.—Finishing, mounting, and proving. Machinery required, choice of papers, etc. March 17th and 24th.—The application of typographic methods to colour work. Tri-colour, extra colours. Transfers for surface methods—e.g., lithography, algraphy. Admission is free to students of the school; to others, ticket for the course, 2s. 6d.; single lectures, 1s.

Answers to Correspondents.

- ** All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.**
- ** Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.**
- ** Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.**
- ** For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.**

PHOTOGRAPHS REGISTERED:—

C. A. Pinnock, 423A, High Street, Cheltenham. Photograph entitled 'Pile Fishing on the Thames.'

J. Bates, 113, North Montrose Street, Glasgow. Photograph of Band of the R.M.A.

T. G.—The address of the company is we believe, Liverpool.

M. D.—We know nothing of the person named. The only advice we can give is to sue in the County Court for the balance, as the lessons have not been given.

CHARGE FOR NEGATIVES.—A. S. MARSHALL says: "I have an order from a gentleman to take some views ($\frac{1}{2}$ -plate size), which he is going to copyright for pictorial postcards. Would you kindly inform me what is the usual charge per negative?" In reply: There is no "usual" charge for such work. Every one fixes his own price for his work, and you had better do the same. You can better assess its value than anyone else.

RETOUCHING.—"G. H. W." writes: "Kindly let me know (1) your opinion of enclosed retouching specimens; (2) what wages ought a man to get as a retoucher and operator, taking the enclosed specimens as the average work?" In reply: (1) The work is creditable; but in one or two instances there is a little alteration in the likeness. (2) If this is your average work we should say you ought to receive a salary of from two guineas to fifty shillings a week.

BLEACHED LAC.—"E. E. H." says: "Some little time ago you spoke of some bleached shellac that you found good and soluble. Can you say where I could get a small quantity, say 1lb.? I have had several lots, but stale and insoluble. My agent here has not been able to procure me the Year Book this year; he says his agent in London informs him that it will not be published till May?" In reply: There should be no difficulty in obtaining good bleached lac. Messrs. C. W. Waters and Co., 72, Great Eastern Street, E.C.1, are lac bleachers. "The British Journal Almanac" was published in December last.

PROCESS BLOCKS.—"W. C. E." says: "Enclosed please find cover of magazine with three blocks of churches. Will you kindly tell me why they are faint? The printer tells me they will not take any more ink. Are the blocks at fault, the paper or the ink? I got the blocks made for our vicar, and the firm who produced them are reckoned first-class. The vicar is not at all satisfied, and I should be glad if you would say where the fault is." In reply: We should advise you to place the blocks in the hands of another printer and see what he can do with them. We may tell you however that the paper is not well suited for printing fine blocks upon. The best results must not be expected on such paper.

PICTURE FRAME MAKING.—"INQUIRER" asks: "Would you kindly inform me if you know of any firm that makes a speciality of picture framing apparatus, such as cramps, mitre boards, etc., or if such things as these are generally obtained from an ironmonger and tool dealer; also if there is any book published on the making of picture frames? Could you furnish me with one or two addresses where picture mouldings can be obtained wholesale?" In reply: All the necessary appliances for picture frame making are supplied by good tool makers, such as Buck's in the Tottenham Court Road, Messrs. Dawbarn and Ward, Farringdon Road, issue a book on the subject. There are

many firms that supply mouldings wholesale. Consult a "Post Office Directory."

THE VERANT.—A. G. BEAUNIRNE (Chicago) writes: "I was very much interested in the reference made to the experiments of Dr. Moritz von Rohr with stereoscopic photography in the introduction to the last 'Almanac.' I hope you will permit me for troubling you about the matter, but I should be very glad to know more about Dr. von Rohr's experiments; and whether he has reached any satisfactory results, and should consider myself under great obligations to you if you could let me know whether I could get further information. I am interested in photography, and especially stereoscopic photography, as an amateur, and have read your 'Almanac' for a number of years with interest and profit?" In reply: We reprinted Dr. von Rohr's paper in this JOURNAL of January 8th, 1904.

INCANDESCENT BURNERS.—"MORE LIGHT" says: "In your issue of August 28th, 1903, page 684, re 'The Gas Mantle,' you announced a new portable lamp. Will you kindly answer as to: (1) Whether the above lamp is yet on the market, price, and whether the company have agents in or near London. (2) Whether suitable for the magic lantern, and if so the power of light as compared with a three wick oil lamp. (3) Whether the lamp invented by Mr. Birt Acres is on the market, and refer to the one in which a greater pressure of gas is obtained. If so, price, etc.?" In reply: (1) We cannot say. Why not write to the patentees, whose address is given in the article. (2) We have had no opportunity of comparing the lights. (3) We cannot say. Here again, why not inquire of the inventors direct for the desired information?

SPOILT NEGATIVES.—J. SMITH writes: "I will be most thankful you will help me in getting out of the present trouble I am in. I have had a lot of good negatives given to me to print specimens, and before I got two prints of each they all were filled with yellow spots, most of them through the film; some were on the surface—silver stains. I expect I will be responsible for them as they were good when I had them printed. If you will kindly tell me what to do to restore them I will indeed be thankful to you?" In reply: So far as we can judge by merely looking at the prints we should say that you have used damp paper in printing from the negatives and so stained them. If the stains go through the films it is doubtful if they can be removed; but that, of course, we cannot express no decided opinion upon, as we have not seen the negatives. Try soaking them in a new solution of hyposulphite of soda for some hours.

A VERDICT of suicide while temporarily insane was returned at coroner's inquest at Marylebone last week into the death of a colour printer named Beck, who died from cyanide of potassium poisoning. He had often threatened to take his life, and after reading the accounts of Mr. Whitaker Wright's death remarked that death by cyanide of potassium appeared to be easy.

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** The Editor can only be seen by appointment.

** We do not undertake to answer letters by post.

EX CATHEDRA.

The Rathenower Optical Works appear to have suffered an injustice rendered possible by the state of the German law of Trade Marks. A three lens system corrected only for colour and spherical aberration hitherto been sold by the Rathenower Company under the name of Perioplanat. This name was not registered, but the Hamburg firm, Dr. Lüttke and Amdt, has given the same name to a lens not corrected for colour, and registered notwithstanding the fact that it was previously used by the Rathenower Company. The German Patent Office has allowed the objection to this appropriation of a name used by another firm, and the appropriators have forbidden the use of the name by customers of the Rathenower Company. The hitherto users are thus compelled to find a different name for their lens, and they are now mulcted of the expense of making known the change. The Rathenower lens will henceforward be called the "Metaplanat." This is evidently a wrong forged for the unwary by the German Government.

* * *

Impressionism The gentleman who writes the "Science of Starland." Notes in the "Daily Telegraph" tells readers that a discussion is now going on in astronomical circles touching the proper use of photography

in the astronomical observatory, and he very rightly says that the primary object of practical astronomy is to leave faithful records of things as they are for the benefit of future generations. It seems, however, that the impressionist is making his presence felt even in these pictures of starland which, to be of real service, should be maps of the heavens, and nothing more. But when the writer tries to explain how the improved artistic appearance is brought about he is as nebulous as some of the orbs to which he refers. He informs us, "that by skilful arrangements of lighting and by local reduction more attractive copies of nebulae and other celestial objects can be made than by mere contact printing," and that "the query arises whether these copies are true representations of the objects depicted." We confess that we do not know what this means, for the stars and nebulae are photographed by their own light. No arrangement of their lighting could be possible, and if it were neither such an arrangement nor "local reduction" could possibly take the place of printing. Again, he says that "a simply developed negative may show more detail than the eye can see with the telescope, but a contact print made from this may show a great deal less, and, therefore, such a print is not more true than a manipulated copy." We fail once more to understand the true inwardness of this remarkable paragraph. The writer is evidently not a practical photographer, and he would do well to leave such matters to the compiler of the photographic column in the same journal. *Ne sutor ultra crepidam.* The last-named would then have an opportunity of escaping for a time from the vagaries of bromide paper, with which he endeavours so perseveringly to interest his readers.

* * *

Hints to German Exporters.

Under this title a German paper, "Photographische Industrie," publishes two letters from well-known persons in Italy and Russia "La Revue Mensuelle du Commerce et de l'Industrie Photographique," giving some account of the wants of these countries in the photographic trade. In Italy French plates appear to be the favourites, but the "Barnet" plate seems to be gaining a foothold. Most of the silver paper is of English origin, and Kodak has the larger part of the trade. Carbon tissues are supplied by the Autotype Co. and the French firm, Lamy. German cameras predominate, because they are cheap and no attention is given to quality. Developers and sundries are mostly of German origin. Although Italians correspond with more facility in French than German, this fact appears to be neglected by the former, who might by such an advantage obtain the first place in supplying Italian markets. Concerning Russia, it must be granted that Germany has most of the trade, but this does not depend upon quality of the goods.

France does a good business there, but principally through agents. French lenses enjoy much favour, for their cheapness and good quality, but not much is known of their origin either by amateurs or dealers. The only way to acquire the trade is by opening branches in the large centres, as the risks are too great, and the good firms too few. Another means is by demonstrations at the photographic societies. The Russian public is tired of German goods, the cheapness of which is more apparent than real. English and American firms have discovered this, and are taking advantage of it. Apart from Kodak, a much greater number of English and American patterns of apparatus were observable in retailers' windows than ever before. If French manufacturers are apathetic, so also are Russian dealers. They object to trouble, and are used to being called upon and tempted by offers. If these letters correctly represent the state of the photographic trade in Italy and Russia, they point the way to business for enterprising English firms. English plates, like English papers, should rule the market, and English cameras should find their way into the hands of everyone who takes a serious interest in photography. We even venture to say that the best of our English hand cameras, if pushed with intelligence in Germany, would soon make headway and find a ready sale among amateurs, who look more to usefulness than price.

* * *

Gas. The name of Sir William Abney as a member of the Committee recently appointed by the Board of Trade to consider various matters in connection with the gas-supply of the Metropolis, is a guarantee that the interests of consumers will be well looked after. One of the chief points to be considered is the advisability of lowering the candle-power, so as to save cost both to manufacturers and users. The importance of this will, perhaps, not be appreciated until it is remembered that quite eight-tenths of the gas made is employed for heating and cooking, for motive power, and for incandescent mantles. For none of these purposes is a luminous gas required, the blue flame being all that is necessary. Hundreds of thousands of pounds are, therefore, being annually expended upon enriching gas that needs no treatment of the kind. If the use of mantles were made compulsory, and the old burners were thrown away, a gas costing a few pence instead of shillings per thousand feet would answer every purpose. But it is clear that the gas-mantle, largely as it is at present employed, will never be universally adopted until it is improved. We want something much less perishable, a mantle which can stand a little knocking about without injury. It represents a very beautiful adaptation of scientific research to common uses, but it is almost as delicate as a cobweb, and a good sneeze in its near neighbourhood is quite sufficient to annihilate it. Surely it should not be impossible to make a mantle of less delicate structure, with a dash of, say, flint in its composition, so that it can be handled by the roughest of fingers. We might also suggest, while improvements are under consideration, that a mantle might be introduced of smaller volume and giving a far lower candle-power with a corresponding reduction in the gas consumption. The man who has been content with a ten or twelve candle-power gas flame for years does not want the tremendous glare of the ordinary mantle, which, we suppose, represents something like seventy candles. A lesser light, say, of twenty candles with a gas consumption of about one foot per hour would suit his modest wants and his pocket much better. Let those of inventive minds, therefore, set their wits to work to produce a little fixing of highly refractory material, with the incandescent qualities of the present mantles, but

without their extreme fragility, which can be sold for a penny apiece, and he will earn the gratitude of his fellows and make his own fortune. Possibly the gas companies might not appreciate his invention, but it would be open to them to buy it up and suppress it, at any rate, until the next clever man came forward.

* * *

Jan Szczezanik's Process of Colour Photography.

We published a short time ago an abbreviated paragraph, taken from a German photographic newspaper, in which a severe criticism of this process, from the pen of Dr. Neuhauss, was embodied. Our readers will remember the reply which the publication of the paragraph elicited from Mr. William Gamble. In the February number of the "Photographische Correspondenz" a letter appears, in which Jan Szczezanik himself characterises Dr. Neuhauss's attack as unjust. He writes that he has substituted stable for the unstable colours he previously used, and that fixed points, made with these, have been exposed to sunlight for weeks without fading. He also states that he has worked out a simple process for transparencies and constructed a camera for landscape work. As the process was worked out eight years ago and a patent granted for it in 1896, it is impossible that Lieutenant Slavik can have obtained a patent for a precisely similar process. So far as we can gather, there appear to be distinct features of novelty in the Szczezanik process. If the difficulty of fixing the colours has been overcome, there should now be some merit in it. The process differs from that of Dr. Neuhauss, because the colours are isolated, whereas in the latter they are mixed. The "Photographische Mitterlungen" draws attention to a patent taken out by Edward R. Hewitt in 1895, in the United States, which it affirms is identical with that of Lieutenant Slavik. Paper, glass, or celluloid is coated with several layers of pigmented gelatine sensitized with bichromate of potash. The light penetrates through the thinnest parts of the negative to the lowest layer, whilst the half-tones only permit of the upper layers being affected, and the densest parts absorb sufficient light to keep the films soluble, where the picture should be white. We may, however, point out that the use of a polychromatic carbon process is even much older still. It can be traced back at least to 1879, when it was recommended by Sawyer. At the time of the publication of the Sanger-Shepherd process it was also pointed out that the stained gelatine process was anticipated by Charles Cros, but the Szczezanik appears to be a bleaching process, differing from any of these.

* * *

Theatrical Scenery.

Persons quite ignorant of art matters but who have acquired from newspaper critiques and other sources the common shibboleth of art terms—there are many such youths about, mostly with long hair—have often been heard to deride scene-painting as something quite beneath serious notice by artists. It is a pity that some of these gentry were not present at the dinner given the other day to "painters for the theatre," which was presided over by Sir Lawrence Alma Tadema, who was supported by a number of R.A.s and prominent men in other professions. For they would have heard the just tribute paid to these clever knights of the brush and palette. A successful scene-painter has, in fact, to go through an apprenticeship quite as arduous as that necessary to the man who paints on smaller canvases. He must be a master of design and of drawing, of perspective and of colour, besides which he has to wear a pair of mental spectacles, so that he can gauge the effect of every dab of pigment as it would appear from the distant dress

le. It is quite a mistake to suppose that scene-painting here slap-dash work. It is, of course, on a large scale, there is often as much finish in it as there is in a very picture. Many well-known artists have passed their novitiate in the theatre painting-room, and have taken to smaller canvases later in life. David Roberts and Clarkson Stanfield are two names, which occur in this connection. It is always a matter for regret that theatrical painting should be of such an ephemeral character. The beautiful scene which has charmed our eyes is destined, at the end of the run of the play for which it was designed, to be worked over in order to bear their painting. The chairman said, the other night, that he had seen upon the stage most beautiful landscapes, architectural scenes, and flights of fancy, which, alas! he knew he would never see again. He could only hold them in his memory as he did the achievements of the actors themselves, the beauty of whose art they did so much to enhance. This was high praise from a painter of the kind of Sir Alma Tadema. But we have been asking: Need these beautiful pictures quite disappear in mortal ken? Cannot photography preserve a record of them? It is true that the ordinary reproduction of a scene at the theatre is a dire failure. The actors and actresses look like dolls, and the painted scenery has little resemblance to nature. But by aid of the three-colour process it should be possible to preserve faithful records of these beautiful pictures, which would not only be valued by the patrons of the theatre, but as accurate memoranda, to help in the reproduction of any particular play elsewhere. Now that electricity is in such common use at the theatres there should be no difficulty about effective lighting, and the production of a picture in colours under such conditions should not be a matter of great difficulty. We commend the suggestion to all whom it may concern.

* * *

Century Back. The excerpt from the "Liverpool Photographic Journal" (now the "British Journal of Photography") of 50 years ago, which we gave last week, is specially interesting, inasmuch as it contains a critique on the exhibits at the London Photographic Society's—now the Royal Photographic Society—Exhibition in 1854. It may be mentioned that, prior to the opening of this Exhibition to the public, it was visited by the late Majesty the Queen, accompanied by his Royal Highness Prince Albert, and both, before leaving, expressed extreme satisfaction at the wonderful advance that photography had recently made. Both Her Majesty and the Prince were patrons of the Society, and took a practical interest in photography at that time. It will be seen from the reprint that the show contained nearly one thousand exhibits; that is more than has been shown in any Exhibition of the Society of late years. Many of the exhibits prove that the art, at that early period when it was only fifteen years old, was not so backward as many modern writers seem to infer. For instance, some prints from steel plates etched by the bitumen process by Bisson, were shown, as were some others by the late Fox Talbot, etched with bichloride of platinum through a preparation of gum. A large calotype from a negative on iodised paper three feet six long was in the Exhibition, and was in perfect perspective. This picture was probably an enlargement from a smaller negative. The Rev. W. J. Kingsley showed some excellent photographs of microscopic objects taken by artificial light. Some photographs of the animals in the "Zoo" were shown by the Count de Montizon. These pictures, we are told, were on a much larger scale than those that have been attempted of late, and were by the collodion process, which was then comparatively in its

infancy, as it was only published in 1851. Photographs of the phenomena of polarised light on various crystals illustrating the difference produced on iodide of silver and on bromide of silver. At that time it will be seen that Burnham Beeches was receiving the attention of photographers, and their beauty was fully recognised. The foregoing notes serve to illustrate the state of photography fifty years ago, and how forward it was, although still so young, for the Daguerreotype process and the Calotype process were only published in 1839. It is noteworthy the number of persons of high degree that then took an interest in, and practised, photography at that early date. The late Queen and her Consort were patrons of the Society. Sir Charles Eastlake (then President of the Royal Academy) was the President of the Society, and Sir William Newton one of the Vice-Presidents. Amongst the exhibitors at this Exhibition we find the names as well as of Sir William Newton, the Ladies Neville, the Hon. H. Kerr, Viscount Vigier, Count de Montizon, and Sir T. M. Wilson. These were, of course, amateurs, but not of the "press the button type," as they, perforce, had to prepare everything for themselves, from the preparation of the paper, or plates, to the finishing of the print.

* * *

Post-mortem Photography. This is a gruesome subject, but it is one which the professional photographer has occasionally to busy himself with. He may be called upon at any time by the police to take the picture of some dead body which has been found under suspicious circumstances, and in many cases such photographs have been the means of leading to the identification of some poor relic of humanity. On the other hand, mistakes are not unknown, in which such a picture has been mistaken for the presentment of somebody still in the flesh, and the error has not been discovered until, like Enoch Arden, the supposed dead man has turned up again, and made things very unpleasant for everyone concerned. People who have been comfortably buried and sincerely mourned have no business to upset their relatives by such quixotic behaviour. At the Paris Morgue it has long been the custom to photograph the flotsam and jetsam of humanity which finds a last resting-place there, and the pictures, often of a repulsive nature, are exhibited outside the doors with as little compunction as that with which a professional portraitist hangs out his specimen cases. But according to M. Bertillon, the well-known French police expert, whose identification system was adopted in our own country until it was displaced by the perfected fingerprint method, these post-mortem pictures are unreliable—or, at least, they were unreliable until a better way of taking them was elaborated. M. Bertillon has apparently been recently interviewed, and a record of what he said is reproduced in one of last Saturday's evening papers under the sensational heading, "Corpses Made to Live." With such an attractive title the matter will have been widely read, possibly with the suspicion on the part of some that it concealed an advertisement of someone's pills. Our own impression of it is that either the interviewer must have totally misunderstood what the expert said, the wording has suffered under the hands of the translator, or that M. Bertillon had it in his mind to fool the newspaper scribe to the top of his bent. However, he is first made to say that an ordinary photograph of a corpse bears little resemblance to the person as he or she appeared during life. With that statement we can have no fault to find; it is a truism. But he goes on to say that he has invented a new system by which "in future, we shall be able to make a corpse to all intents and purposes live again for a few moments, and give us sufficient time to take its

photograph. We inject two or three drops of glycerine into the corpse's eyes. This results in the pupils opening. Then we rub a very little rouge on the lips, and take our photograph. In many cases relatives of the deceased who had not recognised the actual bodies at the Morgue, have by our pictures, been able to identify the dead." We have before had tall stories about various scientific achievements from Continental sources, but this last, supposing that we are wrong in our idea that M. Bertillon was chaffing his interviewer, really out Herods Herod. We may presume that the pupils of the eyes, except, perhaps, in cases of death by narcotic poisoning, would be naturally dilated by the relaxing of the muscles. But supposing they were not so, would cocaine or atropine cause them to open, as those drugs do during life? And if not, would such an inert liquid as glycerine have any effect? To a photographer, the notion of rouging the lips previous to taking a picture in order to make the result more lifelike, will be estimated at its true value. But the whole story is too absurd to merit serious consideration, and probably we shall learn in due time that the opinions attributed to M. Bertillon were either never uttered or have been so distorted in transit, that they are no longer recognisable.

ON MAKING SOLUTIONS.

II.

WHEN treating this subject a short time ago it may be remembered that we greatly objected to the use of so-called saturated solutions, such solutions being liable to be saturated in name only, owing to causes, some of which are specified. As our readers are aware, we have always been staunch upholders of the plan of exact measuring and weighing of the various substances used in photographic operations, a "pinch" of this, and a "little" of that, and so on, are fatal to certainty of results, and to that economy of time which systematic and regularly carried out measurement render easy and certain. Hence our remarks will be properly supplemented by some hints from our own and others mode of practice in this direction.

When the making of any particular solution is in hand, it is to be noted that much depends upon the qualities of the substance to be dissolved: some readily pass into solution in either hot or cold water, some slowly in cold, and more or less rapidly in boiling; some, and especially so with sodium salts, more rapidly in hot than boiling, and so forth. Much depends upon the size of the crystals; yet there is a difference even here if the ultimate degree of solubility be the same. For example, the comparatively large cubical crystals of iodide of potassium dissolve very quickly owing to the fact that each little cube is rather an aggregation of crystals than one solid whole. The question arises, if there are large crystals such as carbonate of soda, or the older type of hypo, what plan should be adopted. It is, as we said before, so very easy to dump the crystals in a bottle, fill up with water, give a shake, wait until to-morrow, and then call the mixture a "saturated solution." No, the plan is to fix on a strength, say, for sodium carbonate, of 20 per cent.—it will be found a good plan, and one that will lend itself to ready reckoning to have solutions of 5, 10, or 20 per cent. strength—and then to get the crystals dissolved at once. If the work is to be done with despatch, the large crystals of washing soda—should that be used—must be broken down. How? Well, a properly appointed dark-room ought to be provided with a mortar and pestle, though we admit this has been in our experience the exception rather than the rule, that, when we have seen them, they have too often been in what can only be termed a filthy condition—but, failing the presence of a clean mortar, the

crystals may be crushed by being packed very loosely in a piece of strong brown paper, the ends turned in, and the packet placed on the floor or a strong bench, and strongly battered with a hammer or other heavy object. They will then be ready to dissolve, and may be placed direct into the store bottle, and the required quantity of water poured on, then, if the bottle be frequently shaken the crystals may be dissolved in an hour or two! Far better is it to use a glass bottle; the solution will take place rapidly, an occasional stir being given; but this must be done in a separate vessel, not the glass store bottle, which might be instantly cracked by hot water. We will describe a very simple and efficient method we have seen for making a stock solution of carbonate and sulphate of soda, a Winchester quart only at a time. An old half-pound tobacco tin (the cylindrical shape) was pierced with a number of small holes in the bottom—made, we were told, by jabbing with a bradawl—and round this bottom was tied a double thickness of old muslin. A complete percolator was thus formed. Next an enamelled iron funnel was taken from its place against the wall and placed in the Winchester; the percolation containing the weighed quantities of contused soda crystals and sulphate of soda was placed in the funnel; boiling water was then poured on to the crystals (becoming cooled by the action) and, in about the time it has taken to write this, the crystals were all dissolved. Cold water was then added to the required bulk, the bottle well shaken and placed in its proper position. We noted one simple little expedient; the stopper, while the whole was cooling, was placed wrong way in, to prevent, we were told, it becoming tightly wedged by air pressure, as the contents contracted as they cooled. The percolator was well rinsed out, and hung up ready for use for the same or any other crystal solution. When larger quantities are to be dissolved, as, for example, in the case of hypo, this plan would not be so useful. We have seen a piece of cane bent into a circle, canvas slackly secured to it, and the whole hung inside the top of a huge jar, the hypo crystals being placed inside the canvas receptacle, and hot water poured on. When hypo solution is needed for immediate use, hot water should be used, as, in the act of dissolution, a large amount of heat is absorbed and the solution would be ice cold, even in summer time. Large users have all their own plans; we will merely mention one. The containing vat had two strong bars run into the sides about eighteen inches from the top. On these bars is placed a cwt. cask of hypo, bored through the bottom with a number of apertures made by a centre-bit, rough canvas being nailed over them. Upon the admission of water into the vat till it reached some little distance above the bottom of the cask, solution took place without attention being required, the only precaution necessary being to see that the whole was well stirred up to equalise the density, when the cask, emptied of its contents, the solution, was removed. Referring now to particular crystals, we may instance alum, which is very soluble in hot water, and only to the extent of about ten per cent. in cold. Bichloride of mercury is much more soluble in hot than cold, and the same with bichromate of potassium. These three chemicals can be bought at little or no increase of cost, ready powdered, and it is much better to obtain them so. A caution may be given about the heavy form of pyro; it is apt to go "lumpy" in parts, in which case solution of the lump is not very rapid; before placing the water these aggregations should be crushed, or there will be a tendency for them to remain at the bottom of the bottle unnoticed, and the solution then to be uneven in strength. Finally, we refer again to hypo, which can now be obtained in "pea" crystals, or very fine granulated crystals, either of which readily dissolve. We have not found it necessary to make a complete list of all the substances

ly to be used, but we have, we trust, given sufficient information to be really useful in practice and to throw the discredit upon the system or want of system of saturated solutions."

ON THINGS IN GENERAL.

Two letters respectively from Mr. W. H. Eady and Mr. G. Sims upon the subject so important to photographers—insurance—are very instructive, and fairly represent two sides of the question. In dealing with an insurance company one is met—in a modified degree, it is true, seeing that they are more subject to competition—with the same trouble that way companies provide for us when a claim for damages is made—the innocent have to suffer for the guilty. The various companies are so accustomed to fraudulent claims that they are very apt to look upon all as coming under the same category, and to look upon them with a little more than mere business carefulness. Few would conceive the extent to which the insurance companies are victimised or attempted to be, unless they have been behind the scenes a little. The consequence is any claim must rise very early to get the better of an insurance company. I know of a case when suspicion was aroused through books, invoices, and evidence generally of a photographic photographer, whose premises and stock had been burnt, being in perfect order, and who showed the invoice of a valuable article alleged to be consumed by the fire, leaving not a trace behind. In plain language, it was believed that knavery was at work, and the assessors actually had every particle of debris on the roof to basement passed through riddles, with the result that not a trace of glass or brass could be found. The claim, of course, resisted. With regard to the assessor's work, I cannot but believe that they work in the interest of the insurance companies. They are independent professional men; still, their income comes from the insurance companies. As an example of how they will act, I can quote an instance, the truth of which I can guarantee. There had been a small fire, and several garments were burnt, among them being one fresh from a tailor's that had not been taken out of the wrapping-paper. The assessor gravely asserted that the whole value, i.e., the retail price, could not be claimed for. It is not generally understood that in case of photographic policies the premium charged is often much less if the negatives are not included, and that is an argument in favour of a separate printing establishment.

Noticed in these columns a few weeks ago an extract from a post-card paper, under the head of "Post-card Stories." I give a better one. In a little monthly publication devoted to the interests of a bromide paper manufacturing company is an account of the mode of working and the daily output of a photographer in the country. Here is his account. He goes to work at six in the morning and goes on till noon. He prints his post-cards by daylight, one by one, in a printing press. He places a card in his frame (the negative being held for white margin), adjusts it truly, exposes, takes the print, drops it into the developer, fills in, exposes, and takes the second card; takes the first out of the developer, drops it into the hypo solution, and then puts No. 2 in the developer, etc., etc., No. 3, places No. 1 in water, out of the hypo, and so goes on in this sequence till noon. He has a boy to help him, but he is engaged in polishing the enamelled sheets being the cards on them as fast as they are ready. How many cards do my readers suppose are got through in these six hours working this way? We are told 300 is an

average, though, at a pinch, 500 or 600 have been done! Is there any reader with a spare glass-case to put this worker in? He is too good to live.

We have heard a great deal lately about residues; but though I hold no brief for the assayers I feel bound to say something for them. In the first place, as hypo residues were first in question, I have to say that either the collector of residues must have been exceedingly careless, and permitted a deal of rubbish to get mixed with his sulphide, or he sent it to a reducer who was a knave. There is no *media via*. I am fortunate in being able to quote from an assay report now before me of a well-known London refiner to whom was sent a small trial parcel of sulphide, collected after precipitation with liver of sulphur in the usual way. It is as follows:—Weight before melting, 11 oz. 80 grs.; after melting, 6 oz. 85 grs.; so that from this little parcel of sulphide more than half its weight in solid silver was recovered and paid for.

Here is the result of another batch containing mixed chlorides, sulphides, ashes of waste, untuned prints, and paper cuttings:—Weight, 21 lb. 4 oz.; product, 32 oz. 10 dwts.; price given for this 32 oz. of silver, 3s. 5d. per oz. This is a high price, but is accounted for by the fact that the sulphide was mainly from gold-toned prints. Otherwise the market price of silver would have governed the price, which would have been about 2s. or 2s. 3d. an ounce. These two assay reports I know to be genuine, and just as they arrived from the maker. After this, can any careful worker say it is not worth while saving sulphides. One point is worthy of note, and that is the relatively small amount of silver in proportion to the whole bulk of the latter parcel, and which adds to the cost of reducing—it only amounts to 12 or 13 per cent., and is probably attributable to the baryta of the P.O.P. or collo. paper used.

The extracts from the old pages of the Liverpool Photographic Journal are very interesting reading. One name strikes a chord of memory strongly. I am no longer in my teens myself, and my earliest recollections of photography are connected with the name of J. A. Forrest. Here in these "Fifty Years Ago" memories we read of Mr. J. A. Forrest being engaged with Mr. Edwards in photographing the moon, yet Mr. Forrest is still among us, and, last time I saw him, still a photographic enthusiast. Surely he must be the doyen of photographic amateurs. Yet, stay, in the very same set of memories we have a noted name which sheds lustre on this JOURNAL through its owner having occupied the editorial chair—Mr. (now Sir) W. Crookes. Still, I think Mr. Forrest could give him points in a mere matter of actual years.

Another subject of vast interest that is again brought under discussion is the metric system. Mr. Gotz, in his paper, "The Decimal and Metric Systems," gave an excellent resumé of the subject, and the arguments in favour of the adoption of the system, though I think his paper savours of the special pleader. Why, for instance, to show the cumbrousness of Roman numerals (now really a curiosity, and only used for very archaic or exceptional purposes) should he for 1849 write MDCCCXXXVIII? Why not for the last five figures put IX? Then, again, referring to the upholders of our British system, he says: "They are, in fact, missing the point entirely, for it is not a question of computing a perfect system of counting, but of bringing existing systems into harmony. This is begging the question. The question really is three-fold—to discover the best system for the daily use of the many; to

decide whether a practically perfect system for universal employment is found in the metric system; to decide whether these two considerations are to be entirely ignored, and whether it will not be to our best commercial interests to adopt the simple method now made use of by the majority of our customers abroad. The clumsiness of the metric system for general use—domestic use, if I may so put it—is proved by the fact that in everyday life the majority of the metric designations are entirely ignored, and, as I have before pointed out, a Frenchman would not ask for two hectogrammes and five decagrammes, nor even 250 grammes, of tobacco—he would say a quarter kilo. An Englishman, taking the same proportion of our unit—a pound—would say either a quarter pound or four ounces; if half this specified quantity were wished for we in England would want two ounces, against a metric man's hundred and twenty-five grammes, put at its shortest, and so on. The British system of weights and measures is complicated, but such of them as are used in everyday life lend themselves to ready calculation, and subdivided far more readily than does the metric system. But, as Artemus Ward's cabman said to him: "There's a deal to be said on both sides."

FREE LANCE.

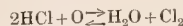
PHOTO-RETROGRESSION, OR THE DISAPPEARANCE OF THE LATENT PHOTOGRAPHIC IMAGE.

[Read before the Fifth International Congress for Applied Chemistry in Berlin.]

ONE of the many practical advantages of the gelatine dry-plate over the older processes consists in the fact that development of the plate can be postponed to any convenient time after the exposure. Examples have been recorded where negatives were successfully developed a number of years after the plate had been exposed in the camera. On the other hand, the question has often been raised in how far results obtained thus are inferior to those which are produced on plates developed immediately after the exposure. Direct facts have been given indicating a gradual disappearance of the invisible photographic image. The study of this question requires more accurate methods than those ordinarily resorted to by the average photographer, and this may account for the reason why this question has brought out some quite contrary statements. The gradual disappearance of the latent photographic image seems to be a process exactly the reverse of the one which produces this image under the action of light. I would propose to designate this phenomenon under the name of photo-retrogression.

Very probably we have to deal here with what is called in chemistry a reversible reaction, similar to those occurring in all phenomena of dissociation and double decomposition, where, under the action of opposing energies which try to produce two different systems, a condition of equilibrium is reached. That such a condition of equilibrium may exist has been shown conclusively by the study of photo-decomposition of pure chloride of silver in sealed glass tubes, but an almost virgin field of study and research is still open for the physico-chemist who desires to determine the limits and factors of photo-dissociation of various chemical compounds. Such study should not be limited to silver salts, of which the susceptibility to the action of light is well known. Much more staple inorganic compounds may undergo profound changes, as I have been able to show when studying the photo-oxidation of hydrochloric acid.* This reaction is so much the more remarkable because by same hydrochloric acid in presence of oxygen oxidises under the influence of sunlight, whereas we know also that chlorine in watery solution evolves oxygen and forms hydrochloric acid. We are here in presence of a reversible reaction produced under

the influence of light and analogous to what occurs in photo-retrogression:—



I shall not try to decide here what chemical reaction occurs in the production of the latent silver image nor of its photo-retrogression. I consider any decisive opinion on this subject as idle talk as long as we cannot dispose of more thorough and complete laboratory investigations than the meagre work which has been published on this subject.

Without going into further general theoretical speculation we may state that photo-retrogression was known to exist long before the dry-plate was invented. In the daguerreotype process the image can only be retained in proper developable state during a few hours. For the wet collodion process a similar fact is known, although it might be ascribed here to the physical condition of the sensitive layer, which requires a certain degree of moisture. Photo-retrogression in gelatine dry-plates can be observed in such cases where the time of exposure has been limited to the very minimum, as, for instance, in undeveloped negatives. Even then it may be difficult to observe same unless under some particular conditions. In all cases where more than enough exposure has been given, photo-retrogression becomes much less apparent, and this is, perhaps, the reason why so many contradictory statements have been made on this subject. I have studied photo-retrogression on dry-plate films, bromide papers, and chloride papers. For all my experiments I take a standard negative purposely selected so as to show delicate graduation with no high lights and no transparent parts. I also use a sensitometer scale, similar to what is used for ordinary sensitometer tests, and consisting mainly of a glass plate divided into numbered squares made up of different thicknesses of opaque pigment. As a source of light I use a normal candle, the same quality of candle being used in all my experiments. In order to minimise the errors of observation, the experiments have always been repeated at least four times. My way of proceeding consists in placing the strip of dry-plate, film, or paper in direct contact with the negative or sensitometer scale, and then expose same during a given time at a constant distance from the candle-light. All ordinary precautions are taken so that the experiment should not take place when the flame of the candle burns under normal conditions. In each series of experiments some of the dry-plates, films, or papers are developed immediately, the development being carried as far as possible, i.e., until the image does not gain any further strength. The results thus obtained are numbered and stored away for future comparison. An equal number of the dry-plates, films, or papers exposed under the same conditions are stored away in the dark undeveloped but are treated with the same developer afterwards at specified intervals. Proper precautions are taken while storing tests so as to exclude the possibility of outside influences on any of the light sensitive material. When developing any of these tests a developer of strictly the same composition and same temperature is taken, and development is carried on under exactly the same conditions, but in each case development is carried on as long as the image gains in strength or disappears regardless of beginning "fog." In each case I selected a developer which experience had indicated to be best adapted for each sensitive material. Some of the experiments were repeated using different developers, but in each case the results were only compared with those obtained by identical developers. I have observed, however, that whenever photo-retrogression was apparent same would be shown by each one of the developers, so that the nature of the developers seems to play no rôle in this phenomenon. In the first experiments thus conducted I came soon to the conclusion that certain varieties of films and bromide papers, also some chloride papers, show photo-retrogression to a considerable extent, even after relatively

* Backeland Bull. Acad., Royale de Bel. 1886, IX., No. 3.

port intervals, while other varieties, and especially dry-plates, do not show it so much. This is mainly due to some chemical differences in the emulsion, as will be explained further. In some varieties of bromide paper and films photo-retrogression is quite apparent even after so short a time as forty-eight hours. The image developed after this time was invariably weaker than the one obtained directly after exposure. At the end of a few days the results became much more decisive, and after two months, in some cases, only a faint image was all that the developers could bring out. Let me repeat here and insist on what I have stated before, that these results become apparent only in such cases where exposure has been insufficient, and where, consequently, the prints have been underdeveloped. In such cases only development can be carried on to full limits, and after all the silver salts, which have undergone the action of light, have been reduced, the image will not gain any further strength, even if the developer is left in contact for a considerable time. The only effect which such prolonged development may then produce is a general grey "fog" which covers the whole image without strengthening same or changing the relative density of the different parts of the first developed image. In full-timed prints—and by these we designate such ones as have practically received a slight excess exposure—this condition of affairs does not exist; by developing same we reach a phase where development has stopped, not on account of fear of "fog," but because the shadows and half-tones will acquire too great a density, which would prove objectionable in a negative, and which, in our experiments, renders it impossible to distinguish slight differences in the results. All experienced photographers will rather err too much than too little exposure to their negatives. This practice is very commendable in view of the fact that thereby the effect of photo-retrogression is avoided. However, there are many cases where full-timed exposures are not possible—example, in instantaneous work, and there photo-retrogression may have serious drawbacks. It may become more objectionable still in some methods of automatic printing and developing which are carried out nowadays on a large scale in some industrial establishments. As the amount of material involved in one of these operations may represent thousands of dollars at a time, it is quite natural that in such cases photo-retrogression deserves special attention.

A few years ago, when automatic printing and development, "photography by the mile," was first carried on in New York, it was brought to my notice that a large roll of bromide paper, about 500 metres long and 65 cm. wide, which had been developed automatically by artificial light, could not be developed to the proper strength, although the test strip, which had been developed under identical conditions, but developed immediately afterwards, had given excellent results one week before. The working device of the automatic printer, the steady quality of the print, the uniformity of sensitiveness over the full length of the paper, and the conditions of the developer, were all critically examined. At that time I had just started my investigation of the photo-retrogression, and I was able to trace to this phenomenon the difference in results. That this was really the case of all the trouble was proven beyond doubt by some direct experiments which were made afterwards. Mr. A. E. Munstone, of New York, reported to me similar cases which had been observed lately during the development of strips of negative and positive films, same as are used nowadays for animated photographic exhibitions. For instance, a large roll of films exposed in Europe, and of which a test strip had been developed there so as to make sure that the exposure was correct, was shipped to New York for further development. On arrival there it was found that the pictures developed too weak, so as to make the results unsatisfactory. The same developer was used as in Europe, and great stress was put on the quality of the chemicals, but without avail. Finally, the undeveloped

portion of the film was reshipped to Europe to the party who had developed the trial strip, but he could not obtain any better results. Another case was cited to me of an undeveloped film which was sent to New York from the Philippine Islands. This film had also been exposed in an apparatus for animated photographs, and by a very competent operator, who tested a portion of the strip for exposure and development. On arrival in New York the image could not be developed; and showed all signs of photo-retrogression. In this particular instance the film had been submitted for a relatively long time to a humid and warm climate, which includes conditions which are most favourable for producing photo-retrogression, as we will see further.

I have tried by direct experiment to determine what factors have an influence on photo-retrogression:—

Temperature.—Dry-plates, films, bromide paper, and chloride paper were exposed as indicated above. A certain number of the tests were developed immediately; a same number of them were enclosed in a bottle provided with a glass stopper and kept in a refrigerator at a temperature ranging from one degree C. to four degrees C. An equal number of tests were kept during one week in a stoppered glass bottle in a box, of which the temperature was kept at 40 degrees C. to 48 degrees C. At the end of three days photo-retrogression was very apparent, for the tests kept at a high temperature, whereas it was not noticeable even after two weeks for the tests which had been stored in the refrigerator.

Humidity.—Same tests as above were repeated. Some were placed in a large earthenware jar provided with a tight cover. In the centre of the bottom of the jar was placed a large cylindric glass containing sulphuric acid 66 degrees B., so as to keep a very dry atmosphere. Other tests were placed in a similar jar, but the glass of same, instead of sulphuric acid, contained cotton soaked with distilled water, so as to saturate with humidity the air of the jar. The two jars were left in a room of which the temperature oscillated between 18 degrees C. and 27 degrees C. At the end of two weeks the tests of both jars were developed. All showed photo-retrogression, but the tests in the humid jar showed same much more than the ones contained in the dry atmosphere.

Chrome Alum.—In all above experiments I had the opportunity to observe that some dry-plates which I used showed less photo-retrogression than some films, bromide papers, and chloride papers. Then, again, films and bromide and chloride papers of different makes showed results quite different with each brand. I soon found out that those papers which were most subject to photo-retrogression had either a slight acid reaction or contained noticeable amounts of chrome salts. In order to determine in how far the presence of chrome salts has an influence on this phenomenon, I made a bromide emulsion, and, after dividing same in two portions, I added to one of these about one per cent. chrome alum of the amount of gelatine used in the emulsion. The other portion received no addition, and both emulsions were used to coat some test plates and papers. The tests were dried under the same conditions, and afterwards exposed and developed at long intervals. Photo-retrogression was much more apparent with the tests containing chrome alum than with those without this salt.

Acidity.—In the previous experiment I noticed that the test which contained chrome alum showed a slight acid reaction on litmus paper. In order to determine whether acidity or chrome alum has the greater influence on photo-retrogression, I repeated the experiment in the following way:—To the whole of the emulsion I added the same amount of chrome alum. Then I divided the liquid into two portions. One of the portions was used to coat test plates just as it was; the other received an addition of some drops of diluted ammonia, just enough to produce a very slight alkaline reaction. An initial test showed little or no difference in the sensitiveness

of both emulsions, but after a few weeks photo-retrogression was less apparent in the tests which were coated with the slightly alkaline reaction. I next compared a neutral emulsion containing chrome alum with the same emulsion containing no chrome alum, but enough citric acid so as to give it a distinct acid reaction. The acid emulsion without chrome alum produced more photo-retrogression than the neutral emulsion with chrome alum. In all these experiments the tests were carried on in the same way and kept under the same conditions for each set of experiments, but in certain cases development of all the tests of each set had to be postponed for a more or less longer period until such time was reached, when the difference in the results was sufficiently apparent to enable me to draw conclusions. These experiments explain why certain brands of dry-plates, films, or papers show more photo-retrogression than others. This phenomenon must undoubtedly be attributed to chemical action, and the chemical conditions of the different emulsions determine the speed and intensity with which it occurs. It is a known fact that emulsions which are intended for films or paper receive almost always an abundant addition of chrome alum, so as to render the gelatine coating less soluble, and to produce at the same time a more viscous liquid which is better adapted for certain coating machines. Dry-plates, on the other hand, require no such addition of chrome alum. Furthermore, if emulsions are made by the "boiling" process where the "ripening" is obtained by a prolonged application of heat, their final reaction will be neutral or very slightly acid, and the smallest amount of chrome alum may give them a distinct acid reaction. Emulsion "ripened" with the ammonial process will almost always be slightly alkaline, even after long washing, and the addition of a small amount chrome alum will not necessarily give them an acid reaction. I should mention here that emulsions made with the ammonia process, but separated by a centrifugal machine, may produce, after reincorporation of the silver bromide with fresh gelatine, a neutral or slightly acid reaction, which may become more apparent after the addition of chrome alum. Let me also call attention to the fact that these slightly acid or neutral emulsions give generally papers or dry-plates which have better keeping qualities and which are less liable to become "foggy" with age. It so happens that such emulsions are also those which are most liable to show photo-retrogression. In above statements, whenever I referred to chloride papers, I meant papers of the "velox class," coated with such emulsion which contain chloride of silver in the gelatine, but without any excess of nitrate of silver or any other soluble silver salt, and which are intended to produce images by alkaline development, and not by printing-out methods.

The facts mentioned here add new strength to the supposition that the latent photographic image is due to a chemical and not to physical condition. Many hypotheses, none of which has been sufficiently demonstrated, have been proposed to explain this subtle chemical reaction. Whether we try to explain the latent photographic image by the formation of free silver, sub-bromide and sub-chloride of silver, or, again, by the existence of oxy-sub-bromides or oxy-sub-chlorides, above-mentioned facts point out that photo-retrogression occurs by chemical action. This action is probably the reverse of what occurs in the formation of the latent image. Whether in this phenomenon oxygen directly or indirectly plays a rôle we cannot say yet, and further work in this direction may give us a better insight in this matter; but I would call your attention to the fact that a neutral or alkaline light sensitive layer would be in better condition for absorbing free bromide or chlorine or oxygenated derivatives of same than if same had an acid reaction. As far as regards the influence of heat and moisture, same is sufficiently accepted as being of great importance in all chemical reactions; in this particular case we are not astonished to see

again these two factors as being of very marked influence in photo-retrogression.

Conclusions.—Photo-retrogression, or slow disappearance of the latent photographic image, takes place in glass plates, films, and paper, coated with gelatine silver bromide or gelatine silver chloride. Photo-retrogression is especially apparent in under-timed images, and much less noticeable in over-timed images. Photo-retrogression may, under special conditions, become apparent in dry-plates, films, or paper forty-eight hours after exposure, and may increase until the latent image has nearly disappeared. Photo-retrogression occurs quicker at high than at low temperatures. Photo-retrogression occurs quicker in a humid than in a dry atmosphere. Photo-retrogression is less apparent in neutral or slightly alkaline sensitive layers than in such ones which have an acid reaction..

DR. LEO BAEKELAND.

"LAISSEZ FAIRE."

[A Paper read before the Professional Photographers' Association.]

WHEN our president requested a paper for this evening's discussion it occurred to me that the subject most à propos at this dreary time of the year—the topic most likely to be of general interest—would include "Causes of Business Depression."

Probably, only very carefully managed studios have passed the test of recent annual audits at all brilliantly, and the outlook in these days of fresh war disturbance and changing trade conditions does not appear particularly rosy for the general body of photographers. Of course nothing is simpler than to ascribe bad times in the studio to bad business all round, or to suggest that the swing of the commercial pendulum will once again bring round golden years to our special calling.

But many things point to an unsettled condition in photographic business—which is likely to become more marked in the future—and the question arises whether this is due to any causes over which the P.P.A. may exercise beneficent control. It is generally admitted that, while the average quality of professional portraiture is higher to-day than it ever has been, the difficulty of securing sufficiently large "turnovers," to make it pay, is greater now than in bygone years. Photographers of the "good old days" lament the introduction of dry plates, and ascribe lessened prosperity to the enormous increase of photographic establishments which followed the simplification of technical operations.

Others believe the widespread practice of giving invitation sitting has produced a slump in photographic interest, from which a speedy recovery can hardly be expected; while again anathemas are lavished upon post-card publishers by those who think they see in this craze a break up of remunerative publishing work.

But, important as these factors may seem in considering causes of photographic depression, there are others which have encountered far too little opposition relative to the mischief they create. I allude to the cheap "newspaper" enlargement, the "free" portrait, the meat or soap, or tobacco advertising schemes.

Within recent years a thoroughly mean and attenuating system of despoiling photographers of their business has grown up by which men of no artistic ability (but skilful in assimilating to themselves the fruits of other men's labours) have caused injury to the regular established photographer.

One may rarely pick up a newspaper without alighting upon meagre and audacious announcements, intended to gull the public into the belief that it will get something photographic "free," or making the impudent and offensive insinuation that the "life-sized" enlarged portrait that the advertisers sell for five or six shillings is similar to the "two guinea" work of the professional photographer. Moreover, the use of such adjectives as "magnificent," "artistic," "beautifully finished," and the assertion that these qualities are found for so small an amount must eventually produce the impression that a photographic enlargement is a synonym for cheapness and vulgar pretension. It is seldom of use appealing to newspaper proprietors, for some of the worst advertisements are actually put forth as photographic enterprise, in which they are themselves directly interested.

Shall we then remain content with an attitude of *laissez-faire*? Are we to allow this wholesale depredation to go on unchecked, to

ote our portraiture being vulgarised in enlargement, and often framed in execrable taste without attempting to limit the operations of these people, who not only use our work, but deliberately try to misrepresent us in the eyes of the public? Many of us are accustomed to hear clients (who can well afford artistic work) apologising for possessing these wretched things on the score that "they cost so little." While this may be true enough, will anyone suppose that these crude enlargements can hang in thousands all over the country without degrading the popular taste and interest in bromide, or indeed any productions on a large scale.

Photographers who imagine they suffer little or no curtailment of business on this account forget that the profitable use of their own negatives must be minimised, otherwise the expensive and persistent advertising could not be made to pay.

I suggest that this diversion—this unfair diversion—of business is a source of weakness to us, and also seriously threatens the prosperity of that large number of artists who are dependent for commissions or daily employment upon the regular photographic establishment.

It is often easier to diagnose a malady than to provide a remedy, but those gentlemen who have considerable capital and interest at stake in portrait studios throughout the country can be sufficiently impressed with the necessity of keeping photographic business to photographers where they may be found ways of dealing with this trouble needing no heroic measures.

The action we may take cannot gain anything by appeals to public sympathy, but should rest upon the commonsense basis of giving the best value for money. It is the only argument that eventually wins, and is the only one we need expect the public to consider in the present hunt for bargains.

But is anything easier to demonstrate than this—that if a man will only spend five shillings on an enlargement he will get better value from the photographer who took the negative than from a man who tries to reproduce a paper print, with its attendant coarseness, and lack of detail. I think this might be made the keynote of our opposition, and to drive it home every professional might possess an example (made from a paper print by one of the newspaper firms) and use it for purposes of comparison with his own work. Photographers will know well enough how to make this comparison effective in using their own negatives.

An ounce of practice is worth a ton of theory, and I can assure our members that this simple plan will bring many guineas to them which they might otherwise miss. The exhibition of "an awful example" does more to clinch an order for a well finished portrait than any amount of persuasive talk. Within the past few months I have had opportunities of examining a great many of these so-called "crayon" enlargements; the draughtsmanship is thoroughly childlike, and the delicacy with which the powder is rubbed into the enlargement renders one forcibly of the genius of the pavement.

The public are amiably reminded that "the better the photograph the better the enlargement will be"; also that "the crayon and Indian ink used in the production of the portraits cannot fade," the latter statement being as correct as the former; any hope of the likeness improving by keeping is quite destroyed.

It is not often a newspaper has the courage to exhibit the photographic article it advertises, but this week, in Hull, there are to be seen in the office windows of a much circulated local print, some very fine specimens, labelled, as usual, "Two guinea portraits for 6d." One of these specimens has been purchased, and is in the hands of your inspection. This public exhibition seems, at all events, more honourable proceeding, and, from the professional photographers' standpoint, a few hundred objects of this sort shown about the country would be most gratifying. Unfortunately, the absurdity of expecting a two guinea portrait for 6s. 6d. is not always made plain by such striking proof, the victim generally parts with his money without the awakening. Therefore, we must either discredit this advertisement, or, by doing nothing, risk the public accepting the elements as truth. So far, I fear the policy of photographers has been summed up in the words, *laissez-faire*. Is the old habit to come a motto of our profession, in this, as in other business evils? We have heard photographers suggest that the P.P.A. might become the centre from which information should be disseminated for the caution and guidance of its members, as these schemes crop up.

With regard to "free" enlargements, short articles, describing the manner in which these things are worked, might be printed by our

association and circulated by the members with their ordinary business "literature." And there can be no insuperable difficulty in communicating to the weekly Press notes on this matter, after the style of the "Truth" exposures. When "free" enlargements are advertised to assist the sale of some trade article, such as soap or meat extract, the example of the P.P.A. resistance to the Liebig Company in Hull may be worthy of imitation.

Readers of the BRITISH JOURNAL OF PHOTOGRAPHY know how that short campaign produced a vigorous protest against the "Oxo" advertisements on the part of the Hull Grocers' Association, and ended in the rapid disappearance of photographic enlargements from the Hull grocers' windows. It is true the Liebig Company still advertise, "Insist on having a 'free' photo enlargement coupon with every bottle you buy," but the number of housekeepers who will consume eighty bottles of "Oxo" and trouble themselves to save the coupons need not be a source of worry to us. If there is a moral deducible from this experience it is that a thing worth fighting for at all requires prompt action and professional unity, and then difficulties like this lose their importance.

In conclusion, may I suggest to my confrères the possibility of ultimate good accruing to us if the present quietness of business and external competition for photographic works brings about a more interested attitude and desire for co-operation. While there may be photographers in every town who in bad times try to fill up their leisure in devising price-cutting methods of business that lead to self-extinction our association may find it the psychological moment for attracting to itself the best services of its members and extending the sphere of its usefulness.

T. C. TURNER.

WHY NOT ILLUSTRATE BOOKS WITH STEREOSCOPIC VIEWS?

[From The Publisher's Circular.]

SIR,—I am neither publisher nor bookseller, but as one generally interested in literature it appears to me that book illustrations might be made much more interesting and explanatory if the stereoscopic principle were adopted. The fact that this requires two pictures side by side would not increase the cost of the process block, as the surface would be no larger superficially than a whole page illustration. Of course, this principle would not be available where the author only supplied wash or outline drawings to the block maker; but where photographs of solid objects, scenery, figure groups, architectural work, etc., have to be copied it would only be necessary to take two views with a binocular hand camera, or with an ordinary camera by the well-known plan recommended by Prof. Flinders Petrie in his last work on archaeology. Nowadays nearly every one is provided with a hand stereoscope, but even if such were not the case it would be very easy for the binder to make a receptacle in the cover of the book to hold a thin piece of wood on which the necessary lenses could be mounted. The whole of this would involve but a very trifling cost; indeed, the opticians would soon meet the requirements of the reading public by providing a cheap form of instrument adapted for book use. I have one by me which was issued with the early numbers of the "Stereoscopic Magazine" many years ago, but indeed after one year book buyers would not require the instrument to be provided with the book—it would be quite as common as a paper-knife. The effect gained by this method of illustration would be most advantageous when the plates were accompanied by descriptive letterpress.—Yours obediently,

C. J. TABOR.

The Press Club, Fleet Street, E.C.

February 9th, 1904.

[Mr. Tabor's suggestion is certainly interesting, and as many stereoscopic views are already printed from half-tone blocks we see no reason why it should not be carried out. Stereoscopic lenses and holders are so cheap now as to be found in every house. Illustrated guide-books would be much more interesting if the views were stereoscopic.—Ed. "P. C."]

THE Prince and Princess of Wales visited the new offices of the "Graphic," in Tallis Street, Victoria Embankment, on Thursday afternoon, and on that occasion set the entire machinery in motion by means of an electrical lever.

AMERICAN PHOTOGRAPHY AT THE ST. LOUIS EXPOSITION.

[From *Wilson's Photographic Magazine*.]

THE following letter speaks for itself, and should be carefully read by those who desire to exhibit their photographic work at the St. Louis Exposition.

The invitation mentioned in the letter as having failed to bring response was read at the last national convention, but the Association failed to appoint a committee to take charge of the matter. Mr. J. George Nussbaumer, of Buffalo, was appointed juror to serve on the Committee of Selection, and there the matter apparently ended. It is regrettable, indeed, that this neglect has placed American photography at a serious disadvantage as far as adequate representation at the World's Fair is concerned.—En. "W. P. M."

St. Louis, January 15th, 1904.

To the Editor: "Wilson's Photographic Magazine," New York.

DEAR SIR,—Under date of July 29th, 1903, invitations were extended by this department to seven photographic societies to name one member each of a proposed Committee of Review and Selection. The duties contemplated for this committee were to examine and grade photographs offered for exhibition. Inasmuch as the majority of the societies have failed to respond to the invitation extended to them, it becomes necessary to change the programme, and new regulations have been formulated, a copy of which is enclosed herewith.

I will be pleased to have you give publicity to these regulations in the interests of the photographic fraternity.—Very truly yours,

JOHN A. OCKERSON,

Chief, Department of Liberal Arts.

Regulations governing the admission of photographs as exhibits in Universal Exposition to be held at St. Louis, April 30th to December 1st, 1904.

That portion of circular dated July 29th, 1903 (page 342, August 1903, of this Magazine), relating to the admission of photographs is hereby rescinded.

The following information is submitted for the guidance of photographers who contemplate entering photographs as exhibits in the Universal Exposition, which opens in St. Louis April 30th, 1904.

First.—Application for exhibit space should be made without delay of forms or blanks furnished by this office. Full information should be given as to number, character, and size of pictures to be submitted, together with a sketch showing proposed arrangement on walls, folding screens, or in albums.

Second.—All pictures offered must be mounted, matted, and suitably framed or otherwise properly prepared for ready installation in the space devoted to photographs, the owner assuming all risk and expense of shipments to and from the Exposition, as well as the installation and care of same while on exhibition.

Third.—All photographs accepted as exhibits will be subject to review by an International Jury of Awards, composed of members from each of the several countries making photographic displays.

Fourth.—All photographs should be shipped so as to reach the Exposition not later than April 1st, 1904. Shipping labels will be sent to accepted exhibitors on application to this department.

The railways have granted free return of goods on payment of full rate to the Exposition, provided shipments are made in accordance with adopted regulations.

Fifth.—Freight and express charges and all charges appertaining to the transportation of photographs must be fully prepaid at the point of shipment, and the goods delivered at the Liberal Arts Palace clear of all charges of every description incident to transportation.

Sixth.—Photographs offered as exhibits must be the individual work of the exhibitor named in formal application for space.

Seventh.—There is no charge for exhibit space, and suitable screen walls will be constructed in the Liberal Arts Palace on which photographs may be hung.

Eighth.—Special adornment of space or extra lighting will be at the expense of the respective exhibitors requiring same.

Ninth.—General rules governing exhibits, their installation, the system of awards, shipping regulations, etc., will be furnished on application to this department.

JOHN A. OCKERSON,

Chief, Department of Liberal Arts.

Exhibitions.

THE SCOTTISH PHOTOGRAPHIC FEDERATION ANNUAL MEETING.

THE first annual general meeting of the Scottish Photographic Federation was held in the Sandeman Library, Perth, on Saturday, Mr. Henry Coates presiding. There were 29 delegates present, besides a number of associates.

The secretary's report showed that the federation was formed on January 17th, 1903, when sixteen societies federated. At the present date the federation was composed of twenty-four societies, working for the betterment of Scottish photography. The list of lecturers, demonstrators, circulating lectures, and lantern slides, as well as the list of judges, although published after many of the societies had made their arrangements for the session, were well taken advantage of, no fewer than fifty calls having been made on these facilities. The exhibition—the Scottish National Salon—was a distinct innovation in Scottish photography, and as to its success it was needless for him to speak, at least there. Exhibition promoting societies had included in their prospectuses special classes for associates of the federation.

The lantern slide competition had been a great success, no fewer than 268 slides being entered for competition. The awards of the judges Messrs. Godfrey Bingley, Ezra Clough, and Alex. Keighley—were as follows:—Societies competition (18 slides in a set), for beautiful solid silver challenge plaque, presented by the president: 1, Glasgow Eastern Amateur Photographic Association; 2, Dundee and East of Scotland Photographic Association; 3, Paisley Philosophical Institute (photographic section); 4, Blairgowrie and District Photographic Association. Associates' competition (3 slides in a set), for prizes presented by three members of Council—Messrs. Eadie, Macdougall, and Stewart: 1, W. S. Crockett, Glasgow Eastern; 2 and 3, Arch. Campbell, Dundee and East of Scotland; 4, John B. MacLachlan, Blairgowrie and District. As the rules precluded anyone taking more than one prize, third prize went to Mr. MacLachlan. The judges also selected three single slides for special mention—viz., "Women in Field," by No. 10 Paisley; "Kilchurn Castle," by Arch. Campbell; and "The Last Rose of Summer," by James Donaldson, Blairgowrie and District.

The treasurer's report showed an income of £26 1s. 4d., and an expenditure of £8 4s. 3d., leaving a balance in favour of the federation of £17 17s. 1d.

Both reports were unanimously approved.

Office bearers for the season were elected as follows:—President, Henry Coates (Perthshire Society of Natural Science); vice-presidents, David Horn (Glasgow Southern) and G. D. Macdougall (Dundee and East of Scotland); treasurer, Archibald Campbell ("Dundee Advertiser"); secretary, John B. MacLachlan (Blairgowrie and District); Blairgowrie; council, J. W. Eadie (Monklands), R. Milne (Paisley), W. A. Frame (Glasgow Southern), S. Stewart (Kirkcaldy), V. C. Bain (Dundee and East of Scotland), A. Symons (Wishaw and District), John M. Dunn (Brechin), John J. Munro (Stirling and District); auditors, Messrs. Murdoch, C. A. and R. C. Thomson.

It was decided that the next annual meeting be held in Glasgow, on February 11th, 1905, and that the annual exhibition also be held in Glasgow in 1905, to open on the day of the annual meeting.

It was decided that the federation arrange an excursion for associates to Callendar on June 11th, it being remitted to the council to arrange details.

It was agreed, on the motion of Mr. Dunn, Brechin, that a federation portfolio be started, and the matter was remitted to the council for arrangement.

It was agreed that the federation publish a year book, and it was remitted to the council to see this done.

Mr. Frame drew attention to the need of a photographic periodical in Scotland, and thought the federation might take up the matter. After discussion it was remitted to the council to formulate a scheme for the consideration of the societies.

Hearty thanks were accorded the judges, who had kindly acted during the session for the federated societies, and also to the judges who had performed the arduous duty of judging the lantern slide competition.

Mr. Mackenzie, exhibition secretary, reported that he thought the result would result in a small balance in favour of the federation. At the council meeting, held immediately afterwards, it was decided that the lantern slides mentioned by the judges be formed into a set for circulation amongst the societies. It was remitted to the secretary and treasurer to get ahead with the publication of the Year Book, and put into it as much information as possible. Messrs. G. H. Depledge, Paired, and the president were appointed an excursion committee. The secretary was instructed to ask the judges who acted last year to continue their services, and several other names were mentioned for addition to the list. It was agreed that the next council meeting be held at Perth on March 26th.

FORTHCOMING EXHIBITIONS.

February 27 to March 5.—Birmingham Photographic Society. Patrons of L. Lloyd Hollies, Church Road, Moseley, Birmingham.
February 29 to March 3.—Cripplegate Photographic Society. Hon. Secretary, George H. Depledge, 17, Hazeldene Road, Goodmayes, Essex.

March 5. Last day for entries February 18.—South London Photographic Society. Entry forms from W. Calder Marshall, F.C.A., Glenton Road, Lee, S.E.

March 5-12.—Brechtin Photographic Association. Hon. Secretary, Kirk, 1, Infirmary Street, Brechtin.

March 8-9.—G.E.R. Mechanics' Institution (photographic section). Secretary, A. Woolford, 16, Grove Green Road, Leytonstone.

March 9-12.—Nottingham Camera Club. Hon. Secretary, Arthur Clark, 9, Bowers Avenue, Nottingham.

March 15-17.—Brentford Photographic Society.

March 15-19.—Arts and Crafts Exhibition (Shrewsbury).

March 22 to April 5.—Glasgow Southern Photographic Association. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.

March 25 to April 9.—Northern Photographic Exhibition. Hon. Exhibition Secretary, Chas. F. Inston, F.R.P.S., 25, South John Street, Liverpool.

April 6-13.—Croydon Camera Club. Hon. Exhibition Secretary, J. King, Hurst Bank, Selsdon Road, Sanderstead.

Patent News.

The following applications for patents were made between February 1 and February 6, 1904:—

Printing.—No. 2,505. "Improved means and apparatus for photographic printing." (Date applied for under Patents Act 1901, 1st August, 1903, being date of application in Switzerland). Complete specification. Nelson King Cherrill.

Amateur Photography.—No. 2,506. "Improvements in and in connection with amateur photography." Nelson King Cherrill.

Camera Holder.—No. 2,568. "Camera holder and clamp. Complete specification. Hermann Conrads.

Photography.—No. 2,693. "Improvements in or relating to photography." James Hewitt and Ezra Barnwell Miles.

Developing Machines.—No. 2,998. "Improvements in or relating to photographic developing machines." (Date applied for under Patents Act 1901, 9th February, 1903, being date of application in United States). Complete specification. Burton James Holcombe.

SWEET are the Uses of Photography."—At the Derby Police-court the other day a man named Matthew McLeavy was charged with having been drunk and incapable in Brook Street, Derby, early on the morning last. This was his twenty-third appearance, and on the last he was placed upon the "Black List." Defendant: "It was very degrading for me, I can assure you, having my name up in all the pubs, and it makes me feel vexed." Fined 10s. costs.

New Apparatus, &c.

Barnet Extra Rapid Plates. Manufactured and sold by Messrs. Elliott and Sons, Ltd., Barnet.

The high reputation the Barnet plates have won for themselves in the esteem of a large number of photographers will doubtless be confirmed by the issue, which has recently been made, of a "specially fast" extra rapid series. We have tried a sample box of these plates, and find the claim for speed well established. The subject was the front elevation of a house in this smoke-begrimed metropolis. The sun justified its existence by a vain attempt to beguile us with the idea that spring was approaching, and we closed the diaphragm of the lens to f/64 and gave a hand exposure, which we should estimate as of barely a second's duration. The plate developed normally with pyro-potash, and did not exhibit any trace of fog. The character of the negative reminded us forcibly of our previous experience with Barnet plates. The shadows are clear, the gradations delicate, and the grain is remarkably fine. The emulsion, in fact, combines those characteristics which the photographer seeks in a plate for the studio, and, considering the rapidity Messrs. Elliott and Sons have succeeded in giving to it, we have no doubt professional photographers will appreciate this "specially fast" series.

THE Camera Club.—The honorary secretary regrets extremely the late appearance of the "Journal" this month. When last month he congratulated himself and the members upon the fact that he had been able to announce four lectures in advance for February, he was sanguine enough to hope this happy state of affairs would continue. Unfortunately, it has not done so; and, owing to lecturers who have promised, but, alas! have cried off at the last moment, he had been unable to arrange the fixtures for this month until now. In his opinion—and he believes that of most members of the club—the principal use of the "Journal," without in any way depreciating the valuable reports of lectures recorded therein, is to give notice to members of forthcoming events, more especially as we have no other means by which members can be notified of arrangements made by the hon. secretary for their entertainment and instruction. His endeavour always is to announce the lectures as long before as possible. But, unfortunately, "there's many a slip 'twixt cup and lip," and his arrangements sometimes fail. Under these circumstances, he feels sure that he can rely on the sympathy of all the members. Last October the Kotaibis, a tribe whose country lies east of the communication between Aden and Dthala, revolted, and attacked the fort of Sulek, occupied by a party of sixty men of the 102nd Grenadiers, under Captain Lloyd-Jones. For four days the small garrison was practically besieged, and then were relieved by a force which enabled a counter attack to be made upon the enemy. Unfortunately, in a gallant charge made on the part of the 123rd Rifles, Captain Lloyd-Jones, who was with them, received no less than five wounds, which placed him *hors de combat*. His condition was at first critical, and amputation was, at the least, anticipated; but the most recent news is that such serious consequences have been avoided, and that he is doing so well, that he will shortly be able to return to England. He has the sincere sympathy of his fellow members, who trust that the sea voyage will, as is so often the case, effect wonders, and who wish him a speedy recovery from the severe wounds from which he has been so long suffering. It has been noticed that of late smoking concerts have not been so popular in the club as heretofore. When, however, we can look forward to one for which the arrangements are being kindly made by a member of such vast experience in the dramatic world as Mr. Guy Waller, we may be sure of having an excellent programme and a full audience. Members are reminded that a club supper will be served after the concert. The name of Mr. E. W. Maunders, F.R.A.S., Superintendent, Solar Department, Greenwich Observatory, is so well and widely known, that it is only necessary to draw attention to the fact that he will lecture to us on such an interesting subject as "Mars and its Canals," on Thursday, the 18th. Professor Louis has travelled extensively to many corners of the earth as consulting mining engineer; Mr. Percy Macquoid is a well-known artist; and Mr. Edgar Wallace will be recognised by everybody as the war correspondent of the "Daily Mail" and other papers.—"Camera Club Journal" for February.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Feb.	Name of Society.	Subject.
19.....	Plymouth Photo. Society	<i>Bromide Enlarging.</i> Mr. J. Trouern Trend.
19.....	Aberdeen Photographic Assoc.	<i>Collection and Sands of Forrie.</i> Illustrated. Mr. R. G. Johnston.
20.....	Glasgow & W. of Scotland P.A.	Exhibition Opens.
20.....	Ashton-under-Lyne Photo. Soc.	Class Match, "D" League, Hulme 2nd, away.
23.....	Ashton-under-Lyne Photo. Soc.	<i>Improving Negatives.</i> Demonstration. Mr. Alfred Shaw.
22.....	Oxford Camera Club	<i>Alpha Plates.</i> Mr. Rippon. <i>With a Camera in Egypt.</i> Mr. A. R. Sargeant.
22.....	Southampton Camera Club	<i>Majores.</i> Illustrated. Mr. G. E. Thompson.
22.....	South London Photo. Society	Stereoscopic Slides and their Production.
22.....	Ilford and District Photo. Soc.	<i>Westminster Abbey.</i> Mr. E. W. Harvey Piper.
21.....	Everton Camera Club	<i>North Wales.</i> Part II. Mr. E. Youds.
21.....	Nott'ng'ham Camera Club	<i>A Holiday on the Continent.</i> Illustrated. Mr. Booth Granger.
23.....	Royal Photographic Society	<i>The History and Lighting of the Magic Lantern.</i> Demonstrated. Mr. T. E. Freshwater, F.R.M.S.
23.....	Birmingham Photo. Society.	Annual Exhibition.
24.....	Photographic Club	<i>Southern Spain.</i> Mr. A. Barton Keut, F.R.G.S.
21.....	Cricklewood Photo. Society	<i>What is Light?</i> Illustrated. Dr. E. M. Payne.
25.....	Woolwich Photo. Society	<i>Cozins, &c.</i> Mr. W. F. Slater, F.R.P.S.
25.....	Hull Photographic Society	<i>Flowers of the Months.</i> Mr. Alex. Keighley, F.R.P.S.
25.....	Gainsboro' Camera Club	<i>Enlarging on Bromide Paper.</i> Mr. Critch.
25.....	Richmond Camera Club	<i>The Right Process and the Right Negative.</i> Discussion opened by Mr. Oetmann.
25.....	Watford Camera Club	<i>Practical Landscape Photography.</i> Mr. G. T. Harris.
25.....	London & Prov. Photo. Asso.	<i>Up-to-date Photography.</i> Mr. W. T. Wilkinson.
25.....	Liverpool Amateur Photo. Ass.	<i>Photography of Microscopic Specimens.</i> Demonstrated. Mr. F. W. Saxby.

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

A MEMBERS' meeting was held at the Royal Photographic Society, 66, Russell Square, W.C., on Friday, the 12th instant, at 8 p.m. Mr. Alfred Ellis, President, occupied the chair.

The President opened the meeting by informing the members that the Association had been presented by Mr. H. Edmonds Hull with a chairman's hammer, and he would endeavour to keep order with it that evening.

The Committee's report of the progress of the Association since the annual general meeting was presented.

Mr. Frank Turner asked for a little more information regarding the examination of assistants. Were the Sub-Committee asking the co-operation of teachers at the Polytechnic in any way? He had been informed that they were going to write to the Association to know whether they could help in the matter.

Mr. Coles wished to know whether it was contemplated to hold examinations at once, or was the matter only now being considered. Mr. Mackie informed him that no period had been fixed, but that the Committee were now prepared to invite assistants to apply for certificates on the long service qualification. Mr. Coles pointed out that at present there was a considerable lack of inclination to study or acquire any more information or knowledge than was necessary to take assistants through their daily work, and a step such as that proposed should be welcomed. He found that anything in the way of getting assistants to improve themselves in technical matters was so much waste of breath, and if, therefore, there was an examination that they could point to as some indication of having satisfied skilled photographers of their abilities, it would greatly benefit the assistant as well as the employer.

Mr. L. Langflier said he was very pleased to hear discussion of the members on this matter, which would tend to strengthen the hands of the Committee.

The granting of certificates by the Association would greatly benefit not only the assistants, but the employers, for the reason that the certificates would be a proof that the holder's ability had been put to the test by competent professional photographers. He deprecated any connection with the Polytechnic, and thought that as the Association represented a large body of photographers it was quite capable

of carrying the matter through. The Committee were working very hard, and their labours would show good results.

Mr. Coles thought that they should all assist in getting the members, and that the suggestion of examinations would assist in this direction.

Mr. S. H. Fry asked if it was not possible, in conjunction with the matter, that the Committee might take into consideration the propriety of making some sister Association or Sub-Association, by which the P.P.A. might gain, and from which assistants who had received the Association's certificate might be recruited. Of course, this was a very touchy point, and likely to have great difference of opinion. The point that must be borne in mind is that photography is essentially one of those pursuits in which the assistant, or often the amateur worker of to-day, is the full-blown photographer of tomorrow.

Mr. W. Gill thought there ought to be an examination in every case and that they would be making a mistake to grant a certificate of employers' vouchers only. Before the Association invited assistants they ought to deal with specimens, and go into the matter thoroughly.

Mr. Lankester: It would be a good plan to let members know who were the Sub-Committee. They would then have full confidence.

The names of the Sub-Committee were then read out, viz., Messrs. F. A. Bridge, Martin Jacolette, L. Langflier, H. S. Mendelsohn, Lang Sims, and the officers of the Association.

Mr. W. Coles asked whether a certificate would be granted on the strength of one employer, supposing the assistant had been employed three years. Would they require to know the last employer of employers for the last five years? If a man wished to obtain a certificate, would he have any difficulty in satisfying the Board of his five years' proficiency?

The Chairman then proceeded to reply to the various questions. The members should bear in mind that the Sub-Committee have not been sitting a great time, and that they have not yet perfected a scheme. He thought, first of all, they could start the granting of certificates to assistants of well-known practical photographers. For instance, where it was known that an assistant was a good practical man, such, for instance, as his own brother-in-law, who was as good a photographer as he was, they could not ask him to come up and be examined as they could ordinary assistants. The Association would first of all grant certificates to men whose employers could vouch that they were proficient in particular branches of their profession, upon production of specimens of their work provided that the employer was known as a good practical man. There was an assistant who was recommended by his employer, but whom the Association had doubts about, they would require some further proof of the assistant's ability before a certificate was granted.

With regard to the assistants, they did not mind whether they came from the Polytechnic or otherwise. If they apply for examination the Association would be quite prepared to examine either, but it was not the intention to examine them theoretically, but practically. Unless the examiners were satisfied in proper manner no certificate would be granted. The great advantage would be that when the certificate was granted the assistant would be more likely to satisfy a photographer of his proficiency. As regards his personal character, that was a matter the employer would have to satisfy himself.

Mr. Fry thought they might see from the results of the examinations what sort of assistants were coming up for examination, and then they could consider the question of "Associates," such, for instance, as Associates of the Academies of Music, etc.

Was it proposed to make a small charge to the assistants?

Mr. Ellis: Yes. We don't propose to give something for nothing. Would the expense be considerable? Would it be a large fee?

Mr. Ellis: Not more than an assistant could afford. It was thought it would be about a guinea, but details would be considered later. The examination would be a drastic one.

The adoption of the report was proposed by Mr. Coles, seconded by Mr. Skillman, and carried.

On a question raised by Mr. Skillman as to the advisability of having grades of certificates, he was informed that it was a matter for consideration, but each subject would be taken separately.

Letter read from Mr. George Moore, of Buckfastleigh, re question sulphide of silver assaying, the members being asked if they had any similar experience to the one brought under notice.

Mr. Gill gave instances of differences regarding assaying of precipitate of gold. Two samples, of 100 grains yielding by different means 11 per cent. and 26 per cent. respectively.

The President reminded members that the next meeting would be March 11th, on the occasion of the annual dinner; he hoped there would be a good attendance of members, and that they would bring their wives, or sisters, or daughters with them.

Letter read from Mr. T. C. Turner, of Hull, regretting that he did not be present to read his paper personally. He had sent a specimen of what the "Hull Daily Mail" advertises as a "two guinea portrait for 6s. 6d." The exhibition of this created a great deal of amusement. Mr. T. C. Turner's paper on "Laissez-faire" was then read by the assistant secretary.

Mr. Lankester was very much interested in Mr. Turner's paper and the picture sent. He did not know whether the London members of this kind of competition more than their provincial brethren.

Mr. Gill thought Mr. Turner should be thanked for his paper, which contained such useful suggestions.

Some discussion followed on the question as to whether photographers, other than the holder and taker of the negative, should charge for large photographs, or even copy them.

Mr. Coles thought that some mutual arrangement should be arrived at and that firms on being asked to make copies of photographs should refer the person making the request to the firm which had sent the original. There might be some little understanding, and in the order might be passed over to the original photographer, who would allow the other firm some small percentage.

Mr. Bridge asked whether it was an acknowledged fact that a better result could be obtained from the negative than the print.

Mr. Langfrier: It only meant working up the print.

Mr. Lankester: In small towns photographers do not love one another sufficiently to take a photograph to one another for copying enlarging. As a matter of fact, you can do just as well from a print from the negative.

Mr. Gill: I put on my cards "Copies 25 per cent. extra." No photographer need scruple in taking an enlargement order in the circumstances. So long as it is understood that the customer has no copyright, I do not think we need scruple. Nearly all the prints for copying are old, and generally it would be found the original negative was not in existence.

Mr. Bridge said that when you can get a 12 by 10 enlargement for what you cannot afford to give a proportion of the amount away. (laughter.)

Mr. Langfrier: Mr. Turner has worked very hard, and done marvellously well. Nobody else in the photographic profession could do that they have ever practically prohibited a firm advertising selling cheap enlargements in any town. This Mr. Turner, in conjunction with the Hull branch, had done. If photographers were a little more friendly, and worked more in harmony they would be something to stand upon, and they could then do something for Mr. Turner.

Mr. Fry thought they should be a little more consistent. He contested the marked-down prices in drapers' shops, etc. He had recently been to Manchester, and he was quite sure there were many photographers who had enlargements in their windows which were better than that exhibited and advertised by the "Hull Daily Mail" as a two guinea enlargement for 6s. 6d.

We are inclined to jump on this kind of thing when an important case does it. It is very reprehensible, but every firm does the same thing.

The President said, we cannot object to them making an enlargement for 6s. 6d., but we do object to the statement that it is the duty of photographers to supply at two guineas.

Miss Lena Connell thought there was no harm in copying old photographs, but people went to a good photographer for one or two prints, and then had copies from them made at a cheaper house. This was too bad.

A hearty vote of thanks to Mr. Turner for his interesting and valuable paper closed the proceedings.

A meeting of the General Committee was held at the Royal Photo-

graphic Society, 66, Russell Square, on Friday, February 12th. Present: Mr. Alfred Ellis, President, in the chair, and Messrs. F. A. Bridge, S. H. Fry, H. Edmonds Hull, Louis Langfrier, A. Mackie, E. Scamell, W. Grove (hon. sec.), W. Gill (Colchester), H. C. Spink (Brighton), and P. Lankester (Tunbridge Wells).

The President read a letter from Mr. H. Edmonds Hull asking the acceptance of a chairman's hammer. On behalf of the Committee, he thanked Mr. Hull for his handsome present, and suggested that the donor's name be engraved on the silver band.

Letters of apology for non-attendance were read from Messrs. Lang Sims and Martin Jacolette.

The draft of the report to be read to the members at that evening's meeting was read and approved.

A letter from Mr. H. W. Barnett was read, in which he notified that owing to stress of business he was reluctantly compelled to resign his position as Vice-President and membership of the Committee.

Mr. Bridge proposed and Mr. Hull seconded that his resignation be accepted and the letter acknowledged with an expression of regret.

The draft of the Sub-Committee's report on the forthcoming Exhibition of Professional Photography at Derby was read.

Mr. Bridge thought that the members should be notified as early as possible, and information obtained from them as to whether they intended to exhibit, and, if so, how much wall space they would be likely to require.

The President thought the suggestion a good one, and said he would arrange that a post-card on which this information could be furnished should be sent to each member when sending them the entry form and particulars.

It was agreed that Mr. C. B. Keene, Mr. Scotton, and Mr. Crowder (Curator of the Derby Art Gallery) should be invited to form the Hanging Committee.

The interim report of the Assistants' Examination Committee was read, and, after some discussion, was adopted.

The account from Messrs. Strangeways, amounting to £14 8s., for the printing of handbooks, list of members, etc., was passed.

Letter received from Mr. T. C. Turner, of Hull, apologising for his inability to attend meeting, and requesting that the paper he had prepared might be read at the members' meeting that evening. He also notified having sent a specimen of the "Hull Daily Mail's" enlargements, advertised as being worth two guineas, for 6s. 6d.

Arrangements for the annual dinner were discussed, the dinner to take place at 7. It was agreed that as many members of Committee as possible should be in the reception room from 6 to 7 to receive country and other members and guests.

REPORT, FEBRUARY, 1904.

SINCE the annual general meeting twenty-two new members have been admitted to the Association. Up to the present time 474 members have paid their subscriptions for this year.

The new handbook has now been in the hands of members for some time, and the Committee believe that the pains taken to increase the practical value of the section devoted to private information to members have been appreciated, and that the lucid explanation of the copyright law as affecting professional photographers has been a valuable assistance to many members.

The plague of cheap enlargements unfortunately shows no abatement. In every case that has been brought to the notice of the Committee a protest has been made, but without success, except in a few instances, where the statement has been withdrawn, that the enlargement advertised is equal to one charged so many guineas for by photographers. It is obvious that the Association has no legal means of applying coercion, but that a great deal may be done to counteract the effects of these advertisements locally by combination has been amply demonstrated by the total defeat of the Liebig Extract of Meat Co. at Hull, by the energetic action of the Hull branch of the Association. The Committee consider that the Hull branch has earned the thanks, not only of the Association, but of photographers throughout the kingdom, for their spirited attack. The Committee believe that in many centres the local professional photographers are influential enough, if they could act together, to deal with their enemies with equal success, and any serious attempt in this direction would be most heartily supported from headquarters.

The success of the exhibition of professional photography held at Perth last year during the meeting of the Convention was so great that it was considered advisable to repeat the experiment in connection with this year's Convention, if possible. With a view to making arrangements, our President paid a visit to Derby, and was so successful in interesting Mr. Crowther, the custodian of the Art Gallery, in the scheme that the Corporation has placed the picture galleries at our disposal without charge for a public exhibition, to be open for a month. An invitation to exhibit, and full particulars, will be sent to each member in a week or two.

That important function of the Association, the holding of examinations for photographic assistants, and the granting of certificates of proficiency, is now receiving serious consideration. The Sub-Committee appointed for dealing with the matter have made an interim report, in which it is recommended that certificates without special personal examination be granted to assistants who have been practising for at least five years on the recommendation of those in whose employ they have been. Although the arrangements for holding examinations will necessarily take considerable time to complete, the Committee will immediately proceed to invite applications for certificates under the service qualification.

The arrangements for the annual dinner, to be held at the Criterion Restaurant, on Monday, March 11th, are now complete. As there are several lady members of the Association, and as so many photographers' wives and other female relations are actively engaged in the business, it has been thought a fitting acknowledgment of our indebtedness in this direction that members attending the dinner should be specially enjoined to bring lady guests.

It has been felt by some of the members of Committee that it would be a graceful act to present each President with a souvenir of his year of office. A pair of dies, for the purpose of striking a badge or token, has been presented to the Association, and the Committee are subscribing amongst themselves the funds for providing gold tokens for presentation to Messrs. Thomas Bedding and Wm. Grove, past Presidents, and to our present President.

The Committee regret that they are losing the valuable assistance in their deliberations of Mr. H. Walter Burnett, who is obliged to resign his office as Vice-President on account of increasing business.

PHOTOGRAPHIC CLUB.

FEBRUARY 10TH.—Mr. John H. Avery gave a demonstration of printing on Messrs. Wellington and Ward's bromide paper. The negative for a good print should be also a good one, and with sufficient density, not a thin ghost, which seemed to be the prevalent opinion. The light he used himself and recommended, on account of its constancy, was an ordinary candle. Using a fairly dense negative, 12 by 10 at a distance of 15in. from the flame, an exposure of one and a half minutes was given. On development with Amidol it proved to have been correctly exposed. He had never detected any unevenness when exposing a 15 by 12 negative at 15 in. A large number of slides from negatives made while he was with the Sultan of Morocco were then shown and described by the lecturer, and proved extremely interesting.

CROYDON CAMERA CLUB.

FEBRUARY 10TH.—Despite the inclement weather, a large number of members mustered to hear Messrs. F. W. Hicks and W. H. Rogers give a demonstration on enlarged negatives, respectively on plates and paper. On the previous Wednesday, Mr. Hicks gave some valuable hints as to the production of the preliminary transparency. Chiefly on the ground of expense he preferred to make a small contact positive in the first place, employing either a slow dry plate, such as Wratten's "ordinary," or the special autotype tissue sold for the purpose, and which was practically grainless. For the latter, three and a half times the exposure was necessary, compared to P.O.P. printed to the "pretty" stage. When using the former care should be taken to mark the clear glass edges of the plate, so as to prevent light creeping round. For daylight enlarging the density of the small positive should be comparable with the average lantern slide, but without its brilliancy, perhaps, the best results were obtained with the high lights somewhat veiled. He advocated metal as a developer, as possessing a minimum tendency to block the shadows. A slow plate was best for the enlarged negative, and the

requisite exposure could be found in the usual way on a quarter plate of the same batch.

Whilst projecting the image from a carbon transparency on the easel by means of the club lantern, reticulation markings existing in the original showed up plainly, and subsequently duly recorded themselves. Mr. Hicks said he invariably used daylight, and although reticulations might exist in the positive, they had never troubled him in the enlarged negative, or indeed become apparent. Mr. Rogers then followed, substituting Kodak A. slow bromide paper, and several satisfactory 15 by 12 paper negatives were made. He claimed for them, cheapness and ease of retouching. Microscopic detail was, of course, unobtainable, and not always desirable. The only objection he had heard urged was that the grain of the paper showed to some extent; this might be so, but it was not obtrusive in large work. Rodinal as a developer was cleanly and convenient; he employed it at a strength, 25 minims to the ounce, plus 5 minims of a 10 per cent. bromide solution. He never waxed or oiled the paper negative, and saw no necessity for so doing.

RICHMOND CAMERA CLUB.

FEBRUARY 11TH.—A paper on the capabilities of the X-Rays was read by Dr. Rodman, who for some years has made a special study of this subject. Dr. Rodman spoke first upon radiography, or the production of images upon a photographic plate by the X-Rays, and then upon the subject of radioscopy, or the examination of an object by means of the fluorescent screen. In December, 1895, Professor Röntgen announced his since famous discovery to the Physico-Medical Society of Würzburg, on which occasion he described certain rays which, themselves invisible, are capable of penetrating many substances opaque to ordinary light. This discovery was due to the happy chance of an accidental observation. While making experiments with a Crookes Tube, he noticed that a piece of paper covered with platino-cyanide of barium became fluorescent. The same result was produced even when the luminous tube was enveloped in black paper, and he found that the rays have the power of exciting photographic action and penetrating various substances in differing degrees, roughly speaking, in inverse proportion to their thickness and density of structure. Dr. Rodman then threw upon the screen a photograph of the apparatus required for the production of X-Rays, which he proceeded to describe in detail. His apparatus is worked from a 12-cell accumulator, and he finds that as soon as the charge of electrical power falls to about 19 volts per cell, it is necessary to re-charge it. The apparatus used consists principally of an induction coil and a vacuum tube, with the necessary connections and accessories. The induction coil that Dr. Rodman uses contains about 10 miles of insulated wire in the secondary coil, and he showed upon the screen a photo of a 9-inch spark produced by it, representing a very high voltage—as much as 100,000 volts are represented by a 6-inch discharge. The vacuum tube may be described as the lamp by means of which the X-Rays are produced. It consists of a highly exhausted glass bulb connected to the secondary terminals of the coil. Inside the bulb are two discs, one at each end, that at the negative end, called the cathode, being concave, and the other at the positive end, known as the anode, being flat. When the current is switched on, instead of a stream of sparks passing between the anode and the cathode nothing is seen to pass, but the tube becomes fluorescent, and is filled with an apple-green light. Those are the X-Rays. The shapes of the discs cause the rays to be concentrated and deflected upon the objects to be examined by the fluorescent screen, or radiographed. The fluorescent screen consists of a frame, chemically prepared, sheet of vellum, coated with barium platino-cyanide. The object to be examined is placed between the tube and the screen, the latter being placed with its fluorescing salts outward. In photographing the image, Dr. Rodman found great advantages in the use of rapid plates. Length of exposure depends upon the thickness and opacity of the object to be radiographed, and it is frequently necessary to shade thin or translucent portions to prevent over-exposure during the time required to get the details of the thicker or more opaque portions. Dr. Rodman remarked that it is impossible to foretell what further discoveries are in store for us in connection with the X-Rays. We know that the superficial action of the rays upon the cutaneous surface of the body is considerable, and that at the present time cases of lupus, hitherto incurable, are being treated by daily exposure to the influence of the

s with apparently curative effect, and it is hoped that some forms cancerous growth may succumb to the same influence; but apart from therapeutics, there are many other uses to which the X-Rays may be applied, such as for testing precious stones, Custom House investigations, and doubtless many others will present themselves as the work goes on. Dr. Rodman then proceeded to show a number of radiographs through the lantern. He showed first a number of objects, such as scissors, spectacles, rings, etc., radiographed through cases in which they were contained, various animals and reptiles, showing their internal anatomy, and a very fine collection of shells, in which the structural details and markings were very clearly indicated. Radiographs of diamonds showed them as perfectly transparent, whereas paste diamonds were opaque, owing to the large quantity of lead used in their composition. Other precious stones showed the real stones to be more or less translucent, the imitations intercepting most, if not all, the X-Rays. Pebbles, rock crystal, and glass were compared, and showed more or less marked difference in translucence. After these Dr. Rodman showed radiographs of surgical cases, such as needles and bullets imbedded in the flesh, cases in which the X-Rays have been used as aids to diagnosis, prognosis, and treatment, such as fractured and splintered bones, dislocations, and growths, and he concluded by showing some curiosities, such as a boy's foot with an abnormal number of bones, the effects of rheumatism, etc.

SOUTHAMPTON CAMERA CLUB.

FEBRUARY 15TH.—Lecturette Competition.—Each contributor was allowed ten minutes to render his discourse to illustrate, which not more than eight nor more than twelve lantern slides of his own production were allowed. The contest was a good one, the competitors being Messrs. Walton, F. G. Ryder, A. Copeland, W. R. Williams, and J. Evans. The winner was decided upon by the votes of the members present, and their choice fell on Mr. Williams, who took for subject "A Visit to the L. and S.W. Railway Company's Works at Eastleigh," of which he gave a very pleasing and graphic description, and produced an excellent set of slides representative of the various departments of these important manufacturing works. Mr. Williams was awarded the club's certificate of merit. Mr. Evans took second place with an instructive discourse on Salisbury Cathedral, and some of his slides were of an excellent quality.

DERWENT VALLEY PHOTOGRAPHIC SOCIETY.

The president's competition was brought to a close at the end of January, and the judge's awards have just come to hand. The competition was for members of the Society only, and the conditions were that each competitor should send in six prints any size up to and including half-plate, and of any subject, finished in any process and mounted. The sum of £5 was generously given by the president (Mr. R. Williamson, South Lodge), and this the committee divided into four prizes. In order to encourage beginners and place them as far as possible on an equal footing with more advanced workers, competitors who had commenced photography within two years of the date of the opening of the competition were given an allowance of marks. The judge was Mr. P. R. Salmon, editor of the "Photographic News," who fixed the maximum number of marks at 20, giving an allowance of five in each case to the beginners who had made it, these being marked * in the following list of awards:—1st, £2 10s., Mr. J. T. Robinson, 20 marks; 2nd, £1 5s., Mr. A. C. Pen, 18; 3rd, 15s., Mr. P. M. C. Eden, 17; 4th, 10s., Miss F. L. (Loweswater), 16. The other competitors are placed in the following order:—Messrs. C. Armstrong, B. Green, and J. Dallas*, each; R. H. Williamson, 14; J. W. Wood*, 13; J. R. Bleasdale, 12; W. H. Lewthwaite, 10 each; R. Williamson, 9.

The judge's remarks are: "On the whole the work is good, but painting seems poor. Mr. Robinson's work is excellent, also Mr. Pen's. These two are a long way ahead of anyone else. Mr. Pen's allowance of five brings him next." The prizes were handed to the successful competitors at the Studio, Cockermouth, on Monday night by Mrs. J. W. Watson. Hearty thanks were accorded Mrs. Watson, the editor of the "Photographic News" and the president, who repeated his offer of £5 for prizes for future competitions.

Commercial & Legal Intelligence

HELIOGRAVURE COMPANY, LTD.—This company has been registered with a capital of £2,000 in £1 shares. Object, to carry on the business of photographers, lithographers, engravers, etchers, etc. No initial public issue. Registered without articles of association. Registered office, 78a, Mosley Street, Manchester.

BIOPHONE COMPANY, LTD.—The above-named company has been registered with a capital of £20,000 in £1 shares. Object, to adopt agreements (1) between the shareholders of the Kuvverin Phonograph Company, Ltd., of the one part and E. M. Davey of the other part; (2) between H. Fairbrother of the first part of Tourtell Gas and Engineering Company, Ltd., of the second part and the said E. M. Davey of the third part; and (3) between J. M. Tourtell and G. L. Hogan of the first part, the Tourtell Manufacturing Company, Ltd., of the second part, and to carry on in the United Kingdom or elsewhere the business of manufacturers of and dealers in talking machines, gramophones, phonographs, biophones, and similar instruments, etc. No initial public issue. The first directors (no number not less than two nor more than seven) are to be appointed by the signatories. Qualification £250. Remuneration as fixed by the company. Registered office, 18, Fleet Street, E.C.

BEFORE Sheriff Henderson Begg—in Aberdeen Small Debt Court—a case was heard in which Alfred Margand, trading as the Universal Portrait Company, 12, George Street, Aberdeen, sued a fisherman residing in Victoria Road, Torry, for 16s. 6d., being the balance of the price of an enlargement of a photograph and a frame supplied by the pursuer at the price of 18s. 6d. Mr. John Croll, solicitor, appeared for pursuer, and Mr. H. C. B. Forsyth, solicitor, for defender. John Schindler, assistant, Universal Portrait Company, said he had called upon defender's wife and sold her the frame for 18s. 6d., of which she paid 2s. An agent of the company had previously called upon her and obtained a photograph of her daughter to enlarge. They enlarged such photographs very cheaply, in order that people might show them to their friends and thus advertise their work. The Sheriff: Is it not the case that you do it cheaply in order that you may get an order for the frame, and there you will thus make up for any loss on the enlargement? Witness: No. The Sheriff: Do you go in for this business through amiability?—(laughter). What is the frame really worth? Witness replied that it was worth about 12s. 6d., but they had expenses to meet in connection with it, such as carriage, delivery, and so forth. Margand, in the witness box, said his method of business when he went to a new town was to send round a circular asking people if they had any photographs to enlarge. They would do enlargements free of charge, but if the people wanted the photos completed they must buy a frame. Is all that told at the first interview?—(laughter). Witness: Yes. Other evidence having been led, the Sheriff assoilized defender, with expenses, holding that as the photo was not a necessary the husband was not liable for what his wife had ordered. In five other actions by the same company the defenders were assoilized on the same grounds.

Commenting on the foregoing case "The Aberdeen Evening Gazette" remarked:—The decisions given by Sheriff Henderson Begg in connection with the actions brought by the Universal Portrait Company should be of practical service in two directions. In the first place, they make it known that as portraits are not necessities, husbands are not liable for them when ordered by their wives. That is a fact well worth knowing, seeing that it is a plan increasingly in vogue with certain portrait and other canvassers to make their calls at citizens' houses when the husbands are absent, and when they think their plausible stories will go better down with the "guid-wives." In the second place, the decision should be a warning to people against the portrait enlargement dodge. That dodge is a very transparent one, and yet there always seem to be hundreds of gullible people who are all too ready to rise to the bait. The offer is to do enlargements almost for nothing. The agent of the company concerned in the actions brought forward yesterday said "they enlarged such photographs very cheaply"—indeed, enlargement is generally offered to be done for next to nothing—"in order that people might show them to their friends, and thus advertise their work." That is nonsense. The enlargement business could not stand on its own legs at the rates that are dangled before customers'

eyes. As a rule, the idea is to get customers for enlargements by encouraging the belief that something very like philanthropy is being extended to them, and then to press upon these customers—often very much against their wills—the purchase of frames. But for the prices charged for these frames, the photographic enlargements could not be offered at the cheap rates current with the class of enlargement dealers referred to, and there are cases galore of people finding the utmost difficulty in securing enlargements without frames or without some increase on the rates under which they were induced to give their orders. In one respect people have themselves greatly to blame. Nothing could be expected for nothing in these days, and good photographic enlargements cannot be procured unless by paying the reasonable prices that are charged by ordinary (as distinguished from the “free enlargement”) photographers.

X-RAYS IN COURT.—A case of considerable interest arising out of the application of the Röntgen rays was concluded in Dublin on Friday last, before Mr. Justice Gibson and a special jury. The action was brought by a Galway bookseller, named McCullogh, against the Galway Queen's College, and against Dr. Colohan, as his medical adviser, and a man named Haire, as the Röntgen ray manipulator of the College, for damages for the negligent and wrongful application of the rays to his son's knee. It appeared that the boy, who was aged seven years, stated that a needle had entered his knee and got broken, the head remaining inside. In order to discover its location the rays were prescribed first by direction of a Dr. Quirke, of Galway, now deceased, and subsequently by direction of Dr. Colohan. The latter is a doctor in connection with the Galway Queen's College and the Galway County Hospital, which institutions have a working connection. The rays were kept in the Queen's College for educational purposes, but a practice had grown up of allowing the man in charge, Haire, to take radiographs for doctors in Galway. In the present case the radiographs were taken by Haire, who, on the advice of the president, personally charged a fee for taking the plates, and for the work a cheque was sent to the President, and endorsed and given by him to Haire. The boy's knee was exposed to the rays six times in December, 1902, but the needle was not localised. The knee got ulcerated later on, but in April, 1903, it was, by Dr. Colohan's direction, radiographed four or five times again, but the needle was not detected. The boy was then sent to Dublin, and an X-ray expert, on seeing the knee, refused to use the rays upon it. A severe burn, or dermatitis, broke in on the boy's knee, and this caused him considerable suffering. It was now healed, but medical evidence was given to the effect that it might break out again. For the plaintiff it was stated that the X-ray operator had placed the X-ray bulb within two or three inches of the boy's knee while he was taking the radiographs, and the exposures varied from twenty to thirty minutes. For the defence, the witnesses said that the bulb was not held within a lesser distance than six or seven inches. A great number of expert witnesses were examined on both sides, and in the result the jury found for the defendants on the general issue that there was no negligence.

THE Annual Dinner of the Hackney Photographic Society was held on Tuesday last, February 16th, at the Great Eastern Hotel, Liverpool Street, E.C. The President, Mr. J. O. Grant, was in the chair, and he was supported by nearly a hundred members and visitors, among the latter being Rev. F. C. Lambert, Mr. Alexander Mackie, Mr. Thomas Bedding, F.R.P.S. (Editor of *THE BRITISH JOURNAL OF PHOTOGRAPHY*), Mr. H. Snowden Ward, Mr. H. W. Bennett, F.R.P.S.

MORE Scheduled Poisons Suggested.—In a lecture on “Poisoning in its Medico-Legal Aspects,” delivered in the Old Hall, Lincoln's Inn, by Dr. Waldo, the City Coroner, on Thursday, last week, the lecturer said that he agreed with Dr. Wynn Westcott in recommending the addition of strong mineral acids, ammonia, and certain other poisons to the scheduled list. We do not know what the “certain other poisons” are; but there are many poisons used in photography that are not at present scheduled—pyrogallie acid, and some of the new developers; nitrate of silver, sulphate of copper, etc., for example. If such things as these were scheduled, and could only be purchased from pharmaceutical chemists, photographers would have to pay more for them than they now do to the photographic dealers. However, they are not yet scheduled, and there is but little prospect of their being so in the very near future.

News and Notes.

ROYAL Photographic Society.—At the Technical meeting to be held on Tuesday, February 23rd, at 66, Russell Square, at 8 p.m. Mr. T. E. Freshwater, F.R.M.S., will read a paper “On the History and Lighting of the Magic Lantern.”

SOUTHEAST-ON-SEA PHOTOGRAPHIC SOCIETY.—Owing to pressure of business the Hon. Sec., Mr. A. J. Langridge, is obliged to resign his post, which has been accepted by Mr. John Archer of 24, Ashburnham Road, Southend, to whom all communications should be addressed in the future.

THE “Standard's” Berlin correspondent, telegraphing one day last week, said:—Professor Henri Dufour and M. Held, an engineer both of Lausanne, who have been experimenting with radium, have said to have established the fact that radium rays are capable of penetrating a polished granite slab about 2 ft. thick, and steel plate one centimetre thick. This experiment was carried out by means of highly-sensitised photographic paper.

NEW Magnetic Observatory.—Since the magnetic observatory at Kew was rendered unsuitable by reason of the proximity of electric lines, etc., the authorities have been looking out for a more suitable site. This has now been found on the ground purchased by the Government from the Duke of Buccleuch in the parish of Eskdalemuir, Dumfriesshire, for the purpose, and upon which the surveyors report favourably. Building operations are to be commenced shortly, and it is thought they will take about four years to complete. To find a suitable situation for a magnetic observatory in these progressive times, that will be suitable years hence, has been no easy matter, seeing that the observations are affected by far distant electric currents, such as those in lighting or traction cables, telegraph or telephone wires, etc. The site selected seems very suitable for its purpose. It stands high and dry in a pastoral and hill district, and is quite remote from railways; the nearest being about fifteen miles off. When reading this description of the locality of the new observatory, one is inclined to wonder whether the employees in it, considering the monotonous character of their work, will find the place a cheerful dwelling all the year round. Personally, we are not inclined to envy them.

WINTER Pictures.—Photographers resident in the home districts have this year had but scant opportunities of obtaining pictures of winter scenes, unless, indeed, flooded districts can be classed as such. As the season is so far advanced, there seems to be but little prospect of our having much, if any, snow, and if we do have some the sun is now getting such power that it must not be expected to last very long on the ground; hence, those who desire to secure wintry effects should be on the alert to secure them directly the opportunity occurs, as it will, in all probability, be but of very short duration. However, although the outlook for obtaining snow pictures is now very poor, there is ample time to secure good pictures of hoar frost effects. Hoar frosts often hold well into the spring, but the best effects with them are very transient in nature, for soon after only a few minutes after the sun shines upon them, they are gone. Therefore those who desire to secure pictures of them must be on the look-out, keeping their slides ready filled with plates, or a fresh spool in the camera if roll films are used, ready for exposure the first morning the hoar frost appears. It is needless to say that to secure the best negatives of hoar frost, as with snow, the plate should be backed to avoid halation. As for subjects with hoar frost they are almost everywhere. An unpretentious back garden covered with hoar frost makes an excellent picture for the lantern, and is usually much admired when projected on the screen. In some cases a heavy hoar frost on the grass and trees will pass as a snow picture for the white rime conveys very much the impression of a slight fall of snow.

RADIO-TELLURIUM.—A new radio-active substance is said to have been discovered by Prof. Dr. Markwald, of Berlin. Speaking at Vienna, the Professor said that in experimenting with pitchblende (oxide of radium) from Joachimsthal, Bohemia, he discovered minute quantities of a very active substance which he has named radio-tellurium. At first it showed all the reactions of tellurium, but further examination proved it to be a mixture of tellurium and minute quantities of a substance hitherto unknown. The quantity

radio tellurium contained in pitchblende is much smaller than that of radium, the proportion being about one in a milliard, which is less than the quantity of gold in sea water. Radium gives off three kinds of rays—Delta rays, hardly penetrating solids at all; Beta rays, moderately absorbed by solids, and powerfully deflected by a magnet; and Gamma rays, difficult of absorption and not deflected. Radio-tellurium, however, gives off only Alpha rays, which the Professor showed, will pass through a very thin sheet of aluminium, but not through a sheet of paper. Alpha rays possess to a high degree the power of making air a good conductor of electricity. Prof. Markwald, to show the remarkable properties of radio-tellurium, placed a copper plate with electrolytic precipitation of the new substance, consisting of some hundred-thousandths of a millimetre, near a set of electric chimes, and it stopped them. When he put near a Leyden jar it caused it to discharge through the air without emitting sparks. Then the Professor attached an electric wire to a wire and the other end of the wire to this copper plate. When he put a condensing machine near, and when he set it in motion, electricity passed from it through the air to the plate, and thence through the wire to the bell, which it set in motion, although it was directly connected with the machine. But a sheet of paper held between the air between the machine and the plate interrupted the current, so that the bell ceased ringing. Speaking of other radio-active substances, Prof. Markwald stated that salts of radium shine spontaneously, that being specially the case with a rapidly-dried mixture of bromide of radium and bromide of barium; but radio-tellurium does not.

The Scottish Photographic Federation.—Secretary's report, 1903. The Scottish Photographic Federation was formed at a meeting held in the rooms of the Perthshire Society of Natural Science, Perth, on January 17th, 1903, when twenty-seven delegates were present from fourteen societies. A sub-committee drafted rules, and at a meeting on March 2nd, these rules, which had been previously circulated amongst the societies, were the subject of much discussion, and were duly adopted with alterations. The officers were elected, and the work of the Federation really set on foot. It was intimated at this meeting that sixteen societies had decided to federate. The first meeting of the Council was held at Perth on May 2nd, when something was done to provide benefits for the federated societies. Arrangements were made for a list of lecturers, etc., and judges were appointed—the majority of these having agreed to act. It was decided at this meeting that the Federation should promote an exhibition at Perth on the occasion of the first annual general meeting, and a committee was appointed, with full powers to carry this decision into effect. The next Council meeting was held at Stirling on September 5th, when the lantern slide rules were discussed and adopted, and the Secretary instructed to have these, and the list of lecturers, etc., which had been composed, printed and circulated. On December 19th the Council met at Glasgow, when judges were appointed for the lantern slide competition, and arrangements made for the opening of the exhibition. A record of work accomplished by the Federation, especially when considering the time spent on the necessary initial arrangements, is, I think, praiseworthy. The list of lecturers, demonstrators, circulating lectures, and lantern slides, as well as the list of judges, though issued after many of the societies had made their arrangements for the session, were well taken advantage of, no fewer than 150 applications having been made for these. The lantern-slide competition—the prizes for which, it may be mentioned, were given to members of the Council—has been well supported, 268 slides being sent. The exhibition opened to-day—the Scottish National Salon marks a distinct innovation in photographic exhibitions. There is no need for me to speak of its success, you have seen it for yourselves. At least three exhibition-promoting societies have included their prospectuses a class confined to associates. I hope this spirit of camaraderie will be supported. The Federation at its formation consisted of sixteen societies, now twenty-three combine to work for the betterment of Scottish photography, and I hope the time is not distant when every photographic society in Scotland will federate, a matter of course. The stronger the Federation, the more benefit will be its work, and its record for the first year of its existence shows conclusively that it will be a power for good to all British photographers.—John B. MacLachlan, secretary.

Correspondence.

* * * Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.

* * * We do not undertake responsibility for the opinions expressed by our correspondents.

THE NEW DYES.

To the Editors.

Gentlemen,—In the current number of your valuable publication there is the second and concluding portion of a translation from "Das Atelier des Photographen" of an article by Baron von Hübl, entitled "A New Collodion Emulsion." Among the coloured sensitizers recommended for the emulsion there is p-toluchinaldin-chinolin-methyl cyanine, as giving in a degree hitherto unattained sensitiveness to the blue-green. Now, in the "Process Photogram" of September last there appeared Valenta's report on this dye, translated from the June number of "Photographische Korrespondenz." The following is the translation:—

"On short exposure one obtains a band from B₄C to h, in which is to be seen a maximum at D, an indistinct minimum at D₂E, and a further maximum at D₃E. On longer exposure the action extends to B and further."

Valenta's report is on the effect which the dye produces on gelatine plates, and it will be noticed that nothing is said about the blue-green region of the spectrum. But in the same article there appears a report on the ethyl compound of this dye, viz., p-toluchinaldin-chinolin-ethyl cyanin, and, according to the translator, Valenta says of it:—

"This dye is very similar to the methyl compound, but renders the blue more strongly. With medium exposure, a maximum is to be found at F, and the action does not extend so far into the orange red."

It is remarkable that the "Photogram" translation of Valenta's report ascribes to the ethyl compound the very property which is claimed for the methyl in your translation of Hübl's article. When I first read the "Photogram" statement that a maximum appeared at F, I concluded a mistake had been made somewhere; either "maximum" had been printed for "minimum," or F for E. Your translation of Hübl's article merely increases my perplexity, and you will confer a great favour upon me if you, or any of your readers, will clear the matter up. Perhaps you have the June number of the "Photographische Korrespondenz" by you, and, in that event, you might have the goodness to give an exact translation of what Valenta says on both the ethyl and the methyl compounds. I fear I am trespassing somewhat audaciously on your goodness, and if I were not aware how much your patience is exercised weekly with questions which ought never to be asked, I should sink back diffident and silent. If you will publish an answer, however, I feel sure you will do a service to many besides myself, who are interested in tri-colour photography.—Yours faithfully,

INQUIRER.

February 8th, 1904.

[Our correspondent's difficulty is very easily explained away. The translation in our contemporary is correct. Baron Hübl's experiments were made with collodion emulsion, whilst Valenta used gelatine plates, therefore the results are neither comparable nor contradictory. It very frequently happens that a dye may be an excellent sensitizer for collodion but utterly useless for gelatine emulsion; a notable instance of this is ethyl violet, which acts well with collodion but is quite useless for gelatine. Another point which must not be lost sight of is that Hübl used chloro-bromide of silver; Valenta, on the other hand, in all probability bromoiodide, and even in the same vehicle a difference of sensitising is then frequently to be noticed. Further, a difference is to be observed in the opacity of maxima and minima when the prismatic and diffraction spectrum is used. Another source of apparently contradictory results may actually lie in the varying proportion of iodide to bromide of silver, and whether the dye is added to the emulsion before coating, or the plates bathed in a solution of the dye, whether free bromide or an alkali is present, and whether the plates are washed after bathing. As a matter of fact, the whole subject is so complicated that

generalities alone can be stated, and spectroscopic tests should always be averaged for practical work by pigmentary charts.—Ed., B. J.]

FIFTY YEARS AGO.

To the Editors.

Gentlemen,—Referring to your articles, "Extracts from the 'Liverpool Photographic Journal,' the Organ of the Liverpool Society," of fifty years ago, it may be of interest to the numerous readers of your valuable journal to know that Mr. J. A. Forrest, whose name was so prominently associated with the very earliest recollections of the journal, still takes a lively interest in matters photographic. At the enormous age of nearly ninety years he is, doubtless, the only survivor of those whose names occur in these very early records, and he is still a honorary member of the Liverpool Society.

He has expressed his pleasure in seeing these articles reproduced in which he has been very interested, and has a lively recollection of the events.

The photograph of the moon in connection with the British Association's premium offer, taken by Mr. Forrest in conjunction with Mr. Hartnupp (of the Bidston Observatory), was at that time probably the most successful one ever obtained; he still treasures this negative, and is always delighted to show it to his photographic acquaintances.

His experience in the wet collodion process, and his associations later with Mr. B. J. Sayce—also connected with the Liverpool Society—are interesting to relate, and the amount of enjoyment he has derived from amateur photography in his early days, and in interesting himself later in all new developments in the photographic art, is incalculable, and to the present day he takes pleasure in any new process or invention.—Yours truly,

S. H. SAUNDERS,
Member of the Liverpool Amateur
Photographic Society.

February 13th, 1904.

COLOUR VISION.

To the Editors.

Gentlemen,—With regard to Mr. Harry Quilter's criticism of my suggestions on the evolution of colour vision in man, I think he builds too big a castle on a somewhat shifty foundation. If man of the Stone Age had left coloured paintings, or even a bit of crude pottery ware with a rough design in one colour, then one would say beyond doubt he had colour vision. But to assert that because other animals, either contemporaneously or ages previously, had developed colour sight, therefore man had the same power, is making too free with the theory of evolution. That butterflies, which belong to a side chain, had developed colour-seeing eyes, is no proof that the main trunk line had acquired the same power. And, even if it had, it is conceivable that in the enormously long interval before man appeared, colour-vision might have been lost for awhile, owing to its inutility under new circumstances, and afterwards regained. Nature has her retrograde movements as well as progressive. However, I had not overlooked the possibility of colour vision having been developed quite early in evolutionary ages (when writing my article), although I did not know about the butterflies; but for the sake of simplicity, as it seemed to me, I avoided the reference. But even if it be a fact that colour vision was developed in the dawn of life, and has continued without a break to the present time, does this destroy my argument in principle? I do not think so. Rather has the ground been merely shifted from one point of evolutionary time to another, and at the same time my plea for a simpler theory of colour vision than those now in vogue has, perhaps, been strengthened. For Nature, like man, needs experience in her work before she can turn out the perfected article. In the dawn of life, crude forms, imperfect organs; in the ripeness of experience, highly-developed man, finely-wrought organs. If, then, the crude insects of the beginning of time could distinguish the colours of Nature with their imperfect eyes, what need of the complicated mechanism required by the three-sensation theory? Is it likely that the red-green and yellow-blue substances of Hering could have been developed at this early stage?—Yours, etc.,

February 17th, 1904.

"FESTINA LENTE."

A CORRECTION.

To the Editors.

Gentlemen,—In your report on my paper on the metric system there is an error which has escaped correction, and which I would ask you to kindly let me correct. In the last paragraph, fifth line, the wording should be "measurements that are *not* entirely incomprehensible etc. This will put the sense of this paragraph right.—I am, yours truly,

J. R. GORZ.

215, Shaftesbury Avenue, London, W.C.,
February 12th, 1904.

THE SOUTH LONDON PHOTOGRAPHIC SOCIETY'S EXHIBITION.

To the Editors.

Gentlemen,—I understand that the Cripplegate Photographic Society have extended the last day for entries for their exhibition and as we have arranged with them to collect from their exhibitors any pictures entered for both exhibitions, we shall have to extend our closing time in a similar way. I have been thinking over the matter, and after consideration of the work to be done in compiling the catalogue, I have decided to so arrange matters that entry form reaching me up to Thursday, February 25, will be included in the catalogue. I trust that this practice of altering the dates for closing may not increase, as it rather upsets one's calculations of working time for compilation of the catalogues.—Yours faithfully,

W. CALDER MARSHALL, Hon. Secretary.

41, Glenton Road, Lee, S.E.,
February 12th, 1904.

RADIUM Solutions.—Radium and actinium were discussed recently before the Technology Club of New York in the operating rooms of Dr. William J. Morton, by Dr. George F. Kunz and Dr. Morton, who is professor of electrotherapeutics in the New York Post Graduate Medical School and Hospital. Dr. Morton said: "The Röntgen ray has been of immense value in curing cancer, but radium promises to go far ahead of it. If we had radium of 150,000 activity we could no doubt do a great deal more than we are doing now. Most of it have been confined to a much lower radio-activity. We have been working with from 7,000 to 10,000 luminosity. The actual glow of radium does not represent its actual radio-activity. There is a great difference in the ore. One sort of radium may possess a high luminosity, while another sort may have a high radio-activity and very little luminosity. We cannot boast of the luminosity of the kind which we now have." Dr. Morton startled his hearers by telling of a mixture which he had prepared and called "liquid sunshine," the name having been applied because the doctor regarded it as a good "catch" phrase to give to the preparation. By means of this fluid, he said, the whole interior of a patient could be lighted up. The doctor exhibited six tubes containing "liquid sunshine," one of which, he explained, contained quinine sulphate which had been exposed to radio-activity. He then proceeded to show the luminous quality of the fluid by placing each tube before a strong X-ray whereupon a spot of faint light was seen about the size of the palm of the human hand. "That," said the doctor, "would be the result if the liquid were taken inside. I believe," he added, "that radium may, after all, be the real curative property which has been found in so many spring waters throughout the world. The advantage of radium over the X-ray is that it can be applied directly to the part affected. For example, if placed in a small tube, it may be inserted in the throat, and in similar manner it may be applied to any vital region. In other words, with radium we shall be able to get at the seat of diseases. There is no end, in my opinion, to the cures which may be effected by radio-activity, excited in one way or another. In imparting radio-activity to liquids, however, we have to be extremely careful, and physicians will need to use the utmost discretion in advising patients to drink the fluid. It will be possible, however, to bathe a patient's entire interior in violet ultra-violet light as the result of this discovery, and this light have decided to call 'sunshine.' We know of the value of sunshine on the outside, particularly where bald heads are concerned, and I believe it will have a similar effect on the inside."

Answers to Correspondents.

All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.

Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.

Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.

For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

Edward, 13, Bank Street, Edinburgh. Two Photographs of a Room covered with Postage Stamps.

James, Castle Hill Studio, Mere, Wilts. Two Photographs, "Meet of the South and West Wilts Foxhounds."

Jenkins, 316, Victoria Street, Great Grimsby. Photograph of the Theatre Royal, Great Grimsby.

Lovatt, 6, Water Street, Todmorden, Yorks. Photograph of Cricket Field with Spectators.

Evans, 12, St. Helen's Road, Swansea. Photograph entitled, "Washing Day."

H. Balmain, 69, Shandwick Place, Edinburgh. Photograph of Miss K. Mathias, Two Photographs of Messrs. Le Clerg and Dixon, Photograph of "Snooze's Band," and Photograph of Messrs. Greil and Grey, all in "Cinderella" costume, at the Royal, Edinburgh.

Art, Thistlebank, Helensburgh, N.B. Three Photographs of the Rev. A. Allan.

WANTED.—WEBER (Bolton) asks: "Would you be so kind as to give name of book giving the different processes of transferring photos to stone for litho artists?" In reply: "Photolithography," by G. Fritz. The book may be had through any of the dealers.

TS.—"LEO" says: "Can you kindly tell me where I can buy negatives for double printing, ovals, etc., as card enclosed?" In reply: We do not know if this particular mask is on the market. But you might inquire of some of the large dealers, such as Houghton's. You could easily make similar masks by applying water colours on thin paper.

VING HYPO FROM PAPER.—"LAD" (Tufnell Park) asks: "Will you kindly let me know if it is possible to remove all traces of hypo present in paper which is used in the manufacture?" In reply: Soaking the paper in a solution of hypochlorite of soda will destroy the hypo; but of course that treatment will disturb the surface of the paper. It will require a thorough washing to rid it of the hypochlorite after treatment.

PLAY.—We do not quite see what you have to complain of. Many stationers publish picture post-cards, views of the surrounding neighbourhood. You can do the same if you choose. Is there any reason why stationers should not become photographers if they like? As to the question of discount, you might bring that matter before the Professional Photographers' Association, if you are a member of it.

ING SILK.—A. E. H. SMITH writes as follows: "In your query columns of the 5th 'Vulcan' wishes to know where he can procure bolting silk. Probably the following information may be of help to him. He can obtain the silk in question, either coarse or fine, from Kodak Ltd., who keep a stock of same, or any photo dealer will get it for him. Price of same, 23 by 17, is 4s."

RIGHT.—W. MARTIN says: "I have come into possession of a very old photograph, which I should like to copy, but would like your opinion first. It bears the following inscription: 'From a Chalk and Charcoal Drawing, by J. McIntosh, Rochester, N.Y., U.S.A. 1871. Copyright secured.'" In reply: As the picture is an American production the probability is that there is no copyright in it here, as America is not included in the Berne Copyright Convention.

BROMIDE PRINTS.—"W. S." asks: "How are those small bromides done similar to those that were at one time given away in packets of Ogden's cigarettes? They are done by a Birmingham firm at 2s. 6d. per dozen, with name of firm at bottom, in place of the generals' names that were on Ogden's." In reply: They may be done in the following way: Mount, say, a cabinet print on a white mount, and write on the name. Then copy it, several on a plate, with a repeating back camera. Cameras for the purpose are supplied by all the large dealers.

BOOKS WANTED.—A. CORLLIER asks: "Would you please tell me which are the most serious books on following subject?—(1) Three-colour photography (theory) and theories on Maxwell's curves and fundamental colours. (2) Has not Sir W. de W. Abney published any books on the subject? I should like most scientific works (3) Please also note editors of books" In reply: (1) "Photography in Colours," by Bolas, Tallent, and Senior; "Three-Colour Photography," by Hubl. (2) Not that we are aware of. See his Traill-Taylor lecture in the issue for January 22. (3) The editors' names are given above.

ORTHOCHROMATIC SCREENS.—G. BRODIE asks: "Can you let me know if any make of orthochromatic plates, easily obtained in this country, give accurate results with Carbutt's colour filters? I am aware they are stated to be accurate with Carbutt's plates, but as these plates are almost (if not entirely) unobtainable I would be glad to know of any British plates that will suit them." In reply: We have not tried Carbutt's colour filters with English plates, but probably they would answer. We should advise our correspondent to obtain samples of different English plates and try them with the screens, or use those supplied by the English plate makers to suit their plates.

BLUE EYES—LANTERN.—"IVANHOE" asks: "(1) Would you kindly inform me whether, when photographing people with blue eyes, it is better to use iso. plates, as I find they do not show up at all well? (2) And would you also tell me the cause of overheating my limelight lantern? I do not have any excess of hydrogen, and my lantern is as ventilated as possible, yet my slides are often scorched and condenser cracked." In reply: (1) There would be an improvement by using isochromatic plates if they were employed with a pale yellow screen. (2) The only remedy is to secure better ventilation through the lantern, so as to carry off the heat. Try increasing the height of the chimney, at the same time increasing the ventilation at the bottom of the lantern.

STUDIO PAINTING—GAZING SHADOWS.—"COLCUR" asks: "(1) What colours do you recommend for painting interior of studio? My studio has a tendency to give dark shadows rather than otherwise. Personally, I prefer a warm, homely appearance about a studio. (2) What do you recommend to use for black shadows in working up enlargements—namely, to produce touches of black glossy appearances? Dull black does not show up like a glossy black. I find plain gum Arabic has a tendency to dampen and turn mouldy on the print." In reply: (1) A French grey or a pale neutral green will be very suitable. (2) There is nothing better than a solution of good gum Arabic. If it be used fresh there is little risk of its becoming mouldy on the print, unless, indeed, it is kept in an abnormally damp place. In future write on one side of the paper, please.

STAINED NEGATIVES.—"SCOTTY" says: "We have received six dozen 1/2-plate negatives from a customer, which are very badly silver stained. Could you give us any information how to remove them? The negatives are not varnished, and, we are told, were developed with pyro-soda developer. The silver stains were caused with leaving prints and negatives in presses several nights in succession and damp paper." In reply: If the stains are deeply in the film it is doubtful if they can be removed, but you might try a long soaking in a freshly made solution of hyposulphite of soda. If they are merely on the surface, they may generally be removed by rubbing them over with a tuft of cotton wool, charged with a weak alcoholic solution of iodine, about the colour of sherry, until they disappear, and then refix in hypo.

PHOTOGRAPHING INTERIOR.—"DARKNESS" asks: "Will you kindly give me your opinion as to the best way to photograph the enclosed? The light comes from a sliding (open) roof only."

There is electric light in the place, but that seems to me useless. I send you two photos, one taken with electric light and one with magnesium wire, used in the top of building only. Do you know of a way of lighting the top part of the building, which is beautifully painted? Only the ground on which the paintings are executed is a gold one, and comes out so badly, but when you see it lit up at night it is most beautiful." In reply: The only suggestion we can make is that you imitate, as much as possible, the lighting as it appears at night, either by projecting an arc light upward or by using magnesium wire. Possibly a flashlight might aid you. As the ground work is yellow you would find orthochromatic plates useful.

STUDIO.—"GLOSTER" says: "I am about to build a studio, and should like to have your advice. Do you think the enclosed plan suitable for studio and reception-room, etc., the measurements of which are as follows:—Studio 24ft. long, 13½ft. wide, 8ft. high to eaves, 11ft. 6in. to highest part of roof, 8ft. of top and side light, 4ft. blocked at sitter's end? What I should like to know (1) is plan suitable? (2) Is top and side light sufficient? (3) Is 4ft. blocked out at sitter's end sufficient? (4) Would end section as plan be better than full span roof? (5) Would good Eury-scopic lens be suitable for studio work? (6) Having a full unobstructed light on south side (a wall being on north side), what colour blinds would be most suitable?" In reply: (1) Yes, quite. (2) As the studio is 13½ft. wide, another foot of top and side light would, at times, prove convenient. (3) Another six inches, or a foot, might well be blocked out. (4) Yes, as you would get no light on the north side. (5) Yes, though it would be slower in action than a portrait lens. (6) We should recommend two sets, one white and the other dark blue, or light green, to use as occasion may require.

STUDIO QUERY.—"GILLIES" says: "I am making a studio in a town where property is of great value, and necessity compels me to use the ground floor rooms as reception, etc., ones, and the first floor, two rooms, by knocking partition wall out, as a studio; room will be 20ft. long by 19ft. wide, and about 11ft. high. I think of taking 16ft. or 18ft. of the side wall out, from about a foot of the floor up to as near ceiling as the girder, that is to be put in to support the above floor and ceiling, will allow, thus having about 18ft. by 10ft. high of side light, glazing same with ground glass. Do you think I shall have a sufficiency of light, please? Should have preferred the rooms above, but it would encroach on another portion of the building. I could not get any more than 20ft., and there are two or three large stone gables would have to come down, and make alterations more expensive. Work will be mostly cabinet heads and three-quarter figures, thus using sufficiently long focus lenses for the purpose." In reply: Very good portraits can be taken in a studio such as that proposed. It will do well for busts and three-quarter lengths, but will be short for full lengths and for groups. But as the length cannot be increased there is no help for that.

COPYRIGHT.—"VIATYPE" asks: "Will you kindly give me a little information upon the following? (1) I photographed a man in May, 1900, who paid for his sitting. In September, 1903, he committed a murder, and during the time he was in prison I wrote him to give me his consent to sell his pictures, which he did in November last. He was sentenced to death and hanged. A certain paper reproduced his picture, and came to me first before doing so to ask my permission, which I said they could have by paying 7s. 6d. This they refused to do, and copied same. My solicitors have offered to settle the matter by them paying two guineas and their costs, one guinea. This they refuse to do under these conditions. Do you think we have a case? (2) When a sitter is invited to sit and no payment is made by him is it necessary to register that picture to vest the copyright to the photographer, unless he is going to take action, and then it must be registered? Is this so?" In reply: (1) If you had not registered the copyright before the paper reproduced the portrait you have no remedy. Have not your solicitors told you that? (2) No damages or penalties can be recovered for anything done prior to the registration of a picture. Write only on one side of the paper in future.

MESSRS. Newton and Co., of 3, Fleet Street, E.C., have just received a large series of negatives of the Trans-Siberian Railway including Port Arthur, Vladivostock, Lake Baikal, groups in Manchuria, etc., which they are publishing as lantern slides; also a series of Corea and the disturbances in the Far East.

SOUTH DEVON Teacher's Camera Club, at its annual meeting last week, at Newton Abbot, re-elected Messrs. A. W. Searley and Mole president and secretary respectively. It was decided to commence the New Year's programme on March 26th, when the president will deal with "The Laws of Composition as Applied to Photography." Demonstrations will be given during the season on platinotype work, enlargement, and the carbon process, and a meeting will be held for criticism of negatives and prints. During the summer Newton, Ivybridge, Bishopsteignton, Ashburton, Buckfastleigh, Babbacombe, and Torquay will be visited.

LIVERPOOL Amateur Photographic Association.—At the last week meeting, Mr. Gilbert Y. Tickle led the subject on "Common Objects of the Seashore or Seaside Snapshots." A large number of slides belonging to about a score of members were passed through a lantern dealing with the subject, and comprised both interesting and amusing series, notable among the latter being Mr. Dibdin's studies. The lecturette given by Mr. Saxby, dealing with "specimens" found in Barbadoes earth, was given in a very masterly manner, and the microscopic slides taken by him from examples arranged by Mr. Norman Thomas reflected great credit on both photographer and the arranger alike.

The annual meeting of the Royal Astronomical Society was held last week at Burlington House, among those present being Mr. Choate, the United States Ambassador, who attended to receive the Society's gold medal for presentation to Professor G. E. Hale for his method of photographing the solar surface and for other astronomical work. Professor H. H. Turner presided and, in awarding the medal, said that he would refer to the words of Professor H. himself—namely, that "the sun is the only star whose phenomena can be studied in detail." They would all assent at once, not only to the proposition itself, but to the obvious corollary that particular attention should be paid to solar phenomena. Far too little attention had been paid to the sun hitherto. It was a happy augury for a new century that they were able so early in its course to confer well-deserved honour upon one of those who were taking the lead in rectifying the omissions of the past. Having paid a tribute to Professor Hale's work, the chairman went on to say that it was a great disappointment to them that Professor Hale could not be there personally to receive the medal, but having been led to pay a visit to California, to study the conditions for solar work, he had found this so admirable that he felt compelled to begin operations there without delay. Mr. Choate, in receiving the medal, said that he considered it a great honour to be asked to attend, and to receive the medal. He would have much pleasure in transmitting it to Professor Hale. It was a medal, the awarding of which was the crowning honour of any astronomer's work in the world. American astronomers enjoyed unusual facilities for prosecuting their work. They had 300 clear days and nights out of 365, and with all the facilities they certainly ought to do something. Public and private munificence, too, contributed very largely to their opportunities.

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* The Editor can only be seen by appointment.
* We do not undertake to answer letters by post.

EX CATHEDRA.

The Scottish National Exhibition.
The exhibition promoted by the Scottish Photographic Federation, now open in the Sandeman Art Gallery in Perth, is an innovation in Scottish photography. It is a selected exhibition of the best Scottish work (distinctly from Scottish workers), and the fact that little over pictures are hung from some 400 submitted to the selection Committee shows that the committee have done their work in no half-hearted spirit. If an exhibition is to be run on these lines the selection must be strict, as every picture has, as it were, the hallmark of the committee that it possesses real merit. That the scheme has the approval of the leaders of Scottish photography is evidenced by the presence of their pictures on the walls. We are glad to notice that the committee has not entirely neglected the technical side of the art, as shown by the presence of some micro-photographs and Nature studies. This theme might, we think, be more developed in future exhibitions; photography has other sides than the pictorial, and it behoves a national body to pay attention to them.) The work of the Federation during the first year of its existence, culminating in this exhibition, is worthy of all praise, and clearly indicates that the country was ripe for such an institution.

As will be seen by our report on another page the Camera Club members were busy last week in consideration of several questions concerning Mars—

not the god of war—we have enough of him just now in the daily newspapers—but the planet called after his name. There was an unusually long discussion after the lecture, but one very amazing point concerning the history of Mars was not touched upon, and yet it is worthy of record as a curiosity of literature. Until the year 1617 Mars was believed to be destitute of any moons or satellites, and if we refer to the entrancing works of Procter, or of any other astronomers up to that date we shall naturally find no record of them. They were discovered by Professor Asaph Hall at Washington in the year named. But if we turn to "Gulliver's Travels" written very nearly two hundred years ago we can find in the "Voyage to Laputa" these remarkable words, "They have likewise discovered two lesser stars or satellites which revolve about Mars." It is a remarkable thing how many discoveries have been foreshadowed in the irresponsible pages of fiction. Most photographers are aware of the manner in which picture-making by the aid of the sun is described in one of La Fontaine's fables in the seventeenth century. Other writers of even older date have described an apparatus very similar to the electric telegraph. But this forestalling of the astronomers with the satellites of Mars is more definite and complete than anything else of the same kind. Doubts arise, indeed, whether Dean Swift should not be credited with the first recognition of the two small attendant planets of Phobos and Decimos. It was a happy prophecy anyway!

War Pictures.

The illustrated Press of the present day by its enterprise conveys to us at home a very good idea of what occurs at seats of war, however far distant they may be, whether we are personally concerned in them or not. We learn that Mr. Frederic Villiers, who has been through several campaigns as an artist, is starting for the seat of war in the Far East; also that Mr. Melton Prior is already there with the Japanese. Mr. Prior is, as usual, commissioned by the "Illustrated News." This gentleman is always accompanied by his camera, of which he is making large use on the scene of battle. The American illustrated Press is not behind the English in the matter of war pictures, and we learn that Mr. James H. Hare (son of Mr. George Hare, the well known camera maker), who for some years past has been located in the States, is on his way to the seat of war with his camera. He represented "Collier's Weekly" at the American-Cuban war. Photographs of war episodes convey, of course, a more reliable idea of the events than do hand-made sketches. Photographs at seats of war are not such a modern event as some seem to imagine. The late Mr. Roger Fenton, with his camera, went to the Crimean war, and produced some excellent pictures. At that time there were no rapid dry plates as now, and he had perforce to

work the wet collodion process, preparing his plates and developing them on the spot. Some negatives, however, we believe, were by the waxed paper process. Fenton's negatives, we are told, were all 12 by 10, or larger, so that it will be seen that his difficulties were infinitely greater than those of the modern war photographer. Still, he managed to surmount them, and brought home a series of good, as well as interesting, pictures.

* * *

The Tele-phonoscope.

This is the name which we have ourselves invented, and we feel rather proud of it, for an appliance which several people seem to have invented or are trying to invent. The people who have invented it, or say they have, have failed, and we look to those who are, to use a colloquialism, still "on the job." According to a telegram "from our own correspondent," which appears in one of the papers, no less a personage than Mr. Thomas A. Edison is one of these latter. He has "announced that he hoped shortly to perfect a camera obscura attachment to ordinary telephones which would permit users to see each other as they conversed." We are further told that the great American inventor has been at work on this instrument for a number of years, during which time success has again and again seemed to be within his grasp, but that unexpected difficulties have occurred. It is impossible to say what amount of truth there is in this telegram, for it has long been the custom with American journalists to saddle Edison with all kinds of intentions of which he is really quite innocent. He is a practical man, and no one doubts his genius, and, being so gifted, he is not in the habit of devoting his valuable time to an invention the utility of which is extremely doubtful. We are very uncertain of the advantage of being able to see telephonic correspondents as we converse with them, and we can imagine that under certain circumstances such recognition would be a positive hindrance to business. In the case, for example, of a pretty girl being established at the exchange we can foresee the possibility of clerks in the various surrounding offices ringing her up continually on the veriest pretexts just in order to beguile the monotony of their daily duties by a vision of her sweet face. And it would be necessary to replace all the well-favoured girls at the exchange by metal less attractive. What really would be valuable would be a simple attachment to an ordinary telephone of some kind of recording apparatus, and even this would be useless as evidence in a court of law unless it comprised something equivalent to a signature, so that it could be identified with one particular person and no one else. It is easy enough to distinguish the peculiarities of a correspondent's voice in the telephone, but at present we know of no means of describing them graphically.

* * *

Phosphorescence of Plates.

The communications to "Nature" on this subject still continue; last week one from Mr. Walter J. Clarke reduces the problem to its simplest dimensions, and indicates an experiment which can be carried out by anyone without need for any experimental outfit. After quoting several experimenters' results he writes:—"May I point out that the phosphorescence is exhibited by the mixed pyro and soda solutions in an ordinary white developing dish without any contact whatever with any photographic plate or paper, and without adding any other salt; but the phosphorescence is not so brilliant, and takes a longer time before it can be seen. The phosphorescence is distinctly seen by pouring the solution of pyro and soda in the dish, allowing it to remain a few minutes, and pouring it away so that only a few drops are left in the dish. I tried to obtain a photo-

graph of an object between the luminous disc and the camera, but without success." Here is, as we say, such a simple experiment that anyone may make it for himself, and we determined to ascertain how it would work in our hands. Placing in separate vessels the soda and pyro solutions which needed only to be mixed to be ready for developing, we entirely shut off light of any kind, after laying at hand a perfectly clean white porcelain dish. We then mixed the solutions, and kept them in the measuring glass for several minutes, giving a gentle shake at intervals. Result—nothing visible. We then poured the contents of the glass into the white dish, and drained them back into the measure. Still nothing to be seen. After waiting a couple of minutes, we emptied the developer back again into the measure, and poured it backwards and forwards several times over, but failed to obtain any visible result. In the face of so much written testimony of the production of phosphorescence it would be carrying scepticism too far to doubt the existence of this lighting up of the plate, yet we should be inclined to suggest, with the writer quoted in later note with regard to Blondlot's N-rays, that this phosphorescence is due to "radiations to which some men are blind and others not so," and that the precise condition upon which the effect depends yet remain to be discovered. We may narrate an incident of what occurred during the progress of our experiment, but which we should not like to suggest as an explanation of the results obtained by the experimenters we have referred to. On one of the occasions when we were draining the dish into the measuring-glass we were startled by a distinct luminosity of the plate, while the effect we were able to repeat. Its cause, however, was in no way abnormal; it was merely the reflection caused by the temporary brilliance imparted to the glowing end of a cigarette!

* * *

Registration in Double Printing.

Various devices have from time to time been introduced for securing accurate registration when the picture has to be made as a combination print from two or more negatives. Many different forms of registering frames have been introduced by the use of which the print may be removed at any stage of the printing and replaced again in perfect register, the latest form of which was that shown by Mr. Nelson J. Cherill at a recent meeting of the Camera Club, and which was described in our issue of the 12th inst. With this frame the printing may be arrested at any stage and one or more thicknesses of celluloid or other media introduced between the negative and print and the printing complete, accurate registration being ensured. A method of double printing has more than once been described in these pages by which the print, during the printing, may be removed from the frame and replaced on the negatives in perfect register. That method does not require any special frame as any ordinary one will answer. The plan has been used for the production of the so-called "Denier effects." This "dodge" does not at present seem so well known as it deserves to be, we will again describe it for the benefit of some of our younger readers. For the printing frame one of what is now known as the "box form" is preferable, though one of the usual type may be utilised if it be fitted with a glass plate. The glass, whichever form be used, must be securely fixed in the rabbet of the frame so that it cannot shift. The negative is then fastened in position to the glass with strips of gum paper, or, better still, with strips of American sticking-plaster. This is no trouble, remove from the negative or the glass, and may be used over and over again, whereas the gum paper is troublesome to get off. Next we take a piece of cardboard, somewhat larger than the picture to be produced, and it must be cut to a right angle at one end. Any photographic mount w

answer, as they are always truly cut. To this the sensitive paper, or carbon tissue, is attached by two or three small touches of thick indiarubber solution. In placing on the negative the cardboard must be pressed up closely in one angle of the frame, and perhaps the most convenient corner is the top left-hand one. Now, it will be seen that the card and print can be removed from the frame and replaced on the negative in accurate register as many times as may be required provided the cardboard is pressed closely in the angle of the frame. If the frame has a hinged back the printing may be watched in the ordinary way, and only be removed when it is desired to intervene the mask, celluloid, or what not. Very excellent Denier effects may be obtained by partially printing in contact with the negative and then interposing a sheet of celluloid, then another, or perhaps a third, before the printing is finished. Sometimes the printing is commenced through the celluloid and finished in contact with the negative. Each way, to an extent, gives a different effect. Some have suggested commencing the printing with the paper in contact with the negatives and finishing with it in contact, the intermediate printing being done through the intervening media or, maybe, mask. This system of securing registration in different printings was that utilised by M. Lambert when he was demonstrating his Lambertype carbon process in this country some thirty or so years ago.

Photography and Physiology.

The connection between photographic action and physiological phenomena has been exploited in many directions of late, some of them being very remarkable. We are reminded by recent accounts of work done, or mapped out for the future, of the particular behaviour of one special photographic chemical, nitrate of silver, when used in connection with human physiological processes. This chemical has important uses as a medicine, and is given in small daily doses made up in the form of a pill in certain severe forms of disease. Its action is sometimes remarkably effectual; but it is a medicine that should only be employed as a last resource, for the patient too often becomes a walking piece of sensitised—shall we say—tissue. The face and hands, probably through the action of light upon the absorbed nitrate of silver, become livid and corpse-like, and present a perpetual appearance something like the temporary hideousness of one illuminated by a monochromatic light like sodium, or resembling that of people illuminated by the Cooper-Hewitt mercury lamp. Here is an example of light action, painful to contemplate, brought about by artificial means. Much has been written lately of light action in an opposite, a benignant direction. Briefly put, it is stated that a sufferer from small-pox if during the whole of his illness he be kept in what may be termed a continuous dark-room light—one where nothing but red light gains entrance—passes through a milder attack, and recovers without the disfiguring “pitting” of the features, one of the loathsome sequelæ of this disease. Photographers and those engaged in the preparation and use of sensitive photographic products have long been familiar with the fact that to dark-room rays are ascribed certain properties which experience has failed to confirm; for example, quite early in the eighties, a mild scare was created as to the alleged harmful effect which the light in dry-plate coating-rooms, developing-rooms, etc., had upon the eyes, and even now it is frequently suggested that some sort of action is caused by these rays on the skin. The whole thing, however, like the interesting maternity experiment of Dr. Hill, to which we referred a fortnight ago, is, we fear, more in the nature of a spectral myth. We live in times when light in its various forms of manifestation or energy excites a remarkable degree of interest. Scarcely a week

passes without the newspaper columns are filled with interesting statements as to the effects which the innumerable rays now, so to speak, “on the market,” are supposed to have on organic and inorganic bodies. Here still further in the latter direction we have M. Blondlot and his N-rays, radiations from certain structural portions of living beings, which possess properties analogous in some respects to Röntgen rays, capable of exciting phosphorescence, and so on. His opinions and proofs are treated with the respect due to the utterances of men of scientific eminence; but, hitherto, no one else has been able to obtain similar results. He himself has explained and described his experiments to the Paris Academy of Sciences, and has shown how the radiation is separable into eight bundles, whose respective indices vary 1.04 to 1.85. He has also determined the wave lengths of these separate constituents. But, so late as the current number of “Nature,” we have a letter from Mr. J. B. Burke giving in detail the result of his unsuccessful endeavours to repeat M. Blondlot’s experiments. He is at a loss to discover any other explanation than that M. Blondlot has come across “radiations to which some men are blind and others not so, and that the precise conditions upon which the effect depends yet remain to be discovered.”

* * *

Rustic Photography.

We may suppose that every photographer who has in his nature one spark of poetic feeling, must have wished at some time or other to work out by means of the camera some story after the manner, say, of Hogarth. Every picture lover knows his “Rake’s Progress,” his “Marriage à la Mode,” “The Industrious and the Idle Apprentice,” etc. Of course the photographer must come a long way after Hogarth, and to produce picture stories of this kind, he would require as models, actors and actresses of transcendent powers, and a stage manager of marvellous ability to pose them—well-nigh impossible conditions to fulfil. But, if the photographer will content himself with the illustration of some well known poem, which deals with a particular phase of human life—rather than with the movements of a few actors in a life drama, he does not set himself an impossible task. Let us take as an example of what we mean that deservedly famous example of word painting, Gray’s “Elegy in a Country Churchyard.” The photographer need not be tied to that particular churchyard at Stoke Pogis where Gray imagined this masterpiece. He can choose any “God’s acre” which by its picturesque quiet may commend itself to him, and then, if it in him lies, he will find a subject for illustration in almost every stanza of the work. To quote only two lines—

The lowing herd winds slowly o’er the lea,

The ploughman homeward plods his weary way.

Perhaps we should have written in the past tense and said those illustrations for this poem might once have been found ready to the hand of the photographer. For rustic ways have undergone a marvellous change since Gray was in the flesh—nearly a century and a half ago. And this change has come upon the face of the country within the last three decades. During this short time the picturesque features of country life have all but disappeared, and supposing that we had among us a poet of Gray’s calibre, he would have to go far afield to find anything which would tempt his muse. The steam plough with its heavy snorts would certainly not appeal to him, nor would the noisy thrashing machine, whose hum is far louder and not in any way of a soothing nature of the hum of a bee. Then there is the reaping machine, which has taken the place of the man with the scythe. In a word the old English farm with its sleepy ways, and its quiet beauty, is being elbowed out by steam and electricity, and

pastoral poetry is going out with it. The last shred of rustic simplicity is torn asunder with the recent introduction of an electrical milking device. "The pretty girl milking her cow" is no longer to find a place in farming life. She is now superseded by a mechanical contrivance which is called "The Lawrence-Kennedy cow milker." There is a picture of it in the "Illustrated London News" from which we gather that the machine is quite automatic in action, and that placed between a couple of animals as they stand at the byre, it will operate upon them in the most efficacious manner. It seems to consist of a receptacle for the milk in which a vacuum is created, and this is connected by flexible tubing with the cows. Then there is a thing called a "pulsator," which we read can be so regulated by screws to give "adjustability to the characteristics of each cow." What an awful revulsion of feeling there is when we turn from Gray's line—

Along the cool, sequester'd vale of life,

and read about adjusting machinery to the peculiarities of each cow. If this kind of thing does not "implore the passing tribute of a sigh" we know not what does. But we have said enough to show that if an enterprising camera bearer wants to pourtray the essential features of English rustic life as seen by Gray and contemporary poets he must not seek them in England, unless he can find some "sequester'd vale" where mechanical abominations are as yet unknown.

INTERNAL REFLECTION IN CAMERAS.

HOWEVER carefully the photographer may exclude every stray ray of actinic light from his plates until they finally emerge from the fixing bath, there still remains a certain liability of his efforts being frustrated in a way that is difficult to prevent. We refer to internal reflection in the camera during exposure. This is of far more frequent occurrence than might be imagined, and a consideration of the subject is not without interest.

A very good idea of the manner in which light may be thrown back from the bellows lining can be obtained by making the following simple experiment, in which we exaggerate the conditions to render the effect more visible. The camera is pointed up and focussed on a bright light, say an incandescent gas burner, until the flame can be seen sharply defined on the lower margin of the screen. We shall then notice, about an inch above the image, a marked patch of bright, reflected light. If we remove the focusing screen and look into the camera the cause is immediately apparent; the topmost rays entering the lens are striking sharply on the inclined surface of the bellows, and are thrown back in full force on the screen (see Fig. 1).

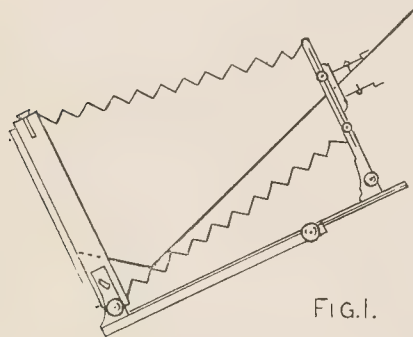


FIG. 1.

This phenomenon is sometimes wrongly ascribed to "getting the light in the lens," which is quite a different thing, though both are largely amenable to the same remedy—the use of a sky-shade. This experiment affords an effective illustration of what may easily happen in photographing interiors where a brightly-lit window comes near the edge of the plate, or in landscape work, where the sky occupies a similar position over a comparatively dark subject. Much of what is put down to halation by the unsuspicious worker is really internal reflection of this kind, and might be avoided either by screening the lens or altering the position of the camera.

The conical bellows is a frequent distributor of stray light. The old-time photographer, with his sliding body instrument, was in this respect better off than some of his modern successors. Internal reflection was practically unknown to him, and not a little of the splendid clearness and vigour noticeable in negatives and positives of that period was due to this fact. Our predecessors, too, seldom took it into their heads to employ a lens of greater covering power than was really needed, more commonly erring in the other direction. The reflection often caused by using a lens of unnecessary covering power is illustrated by Fig. 2,

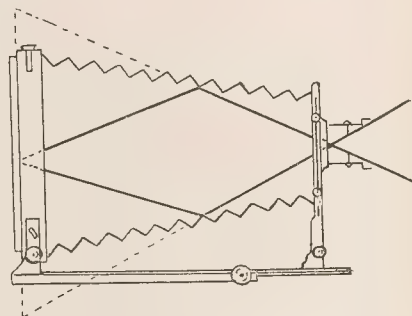


FIG. 2.

which shows how the rays which would otherwise go to form a larger image, as indicated by the dotted lines outside the camera, are stopped by the ridges of the bellows and reflected on to the plate. It does not seem to be generally known that this kind of reflection may be prevented by the use of a suitable circular hood on the front of the lens to reduce the angle of view.

It is evident that the material employed for the bellows lining is a question of some importance. As a rule, there is nothing to complain of in this respect, but occasionally we come across cameras where some kind of linen has been used of a distinctly shiny character. We can only advise the possessors of such to coat the interior of their bellows with a dull, black varnish, since they can hardly expect to obtain perfect negatives under the preceding conditions. It was once suggested by a worker that a red cloth might be more suitable than black, for the somewhat curious reason alleged, that the dyes used for the latter were said to be of a shinier nature than the red dyes. Be this as it may, a series of trials instituted for the purpose showed conclusively that there was far more reflection from the red than the black, as, indeed, might have been expected.

From what we have said, it would appear that the square bellows camera possesses certain advantages, although, of course, the conical form is perfectly satisfactory where care is taken to avoid the conditions giving rise to reflection.

Theoretically, the ideal course would be to have our camera of a larger size than the plate we intend to use, but retaining the smaller lens. There is then no possibility of reflection, as will be seen by Fig. 3. Considerations of

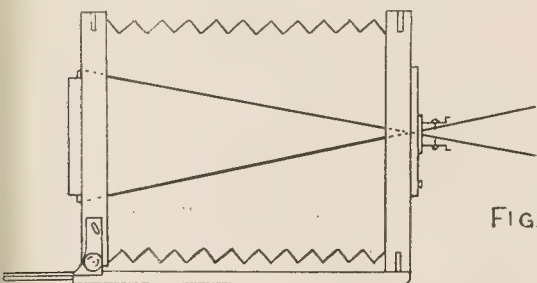


FIG. 3

weight and bulk are fatally against this proceeding for ordinary use, but the idea is worthy of attention in the case of apparatus for scientific purposes.

Space will not permit anything to be said of other forms of internal reflection, such as that from an imperfectly-blackened lens mount or the so-called "ghost image" thrown from the inner surface of the front combination of a badly-adjusted rectilinear lens. They are, at all events, less likely to occur, and more easily perceived and remedied, than the trouble we have been discussing.

In all cases it is more particularly when the apparatus is tilted that there is a probability of internal reflection, as will be readily understood. The photographer will find himself repaid by removing the screen and carefully inspecting the inside of the camera before making an exposure. He will often in this way be able to detect and prevent the evil, which otherwise would have passed unnoticed. It must be remembered that the reflection consists more of a general diffusion of light over the plate than of a special illumination of one portion, and so only makes its presence evident, in most instances, by a flatness and lack of brilliancy in the resulting negative.

At the Röntgen Society's ordinary general meeting on Thursday, March 3rd, 1904, at 20, Hanover Square, the presidential address will be on the subject of "Some Laboratory Notes of the last Six Months."

The Mysterious Poisonings at Sheffield.—The mystery attending the poisoning of John James, labourer, and the narrow escape of several women, at Sheffield, has been solved. At the inquest held on Wednesday last week, Police-Inspector Hebb stated that, next to the house occupied by James was a Siemens' blast furnace, which had been shut down since last September until the Thursday before the fatality. Dr. Carter, police surgeon, who had made the post mortem, said the cause of death, he had no doubt, was poisoning by carbon monoxide gas. This gas was the ordinary product in large quantities of the Siemens' steel process, and was not a constituent of bad sewer gas. Dr. Scurfield, Medical Officer of Health for Sheffield, described his examination of the house and the surrounding court. He agreed with Dr. Carter as to the cause of death, and also as to the source of the gas. The cellar of the house runs up to the footpath, and occupies the archway next to the works in which the Siemens' process was carried on. He found no leakage of coal gas, but the source of the monoxide gas could not be determined until the ground around the house and in the works had been opened out. It was possible that the gas had been absorbed in the earth through a flue which leaked. A verdict was returned that death resulted from poisoning by monoxide gas, but expressing no opinion as to the source whence it came.

PHOTOGRAPHIC LENS MAKING.

[A lecture delivered before the Photographic Society of Philadelphia.]

THERE is probably no other branch of organised manufacture which demands such precision of workmanship as is necessary for the production of the best photographic lenses. The bricklayer and the tailor are proud of working within an eighth of an inch, the cabinet-maker of working to a hundredth, the machinist deals in thousandths, the watchmaker in ten-thousandths; but the photographic lens maker works in hundred-thousandths of the inch every day until he forgets the remarkable character of this performance, for it becomes instinctive.

Before proceeding to describe the making of lenses, it may be well to speak of the tools and appliances necessary for the work, and to say that owing to the special character and extent of the lens-making industry, suitable machinery and tools cannot be purchased ready developed, as looms for weaving may be bought; but opticians have either to content themselves with comparatively crude appliances, or to design and make more perfect ones for themselves.

The glass of which lenses are made is purchased in the form of rough plates from Continental and English makers. This is expensive material, a plate four inches square costing sometimes as much as twelve dollars. The uniform practice at Leicester is to grind and polish both faces of these raw plates to facilitate thorough inspection of the material before being made into lenses. In the course of this examination a large proportion of the glass is marked to be cut out and thrown away. It might well be thought that a material so expensive should be free from all defects. But many of the difficulties of manufacture are serious and inevitable. In order that the various glasses shall possess the necessary refractive and dispersive powers, a large variety of materials is employed by the makers to modify or temper the fusible earths which form the chief constituents of the glass. The perfect incorporation of these materials by melting and stirring them in a crucible, and the avoidance of discoloration and dirt, are highly delicate tasks.

When by these means the optical glass maker has prepared a mass of glass, it is allowed to cool and then broken into fragments. Of these only the cleanest and most perfect are selected for remelting to make the final cast. But in melting a peculiar difficulty is experienced. As the pieces fuse together bubbles of air become imprisoned in the vitreous mass, and only the largest of these quickly rise to the surface and escape. The smallest bubbles remain suspended, and can be removed only by patiently waiting until their feeble force carries them to the surface. But in the course of waiting more serious harm frequently arises. For the same force of gravity which expels the bubbles works other changes within the body of the glass. Its heavy constituents sink, and the resulting lack of homogeneity, although invisible to the eye, is far more hurtful to the action of a lens than is the presence of tiny bubbles, which do not of themselves affect the defining power of the lens in the slightest degree. Like the uncut leaves of a book, which are a guarantee of the book being new or unused, bubbles in certain optical glasses are proof that the glass has not been spoiled by long-continued heating, and the really wise accept a moderate number as the inevitable accompaniment and mark of good quality. When, however, the glass plate is formed and set aside to cool a new difficulty arises, for in its small way it behaves exactly as the earth does under similar circumstances. Originally hot and molten, like the glass, the earth has for long ages been radiating its heat outwardly into space, and its crust has already cooled and formed itself into the rigid rocks with which we are familiar. But the interior of the mass is yet hot, though slowly cooling. As it cools it shrinks, and, like the kernel of a nut, in shrinking, it pulls and tries to part from its shell. In its small way the cooling slab of glass behaves precisely in this manner. Its outer crust first becomes

rigid, and the subsequent cooling and shrinkage of the interior sets up an inwardly pulling strain whose visible, and therefore least objectionable, effect arises when it is sufficiently severe to crack the glass. When the internal strains formed in this way do not result in cracking the material, the glass is still unfit for the production of lenses, although the defect is not outwardly visible. Accordingly, in the process of manufacture, after the glass has been fused into the form of a plate or disc, it is put red-hot into a specially-constructed oven, where it is slowly cooled through a period of several weeks, so that at all times its temperature is as nearly as possible equal throughout the mass. In this way it sets and becomes rigid, first at its outer surfaces; internal strains are thus as far as possible avoided. By the use of a special instrument any particles of dirt, and veins or bubbles, are made visible, and such defective portions of the plates are cut off and thrown away. The use of polarised light, familiar to microscopists, enables any internal strains such as have been described to be detected, and material faulty in this respect is also discarded. By the time these processes have been carried out the raw material, expensive in its first state, has become still more valuable, and is now ready for being made into lenses. In speaking hereafter of the method of shaping lenses, the term "lens" will be applied to the simple lens or part composed of one piece of glass, several of which are combined to form the complete instrument. Unlike wood or metal, glass is a material which cannot be cut in the ordinary sense of the term "cutting." Glass is so brittle that only two ways are available for shaping it. One is to heat it until it becomes plastic, when it may be pressed or cut into shape; and the other is to take a piece of glass of sufficient size, and, without heating, to break or rub away its superfluous parts. Cheap lenses are sometimes made by the former method, which is much the less expensive, but the process frequently results in those internal strains which have been mentioned, and in other defects which make it unsuitable for first-class lens-making.

The best lenses are shaped by taking pieces of selected glass of sufficient size, and breaking or rubbing away their superfluous parts; and all the processes to be described for making lenses of glass, even to the final act of polishing, are essentially of this character. If the lens to be made is a large one, an entire slab or disc of glass may be necessary for the purpose; but for ordinary lenses, such as are used in hand cameras, one plate of glass may be sufficiently large for a number of lenses, and so thick that it has to be cut into slices. This is done by sawing it, the saw being a rotating metal disc with tiny diamond points fixed in its rim. The glass is presented to the saw, which slowly and steadily makes its way through the glass, dividing it into slices of sufficient thickness for the lenses being made. From these pieces circular discs are made, and then begin the processes for shaping their surfaces to the spherical forms which give them their peculiar power as lenses. To effect this a revolving spindle has attached to it a metal tool which is shaped to a spherical form, either convex or concave, the counterpart of the curve it is desired to produce on the lens. Such a tool being rotated, and supplied with coarsely-powdered abrasive, as emery or carborundum, and with water to keep everything cool, will grind to shape the surface of the piece of glass, which is applied to it by hand. At first sight it might be thought that the soft metal tool and not the hard glass would suffer most in this process, but it is not so. The hard particles of abrasive become pressed and embedded in the surface of the metal, each little particle scraping up for itself a tiny metal buttress which holds it and compels it to do its work in scratching the glass. It is by grinding in this way that the glasses are first roughly shaped; and the succeeding processes, up to the final polishing of the lens, consist in skilfully rubbing with a series of tools more and more accurately formed, and with abrasives more and more finely powdered. For

all the earlier stages emery is the abrasive, and for applying emeries carefully graded very accurate grinding tools are necessary. These are made in pairs, one convex and the other concave, the two being ground together until their curvature is not only of the right radial measurement, but so perfectly spherical that the tools touch all over their working surfaces, in any position of contact, and when any pair is put together, clean and dry, and the upper tool lifted, the vacuum between their surfaces will raise the lower tool although it may be many pounds in weight.

For the many curves which are ground, large numbers of these expensive tools are required, varying in size and curvature from that of the smallest marble to curves whose radius is measured in inches, feet, and upwards. With these tools, and various grades of emery, the surface of the glass is gradually changed from the coarsely-ground condition in which it was when first roughly shaped into one free from scratches, and commencing to show signs of polish. Meantime the axial thickness of the lens has been measured by means of a little instrument, which indicates the thickness on a dial, and enables the workman to secure minute accuracy of measurement. At this stage of grinding the roughness of the glass, although apparent to the eye, is exceedingly small in absolute measure, being comparable with the length of a wave of light; and the succeeding process of polishing consists in rubbing down these very minute prominences to one general level by a further process of abrasion. For this purpose even the finest emery is not sufficiently fine, nor can metal tools be used, because a hard surface coming in close contact with the glass would scratch it. The abrasives used for polishing glass are various earths and metallic oxides, such as tripoli, rouge, and putty powder (oxide of tin), and these are applied with water upon rubbers made of some soft substance. Where cheap lenses are made the rubbers are frequently elastic materials, such as paper or cloth, which act quickly, but have the disadvantage of destroying the perfect spherical form of the lens by over-rubbing its outer margins and rounding them. For polishing the best lenses such elastic materials cannot be used, the lenses being polished with rubbers made of waxes or resins, which, although soft, so that they will not scratch the glass, are inelastic, and cannot, if properly applied, distort the curvature of the lens. These wax polishers are held in supporting shells of metal. The operation of polishing lenses demands exceptional skill, and although much ingenuity has been spent in designing machinery for the purpose, much of the work is best done by hand. In hand polishing the glass is fastened with pitch to a suitable handle, and the polishing tool is rotated on a spindle. The rotating tool is slightly coated with the moistened abrasive; the lens is held against it so that their spherical surfaces are in contact, and the operator, with a rapid and delicate motion of the hand, which can only be properly acquired by experience, rubs the surfaces together, changing continually the position of the lens, and securing the equal polishing of the whole surface. At intervals during the process the work and the tool are cleaned, and fresh abrasives applied to continue the process until it is complete. At each interval the lens is carefully examined, and as it approaches completion the accurate formation of its surface is tested by means of what is called a contact gauge. This gauge consists of a piece of very hard glass, having on it a spherical surface very accurately ground and polished, an exact counterpart of the surface it is required to test. When the gauge and the lens to be tested are very carefully wiped, placed together, and viewed by reflected light, brilliant colours are seen, formed by "interference" at the two contact surfaces, colours which exactly resemble those seen in soap bubbles. These colours can only be produced when the two surfaces which form them are exceedingly close together. They have their maximum brilliance when the surfaces are a few millionths of an inch apart, and if the separation of the surfaces varies

in a soap bubble it varies with the thickness of the film) colours change and spectrum bands are formed. It is by varying the brilliance, the form, and the separation of these bands of colour that the lens-maker is able to measure and to work with that degree of precision which is unsurpassed in any other branch of industry. When the workman has finished a batch of lenses they are passed to the lens-testing room, where they are again examined, and, if passed as perfect, are given into stock, to await the arrival of their metal settings, and are then being assembled and adjusted as complex lenses.

The accuracy in the metal work of a lens is first of all essential to the perfect performance of the instrument. But it has other elements of value. One is found especially in the case of flanges and flange screws, which must be accurately made if they are to be usefully interchangeable. The majority of the parts of a lens mount are in the form of rings, which are first roughly shaped by casting, or they are made from the metal tubing or sheet. Such pieces are accurately shaped by turning them in the lathe with various cutting tools which form upon them their shoulders, shoulders, recesses, or other necessary details. To secure the prescribed accuracy of measurement the workman is furnished with gauges for each essential detail, and in working out these precautions unusual in mechanical work have been taken. For example, there is the difficulty of temperature and expansion to be met. When a piece of metal is turned in the lathe, heating as it does at the rate of several hundred feet a minute, it becomes heated by the action of the cutting tools, and when cooled and thus expanded is, of course, not in a fit condition to be measured with a cold gauge. To meet this difficulty, compressed air is blown upon the work to keep it cool. Even with this and other precautions it is found difficult to shape lenses by means of cutting tools alone, within limits of error less than one-thousandth of an inch. And although these variations are really small compared with those which are commonly to be found in good instrument work, there are parts of lens mounts, especially those subject to wear, in which the practice has been adopted of securing still greater accuracy, while hardening their surfaces, by subjecting them to heavy pressure in finely-finished hard steel dies.

The polishing of brass work is more or less familiar to most people. The fluting of the rims of cells, a marking like that which is found in the periphery of silver coins, is produced in the lathe by rotating the piece and impressing it with a steel tool having the requisite pattern cut in its rim. The lacquer which is used to protect the metal work from the tarnishing action of the atmosphere is composed of shellac dissolved in alcohol. The lacquer is applied with a brush, the work having previously been heated sufficiently to evaporate the solvent as the lacquer is applied. The shellac is thus distributed evenly over the surface, and becomes hard when the metal is cooled. It will be seen that mounts should not afterwards be unnecessarily warmed or the lacquer may be softened and damaged; nor should they be washed with alcohol, as is sometimes advised, because alcohol will remove the shellac. After lacquering of the parts is finished, the scales for iris diaphragms, distances for focussing, and all other descriptions are usually found on a lens, are engraved upon the mount by a machine which is really a development of the well-known pantograph.

The action of a photographic lens in forming an image is simply to receive light from each point of the object, and to send the light to corresponding points which form the image, and the capacity of a lens for producing fine definition depends simply upon its power to condense, very accurately to a point, the light which it receives from any other point. Accordingly, in testing lenses, instead of merely putting a lens in a camera, focussing an image, and attempting to judge whether the image is sharp or not, the lens is first put into an instrument, at the end of which, furthest from the operator,

is a small flame or source of light, bounded by a pin-hole. The light passing through the pin-hole spreads out in conical form until it reaches a condensing lens, called a collimator, which bends the light rays perfectly parallel, so that they behave as if they had come from an infinite distance. In the path of these parallel rays, and near the operator's left hand, the lens to be tested is supported, and the light which it thus receives is condensed to a point which he examines by the aid of a microscope. By examining this point of light, and moving the lens so that the light passes through it in various directions, he is able to tell a great deal more about its defining power than could be told merely by taking photographs with it. Sir Wm. Abney has said that the barrier to finer definition in photography lies not so much in the lens, which is now perhaps as perfect as anything can be, but in coarseness of structure of the modern sensitive film. It is well known to opticians that this is the case; but they know equally well that it is not alone the structure of films which limits the definition in ordinary photographs. Where most photographers fail in getting the utmost possible duty from their lenses is in the imperfect setting of the film in the true plane of the image. And this failure is due not so much to want of care or of knowledge on their part as to the loose, elastic, and inaccurate construction of the average camera. So, finally, having endeavoured to show something of the elaborate care which is used in making good lenses, let us leave with you one other thought: the need of corresponding care in using them aright.

J. RONALD TAYLOR.

MESSRS. W. AND D. DOWNEY had the honour of photographing the Princess of Wales on Monday morning.

The Hydroscope and its Success.—Cavaliere Pino is the inventor of a machine called the hydroscope, to which reference has already been made in these columns. The instrument consists of a long tube carrying an optical instrument at the end. Objects at the bottom of the sea are reflected upward, where they may be readily studied from the deck of a steamer. By means of the hydroscope, Pino succeeded in bringing up objects from the sea that have been concealed for two thousand years. These were found off the Grecian coast, and include some valuable art objects—creations of ancient Greek art.—*The Scientific American.*

An Oxyacetylene Blow-Pipe.—An oxyacetylene blow-pipe is described by M. Fouché in the Bulletin of the French Physical Society. The flame is formed by the combustion of a mixture of one part of acetylene to $\frac{1}{4}$ of oxygen, and in order that the explosion may not travel back into the blow-pipe, a jet velocity is required, due to the pressure of a water column four meters in height. The flame melts most metals readily; it will solder iron and steel. Even silica and lime are melted by it. With a reduction of the proportion of oxygen, the flame becomes luminous, and on falling on lime the free carbon goes to form carbide of lime.

MESSRS. B. J. EDWARDS AND CO., LTD., Photographic Dry Plate and Film Manufacturers, Castlebar Works, Ealing Dean, London, W., are issuing the following circular to photographers and the trade:—"For the convenience of our customers we are compiling a list of those photographic dealers throughout the British Isles who stock our goods, and as this list appears likely to be of considerable value to every dealer whose name appears on it, we have pleasure in drawing your attention to the scheme with a view to giving you an opportunity of sharing its advantages, together with other dealers in photographic materials. An offer to include your name and address (or addresses) in this list is made conditionally upon your handling a stock of our goods reasonably sufficient for your local demands, but should you not have such a stock, and yet be willing to obtain same before March 31st, 1904, this will be in ample time for the purpose. The list of names, when complete, will be printed at the end of our handbook. Copies of this handbook are sent out in response to inquiries to amateur photographers all over the country, and as we intend, during the next few months, distributing some 500 or 1,000 copies per week, the value of such a list will be readily understood by every member of the trade."

THE VARIOUS AGENCIES WHICH AFFECT GELATINO-BROMIDE EMULSIONS.

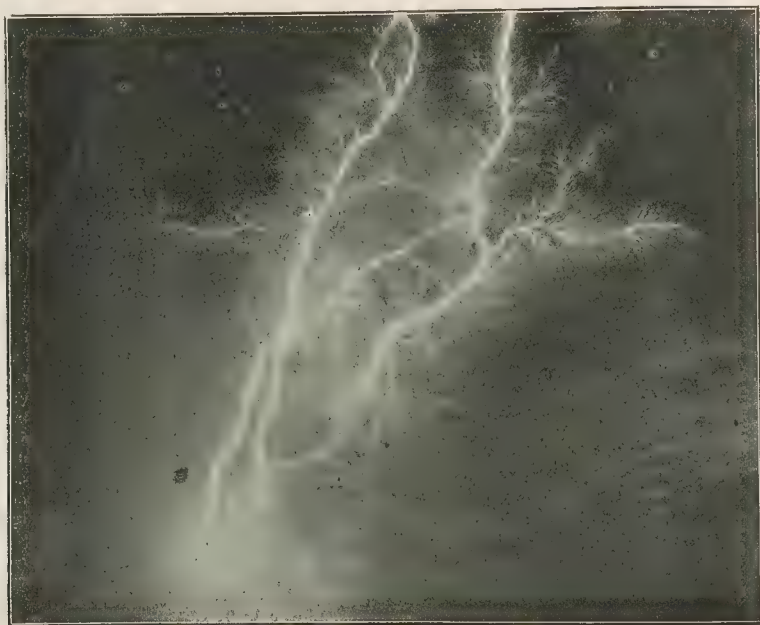
For some time past writers in periodicals and magazines have been devoting considerable time and space to descriptions and experiments relating to the numerous "rays" that have recently been discovered.

These rays are accumulating in such large quantities that the whole alphabet will soon be requisitioned to provide names to distinguish one from another, as is the case with the ubiquitous motor-car. Under the circumstances we may feel relieved that one of the new brands of rays is temporarily disqualified, for the promoter has not yet proved its existence.

In many of the experiments which have been performed to demonstrate the existence of some of the recently-discovered rays, the effects of certain substances on the photographic film were the chief evidences brought forward, and the results were anything but conclusive. The experimenters could not have

and 'susceptibility' to surrounding influences is found in the finished article.

Electricity, for example, has a powerful effect on the photographic film. Those who have experimented with an X-ray are aware of the remarkable effect the electric spark has on dry-plate, when the spark is allowed to traverse the film. This illustration is given here of a spark impression taken by the writer. In this case a coil giving a 10 in. spark was used. The plate was merely held by one corner oblique between the brass knobs of the machine, and the current rapidly switched on and off again. The current could not have been turned on for more than 1-30th of a second, but the electric discharge during that time affected the whole plate, and along the direct lines of the flash an opaque deposit of silver was produced in development. This is an easy way of observing the effect of an electric discharge on a dry-plate; the only objection to this method is that the spark occasionally refuses to pass



Photograph of Electric Spark from Induction Coil. Natural Size.

been aware of the extremely sensitive nature of the emulsion, and the readiness with which it is affected by apparently slight physical changes.

In several of the experiments metals were placed in contact with the sensitive film of a dry-plate for several days, and because the form of the substance was visible when the plate was developed it was considered a decisive test for the presence of those particular rays which were under investigation.

Many other experiments of an equally exacting nature to the equilibrium of the sensitive film have been lately described, and because the plate develops some kind of an image the experimenter was able to prove to his own satisfaction the existence of certain specified rays.

All workers familiar with the operations of preparing the sensitive film are aware of the complex structure of the gelatine emulsion and the excessively delicate nature of its composition. The greatest care has to be exercised in the preparation of the emulsion of a dry-plate, and the same delicacy of structure

along the plate, and strikes a bee-line for the fingers that are holding it.

A still more striking proof of the sensitive nature of the emulsion is shown by the result of drawing the end of a smooth bone or ivory paper-knife over the surface of the plate. A piece of stout brown paper is placed over the plate and a paper-knife, or the rounded edge of a pocket-knife, drawn rapidly and heavily over the paper-covered film; if the plate is examined in the dark-room lamp no mark will be visible, but on development a dark streak appears across the plate. A reproduction of a print, from a plate with several of these pressure marks, is given on next page.

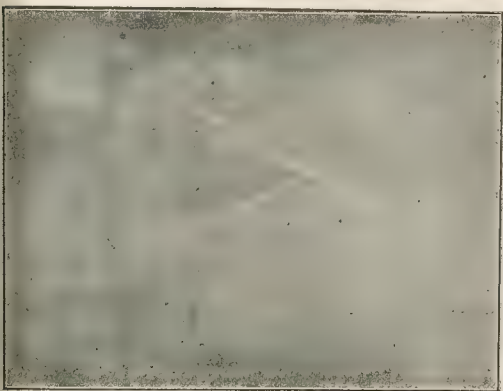
It is well known that the sensitive film is affected by a more or less prolonged contact with all sorts of metals, and as it is particularly the case in hot and thundery weather the effect is probably caused by electric or magnetic action of the metal with the silver in the film. Other substances besides metals affect the emulsion. Plates are sometimes packed with sub-

rips of paper between the edges of the plates; when the plates have been kept some time a distinct mark is often seen after development where the paper has been in contact with the film. In some cases the writer has found that the effect of the paper has been so pronounced that the portion of the film is gone beyond "correct exposure" stage, and reversal has taken place, that part of the film that has been in contact with the paper refusing to develop.

It is a well-known fact that the ink in printed paper affects dry-plates, even if the printed matter is not on the side of the paper in contact with the film.

When plates are kept for a considerable time in dark slides markings corresponding with the grain of the wood and the position of the leather hinges of the folding-shutter are often observable, although the slides may have been stored in a light-tight case.

It has been stated that if a piece of wood, with a well-defined grain, be exposed to strong sunlight for several hours, and then placed in contact with a dry-plate for a day or so, a faint image of the grain is found on the plate after development. As this seemed an interesting suggestion, and there was no prospect



Marks Produced by Drawing Paper Knife across a Dry-Plate.

carrying out the experiment in sunshine, the writer exposed a piece of wood to the light of an electric arc for one hour, but with this illuminant the results were nil.

The writer has lately been shown curious markings on several negatives that were taken on backed plates. One operator said streaks only appeared when the backing required a considerable amount of exertion to remove it, and in consequence put the markings down to electricity produced by friction on the plate. This seems quite possible, as the plate would be temporarily converted into a species of Wimshurst machine. The writer has had these backing marks appear on plates during development, but they may have been due to uneven backing.

There is one feature of the dry-plate that always seems out of keeping with its sensitive nature: the rapidity of the emulsion seems unaffected by cold or heat. Wet-plate workers seem to give longer exposures in very cold weather, but dry-plates seem as sensitive when exposed in frosty weather as they are in the hottest days of summer. J. I. Pigg, F.R.P.S.

PUBLISHERS' Exhibition.—A Publishers' Exhibition will be held at Connaught Drill Hall, Portsmouth, in connection with the Portsmouth Conference of the National Union of Teachers. The 1904 Exhibition will be held on Easter Monday, Tuesday, Wednesday, Thursday, April 4th to 7th next.

THE SCOTTISH NATIONAL PHOTOGRAPHIC SALON.

[Specially Contributed.]

THE advent of the Scottish Photographic Federation has introduced a new and a powerful factor into Scottish photography. The existence of the Federation made the Salon possible. It (the Salon) shows one or two noticeable features—it gives no awards and charges no entry fees, that principle has already obtained in other parts; it is distinctly national, i.e., confined to Scottish photographers, with the exception of the invitation section. That feature is, we think, not only novel but unique. It is questionable if any society would have undertaken to carry out an exhibition embodying these changes, but the Federation Council was in the happy position of having twenty-four societies supporting it, and calmly went on its way without fear. The success of the exhibition quite justifies these departures from use and wont. That the principles of the exhibition meet with approval is shown by the fact that the leading Scottish exhibitors have supported it.

The Sandeman Art Gallery, Perth, where the Salon was opened on the 13th, is an ideal housing; the room is entirely lighted with top light. The Salon Committee has covered the walls with canvas, divided into panels by strips of green-stained wood, while this again is topped by a frieze of Scots thistle and the Scottish lion rampant, effectively combined. This frieze and the general scheme of decoration is, we understand the work of Mr. J. W. Eadie, Vice-President of the Monklands Society, a member of the Salon Committee.

At the opening ceremony there was a large attendance of delegates from all parts of Scotland, as well as a representative gathering of the municipal and social celebrities of the Fair City. Mr. Coates, the President of the Federation, after a brief address of welcome by Lord Provost Love, declared the Salon open. He briefly recapitulated the history of the Federation, congratulated the Federated Societies on its success, and cordially invited those who had not yet joined to throw in their lot with the Federation and help on their labours for the betterment of Scottish photography and photographers. He pointed out the success that had already attended the various "facilities" that had been made available for the federated societies—the lists of judges, lecturers, demonstrators, circulating lectures and lantern slides, and the lantern slide competition with its 258 slides entered. He congratulated the associates on the magnificent exhibition which he had the honour to declare open.

Mr. G. D. Macdougald (Dundee and East of Scotland), Vice-President of the Federation, moved hearty thanks to the Salon Committee and Mr. Craigie, the librarian of the Sandeman Library, for their admirable arrangements, the result of which they now had the pleasure of witnessing.

Mr. D. Horn (Glasgow Southern), Vice-President of the Federation, moved a hearty vote of thanks to Mr. Coates, for opening the Salon, and also for his services as President of the Federation, services which were invaluable in the initiatory stages of the movement.

The hanging of the pictures has been peculiarly successful; the walls are not crowded (only 213 pictures were selected from some 400 sent in) and in the juxtaposition of the various pictures there is not a jarring note. Everyone, even those who were to some extent opposed to the Salon principle, were enthusiastic in their approval of the effect obtained. The fact that the exhibition was run on Salon lines was no doubt to a large extent responsible for the fact that the leading men in Scottish photography were represented on the walls.

The "Scotsman," the doyen of the Scottish press, in a lengthy notice, pointed out that the professional element was largely represented on the walls, and the exhibition lost nothing thereby, but at the same time the writer of that notice did not fail to point out the high quality of the work of several contributors practically unknown South of the Border.

The Council resolved that at each exhibition they would invite some distinguished worker "furth of Scotland" to send a typical exhibit of his work, so that the Scots might see what was being done elsewhere; this year the selected worker was Mr. Percy Lewis (whose phenomenal success at the R.P.S. is fresh in the minds of all), who might be taken to represent English work, and yet, strange to say, none of the nine photographs he sends represent English scenes. Venice and Holland furnish the scenes by which he is represented, and one central panel is devoted to these; even the arrangement of these, we understand, was indicated by Mr. Lewis. While the delightful grouping of his Venetian groups was much admired probably the luminous

atmosphere of "A Misty, Misty Morning in Venice," gained the most attention amongst the photographic audience.

It was a happy thought of the Salon Committee to include a very comprehensive exhibit of the work of D. O. Hill, the pioneer of pictorial photography in Scotland, if not in a wider area. For these exhibits they were indebted to Mr. J. Craig Annan, Glasgow, and Mr. Andrew Elliott, Edinburgh, and we question of a finer exhibition of these prints, dating back sixty years has ever been shown together. The framed specimens occupied one panel, while the unframed prints were contained in three cases. The quality of these early examples of photography was beyond reproach, and it is noteworthy, with all our modern improvements, that they quite merited their place in the Salon, apart altogether from their historical value.

William Crooke, Edinburgh, is the largest contributor to the Salon, and needless to say, the large number (twelve) of his pictures detracts none from their quality. Here we have portraiture at its highest. There is his famous group—triumphing over technical difficulties—at the "Edinburgh Town Council." The lovely "Zuleika" attracts us by its daring lighting; "Master Hector Macdonald," the son of Scotland's modern military hero, showed a subdued boyishness that we feel is just right; the "Infant Son of the Earl of Tankerville," is a splendid example of the modelling of the nude figure; intellectual strength is clearly shadowed forth in his celebrated "The late Sheriff Cormie Thomson, K.C."; the pathetic beauty of "Lady Leonfield"; the Scottish sagacity limned in his portrait of "Dr. Andrew Carnegie"—but why say more, the limitations of space forbid a detailed notice.

J. Craig Annan, although not so numerously represented, leaves his imprint on the visitor. His "The Etching Printer," with its masses of light and shade, entrances us as of yore; in "Harry Alfred Long, Esq.," we have a sympathetic rendition of Glasgow's Grand Old Man; "George J. Frampton, Esq.," pictures artistic manliness; while in "Frau Muthasius" we have a "strong" portrait of feminine beauty, as opposed to the "prettiness" of which we see so much nowadays.

Archibald Cochrane has only two prints, "The Sculptor" and "The Teamster," both telling pictures and artistic successes, and their presence there clearly indicates Mr. Cochrane's sympathy with the movement initiated in this exhibition.

John Spark, Perth, has been successful in having a large exhibit well hung; he has nothing to be ashamed of, his work being of a high standard. We might specially instance his "In Pensive Mood." Here the whole picture well bears out the title, and may well be marked down a success.

James Auld, Edinburgh, is represented by two prints. "A Study of a Head" is a beautiful representation of female loveliness; while his "W. Beattie-Brown, Esq., R.S.A.," is on the other end of the scale and depicts aged virility.

Arthur Hawes, Ayr, is represented by portraiture and also an effective quayside picture. His "Beauty's Eyes" merited much attention.

James Patrick, Edinburgh is represented by three pictures that have been previously medalled. His "The Evening of Life" is a singularly effective treatment of the title, the old wife and the after-glow in the sky combining to form a harmonious whole. "A Shepherd's Care" and "A Stilly Hamlet Home that vies with any Earthly Paradise," show that masterly treatment of sheep and landscape indented with Mr. Patrick's name.

W. Drummond Young and Sons, Edinburgh, have an attention-commanding print in "Evening on the Mississippi," in which the high lights in the sky and on the water appear in a brilliant orange tint.

John Hepburn, Glasgow, shows some satisfying old-world interiors. J. Kirk, Brechin, has also a fine specimen of this class of work.

V. C. Baird, Broughty-Ferry, is particularly strong in architectural work; and J. and G. A. Jack, Airdrie, have two telling pictures in this class of work.

John Smith, Dundee, makes a strong bid, with much success, for a place in genre work, and his delineations of Dundee slum life will live long in the memory of those privileged to see them.

J. W. Eadie, Airdrie, shows that his artistic abilities do not all run to friezes and stencils. Amongst other good things he shows a charming picture of "Ethel."

Archibald Campbell, Dundee, Treasurer of the Federation, shows that he is more than "a man of figures," his renderings of the dreariness of winter being picturesquely dreary.

C. D. Macdougall, Dundee, one of the Federation's Vice-presidents,

exhibits in "gum-bi," as also does A. W. Hill, Lochboisdale, George L. A. Blair, Paisley. John Richie, Kilmalcolm, has a picture in "We hail thee! Eastern gems, to cheer our Winter's Gloom" (chrysanthemums), in which the texture of the petals is well retained. A. Allan, Ratho, is represented by his "auld wife" studies, as effective as ever. J. Peat Millar has some charming little pictures; J. Dunlop, Motherwell, in "Old Scotchman" has a strong head of old man; F. W. Urquhart, Dingwall, in "The Old Fiddler" recalls some of the veteran "fiddlers" (as opposed to "violinists") of bygone days. J. S. Lamb, London, in "Evening Glow," has a picture of rare quality; Alexander McDuff, Glasgow, has a dainty little picture in "Evening"; J. C. Robertson, Brechin, shows a "symphony grey" in "The Storm Clearing," daring yet effective; J. L. Siewring, Newport, sends a typical picture in "Fisherfolk"; W. S. Crook, Glasgow (winner of the lantern slide competition) has some guard trees strongly limned against the sky. "A Bend in the Road"; "Evening on the Clyde," by W. G. McLachlan, Glasgow, is a telling picture of work—the sky is perhaps a little "loud"; "An Autumn Morning" by W. Mulroy, Glasgow, is an effective rendering of the morning struggling through the mists.

But space forbids further details. There are few really bad pictures in the whole exhibition. It is a telling refutation of the statement that there was not sufficient photographic ability in Scotland to hold a satisfactory exhibition without outside assistance.

The next exhibition is to be held in Glasgow, opening on 1 February, 1905, and we are certain, now that this exhibition secured a position, and a high position, for itself, that it will be increasing success.

THE NEW "GRAPHIC" PREMISES.

AFTER more than a quarter of a century's development and extension on its old site in the Strand and Milford Lane the "Graphic" has been removed to new premises in Tallis Street, where all departments will be under one roof. The new building is situated close to the Victoria Embankment, and is built of stone and brick. The Tallis Street frontage, of about 100 feet, is opposite Guildhall School of Music, and the building has, besides, a frontage of 50 feet in John Carpenter Street and Carmelite Street, which on either side of it. Each of the six floors has an area of 5,000 square feet, and there is accommodation for 800 workpeople. A pair of handsome oak doors give entrance to the managerial and editorial departments in Tallis Street, and an oak staircase leads to the first floor from the oak waiting-room and vestibule. A corridor runs through this floor, and communicates with the office of the managing director, the art editors of the "Graphic," "Daily Graphic," the artists' rooms, the secretarial departments and offices, and the business departments. On the second floor the rooms of the literary editor and the offices of the "Bystander." The admirable lighting of all the rooms is very noticeable—the tiled construction of the building has given special facilities to a spacious and airy effect. The rooms are fitted with mahogany, and are of a pleasantly coloured chocolate tint, which serves as an effective background for the black-and-white drawings and colour plates with which they are hung.

Besides the principal entrance, the publishing department has its own entrance, while the door by which the workmen are admitted is in Carmelite Street, and leads by a fireproof staircase to several departments. A similar door and staircase in John Carpenter Street is used for the delivery and despatch of materials. Paper, of varying kinds and sizes, is stored on the ground floor ready for use in the machine basement.

On successive floors, beginning with the basements, are the printing machine departments, the warehouse and publishing departments, the engravers' rooms, the folding and stitching departments, the composing-room, and the foundry. The composing-room, which is in direct communication with the foundry on the same floor, is a bright and airy room, lighted from above with electric glow-lamps over the type cases of each compositor. A quantity of printing matter, stories, articles, sketches and serials, has to be kept up ready for use, so that many tons of type are kept in the room made for this purpose. A very large composing staff is necessary, as the duty of fitting the illustration blocks into the pages on which the blocks and literary matter appear together has been delegated

to them. A staff of engravers is continually employed at the "Graphic" in restoring to the printed blocks the tones and artistic feeling of the original drawings. Each engraver is provided with the photo-mechanical block and a specially inked print which has been "pulled" from it. The special print shows him the best effect that can be produced from the block, better, that is, than the best that can be produced by the hasty printing of numerous copies. Thus he has a very delicate task in the calculation of the exact amount of additional engraving the block requires, bearing in mind the result of rapid printing by machinery from replicas of the altered block. Effects in the artist's drawing, which are lost in the block, must be given just the right amount of emphasis, the whites and blacks must be restored, attention has to be paid to a hundred details of the artistic technique which the block is apt to miss, for engraving is itself a fine art, since the engraver has often to restore not only the technique but the artistic feeling of a drawing. The drawing once processed, engraved and approved, the block passes on to the foundry.

Here casts are made from it. A thin layer of plaster of Paris and water of uniform thickness is spread over a sheet of paper. The paper is then placed immediately face downwards on the engraved copper plate. A blanket is wrapped round the plate, and it is then put in a hydraulic press capable of a pressure of several tons. This presses the plaster of Paris into every minutest line and scratch on the plate. The same process is equally available for advertisement pages. When the pressure has done its work, the plaster of Paris mould is slowly baked in an open oven. A cast has now to be made of the plaster of Paris mould. It is placed face downwards, and slightly warmed to prepare it for the ordeal to which it is to be subjected. It is then placed between two iron covers, and is firmly fastened face upwards, and a ladleful of molten stereo-metal, a mixture of lead and antimony, carefully heated to a certain temperature, is poured between the two iron covers, where, as it cools, it takes the impression of the plaster of Paris, and the cast is made. It is not yet, however, completed. It has to be washed in cold water, its back is made perfectly level and even by machinery, a circular saw planes its edges, and a third machine, known as a "router," smooths away superfluous metal from its face. Great care has to be taken by the workmen in control of this machine lest it should "rout" out type that should be left standing. Finally, a small slanting bevel is cut on the plate, so that it may be slipped on to the machines. All machinery is run by electricity.

The plate is now prepared for the coating of nickel, which will make it sufficiently hard for the printing of a large impression. After a preparatory washing with potash to remove any possible grease, it is given a very thin film of copper in the copper electrolysis bath; this facilitates the putting on of the nickel facing afterwards. Thirty minutes' immersion in the nickel bath are necessary to give a coat of the requisite thickness. From it may then be printed 10,000 impressions without its showing signs of wear. The completion of the plate after its leaving the engraver's hands takes two and a quarter hours. Other processes are, however, employed. There is the wax process of electrotyping, in which the planing and general preparation are the same, but which takes four hours. The plate in this process is moulded in wax instead of plaster, and is coated with copper instead of nickel, remaining for two hours in the copper electrolytic cell. For plain pages of type, *papier maché* is used instead of plaster or wax.

From the foundry the page, with its illustrations and printed matter, goes to the basement, where it is placed upon the machines. The eight new machines, which run at the rate of from 2,500 to 3,000 impressions an hour, produce the highest class of work at a greater speed than has hitherto been possible. They have been made in England, and are worked by electricity. A ten-horsepower motor, fed from an external source of supply, is geared to each machine. A machine manager can control the speed of the motor by means of a regulator with which each machine is fitted. The row of machines extends right along the north front of the buildings; opposite each are boards with the number of the machine and the implements belonging to it. The electric switch-room is adjacent to the machine-room. It is supplied by mains from the two electric power companies, and thence from the switch-boards provided there to the other machines throughout the various departments. On coming from the machines the printed sheets are stacked

on trucks and sent by lift to the third floor, and wheeled to the warehouse department. Here they are folded and stitched by machines, which are also driven electrically. The finished copies are then packed in bundles and sent by a second lift to the publishing department. The work of this department has to be greatly specialised. The great number of copies sent to so widely different destinations necessitates continual work by night and day to supply the various agencies, while the work of preparing extra, special, and Christmas numbers sometimes necessitates organisation many weeks beforehand, and sometimes takes the efforts of all concerned to produce them in as many days.

The necessity of finding extra space for the colour printing department was the first step towards leaving the old "Graphic" premises in Milford Lane. The works established at Reading are arranged on one floor, with north lights extending from end to end. The machines are all in line. A private roadway leads to the main building, which it enters by an arch. In the roof of this archway a long girder with travelling pulleys lifts the heavy cases in which the finished publications are sent to the London office. The principal processes employed are the multiple-colour and the three-colour process. In the former and older process as many as eight or more plates are used. The first plate prints the principal lines of the picture, and successive plates add the various colours. It is a long process, and the resultant colours may differ considerably from the original picture, as well as from one another. In the new process three colours only are used. They are obtained by methods similar to those used in three-colour photography, in which an object is first photographed through coloured glasses that exclude superfluous rays and colours, after which the negatives obtained by this means are superimposed. The greatest exactness is required in the superimposition of the colour plates in colour printing. If the plate of any colour is a hair's breadth "out of register" in the first or second printing, the finished picture is spoilt.

In the Reading works, as at Tallis Street, each machine is driven by its individual electric motor. Electricity allows of a subdivision and regulation of power which is indispensable in such delicate work. The plates for the printing works are all made in the electro department at Tallis Street. Besides the manager of the Reading colour printing works, an art sub-manager, who is responsible for the exact colouring required in the plates, goes between the Tallis Street and Reading works. The Reading works also communicate with the London office by telephone, and telephonic communication is established between every room and every department.

The Adhesive Dry Mounting Company, Limited, are giving demonstrations of the process to which we referred in a lengthy article in our issue of June 26th last, at their premises, 27 and 28, Fetter Lane, London, E.C.

SCIENTIFIC Kite Flying.—At the ordinary meeting of the Royal Meteorological Society, held last week, at the Institution of Civil Engineers, Great George Street, Westminster, the President, Captain Wilson-Barker, in the chair, a paper was read by Mr. W. H. Dines on "Observations by Means of Kites at Crinan in the Summer of 1903." The weather was exceptionally unfavourable to experiments, not only for the large amount of rain, the measurement for the month of August being 8.62in., but thunder storms and gales were more serious interfering causes than the rain. On twenty days out of the thirty-one the wind attained the force of a moderate gale in the district. One of the kites used was 12ft. high, and had 156 square feet of lifting power, its weight being approximately 20lb. Observations were obtained to the height of about 6,000ft. on several occasions, and once to the height of about 8,000ft. A self-registering thermograph was raised, and its resulting observations proved very satisfactory. Various layers of air were observed, strata of dry air alternating with strata of very damp or saturated air. There was, as usual, a decrease of temperature with elevation, and the observations prove that in free air the decrease of temperature with height is less than where there is the interfering cause of land. The decrease of temperature for the height of Ben Nevis is about 5 deg. or 6 deg. less than is shown by the observations at Ben Nevis itself. The mean decrease of temperature for the first 5,000ft. was, during last August, 3 deg. 2' for each 1,000 ft., which is substantially the same as that obtained in the preceding summer, although the conditions of weather were very different. These observations are likely to supply data of much scientific value.

THE "L. AND P." SUPPER.

(BY ONE WHO WAS PRESENT.)

AFTER a lapse of some fifteen years the London and Provincial Photographic Association recommenced on the 9th February, 1899, its series of annual supper and social evenings. Thus the function held at the Association's rooms on Thursday last was the sixth of the series. The affair this year served a double purpose, for in addition to being the annual social it gave occasion to welcome back to the Association, and to the photographic world, Mr. E. J. Wall, who presided. Mr. Wall, it will be remembered, met with a terrible accident over two years ago, and after much suffering has almost recovered from the injuries he then received. The evening of the supper was, as Mr. Bedding when proposing the chairman's health aptly termed it, Mr. Wall's "first night out." The supper was timed for 7.30, and a few minutes afterwards, upwards of seventy members and friends sat down to a supper, described on the menu as "Julienne soup, boiled leg of mutton and capar sauce, roast ribs of beef, Yorkshire pudding, vegetables in season, college pudding, apple tart, jellies, cheese and celery." No liquid refreshments, it will be seen, were listed, and considerable difficulty was experienced by one and all in getting even a popular "bitter," so busily engaged were the three attendant Hebes in the gentle pastime of juggling with the plates. When their performance was nearly at an end, and the chairman and some others had threatened to drink the water out of the celery glasses a boy appeared, and after considerable palaver produced a bottle, then another and then another, and finally some glasses. It was at this stage of the proceedings that the company settled down for a comfortable and jovial evening.

After the usual loyal toasts, the "L. and P.P.A." was proposed by Mr. Wall, and Mr. A. Haddon, one of the trustees, responded. The toast of this particular evening was in the hands of Mr. Thomas Bedding, who in an eloquent speech gave "The Chairman," to which Mr. Wall suitably replied; saying that he hoped now to be again a constant visitor to the Thursday evening meetings of the L. and P. Mr. R. P. Drage in his usual genial manner, submitted the toast of "The Officers," to which Mr. R. J. Kindon, the popular hon. secretary, replied, in a brilliant speech full of witticism: "No better man than Mr. S. H. Fry could have been found to take the toast of 'The Press,'" to which Mr. R. C. Bayley replied. The "L. and P.P.A." has always encouraged visitors, and the large number present were toasted by Mr. T. E. Freshwater. Mr. J. T. Ashby humorously replied.

Then we had "Absent Members," by Mr. W. D. Welford, and messages were read from Mr. A. L. Henderson, who is now travelling abroad, and from Mr. Furley Lewis, who was unable to be present on account of illness. Among those present I noticed, in addition to the speakers named above, Messrs. A. Mackie, R. R. Beard, T. K. Grant, H. Vivian Hyde, H. C. Rapson, J. E. Hodd, J. W. Hodges, R. H. Anthony, T. Thorne Baker, Wilfred Emery, J. A. Sinclair, P. R. Salmon, R. Beckett, H. Snowden Ward, J. W. Zaehnsdorf, J. S. Teape, E. T. Wright and W. T. Wilkinson.

The musical programme has always been—at least while Mr. T. K. Grant has had it in hand, and that is several years now—an important item, and one not to be missed. This year was no exception to the rule. Mr. Grant himself has a fine tenor voice, and his two songs pleased the company immensely. Mr. James Campbell, of the Palace Theatre, one of the neatest and most versatile mimics of the time, gave some lifelike imitations of Mr. Arthur Roberts, Mr. Dan Leno, and other stars; Mr. George Robins treated the company to humorous sketches, Mr. P. Payne and Mr. G. A. Arnold sang comic songs; while Mr. H. Vivian Hyde, with his rich mellow voice, gave two suitable songs.

At eleven o'clock "Auld Lang Syne" was sung, and the company broke up, and as I took my way from the "Jovial Throng" I fell to wondering at the meaning of the mystic words uttered by several of my fellow roysterers. These were: "Well!" "However!" "I see!" "I must go now," "I must really at last expedite my departure," and so forth. Can you enlighten me, sir?

New Books.

"Kamera Kunst." Verlag von Gustav Schmidt. Berlin.

We have received a copy of this work, which purports to be a collection of pictures, with descriptive text, to show the efforts made by photographers in various countries to give individuality and artistic feeling to their work by new methods. Photography is comparatively a young art, and it is no doubt desirable that restrictions should not be placed upon the selection of the medium, or the way in which it should be used. But it does not follow that the work which may be produced under such conditions must be artistic because of its novelty. Yet, such appears to be the basis upon which the claims of some modern pictures appear to rest. A careful study of this collection will, we are convinced, lead to the conclusion that many are bad, and have no claim to be classed as works of art, even in the photographic sense of that much-abused term. We might even go further, and pronounce some of them mere studies, suggestive of human deformity. On the other hand, there are a certain number of pictures which compel admiration for the skill of the photographer. The book, in a measure, represents the tendency of so-called modern photography, a movement which should be regarded with toleration in the hope that some good may eventually come from it.

Patent News.

The following applications for patents were made between February 8th and February 13th, 1904:—

Automatic Machine.—No. 3,093. "An improved automatic photographic machine." (Ernest Hopkinson, United States.) Complete specification. Henry Conrad Heide.

Processes and Emulsions.—No. 3,107. "Improvements in and relating to photographic processes and emulsions." Andrew Wybrat Penrose.

Hand Camera.—No. 3,162. "An improved photographic hand camera." Harry Binfield Parish.

Shutter.—No. 3,272. "An improved photographic shutter." Walter Frederick Giles.

Printing Apparatus.—No. 3,382. "Improvements in photographic printing apparatus." Herbert Richard Watts.

Printing Frames.—No. 3,648. "Improvements in photographic printing frames and hinges to be used on the same." Complete specification. Henry James Spratt, Alfred Sidney Spratt, and George Albert Spratt.

Printing Frames.—No. 3,687. "Improvements in or relating to photographic printing frames." (Frank A. Brownell, United States.) Kodak, Limited.

Enlarging Cameras.—No. 3,695. "Improvements in or relating to photographic enlarging cameras." (Frank A. Brownell, United States.) Kodak, Limited.

THE Metric System.—The Liverpool Chamber of Commerce has forwarded to Lord Avebury, for presentation to the House of Lords, a memorial on the subject of the metric system of weights and measures. The memorial recites the steps which have been taken in recent years to have the system adopted in this country by Chambers of Commerce and other kindred Associations, and points out that in most of the countries of Europe and South America the metric system obtains. The memorial prays that the House of Lords will do their utmost to pass the Bill providing for the compulsory adoption of the system within a reasonable time, as recommended by the Select Committee of the House of Commons which reported on the subject in 1895.

Exhibitions.

LONGTON AND DISTRICT PHOTOGRAPHIC SOCIETY.

The following were the awards at this exhibition:—

OPEN CLASSES.

Portraiture.—Gold medal for champion picture of the exhibition, Arthur Marshall, Nottingham, for "My Little Dutch" (carbon); bronze medal, F. J. Mortimer (Portsmouth), portrait study; extra bronze medal, F. A. Swaine (Southsea), "Morning Service."

Landscape, Seascape, etc.—Silver medal, F. J. Mortimer, marine study, "In the Height of the Storm"; bronze medal, W. Clayden (Lymington), "A Misty Morn"; extra bronze medal, J. B. Johnston (Edinburgh), "Homewards."

Architecture, Flowers, etc.—Silver medal, P. W. Crane (Hleanor), "Crypt de l'Aquilon"; bronze medal, S. G. Kimber (Southampton), "The Monks' Entrance."

Lantern Slides.—Silver medal, F. G. Tryhorn (London); bronze medal, Geo. A. Booth (Preston).

OPEN LOCAL CLASS.

Any Subject.—Silver medal, Thomas Warham (Audley), "Evening at the Mawddach"; bronze medal, W. H. Foxall (Tunstall), "When Evening's Twilight Gathers Round."

MEMBERS' CLASSES.

Portraiture.—Silver medal, W. H. Foxall, study of an old man's head; bronze medal, withheld.

Landscape, Seascape, etc.—Silver medal, Rev. C. F. L. Barnwell (Ramshill Vicarage), "In the Country of Adam Bode"; bronze medal, T. W. Hawksworth (Leek), "Where the Tide Turns."

Architecture, Flowers, etc.—Silver medal, W. H. Foxall, still life group; bronze medal, Rev. C. F. L. Barnwell, "Bath Abbey."

Enlargements.—Silver medal, W. H. Foxall, "A Woodland Path"; bronze medal, S. Jackson (Longton), "Old Irish Cottage."

Instantaneous.—Silver medal, Rev. C. F. L. Barnwell, "The Fishing Fleet"; bronze medal, W. H. Foxall, "Under Parental Care."

Picture Postcards.—Bronze medal, Thos. Hartley (Bosford), "Norfolk Sands, Blackpool."

Stereoscopic.—Bronze medal, S. Jackson, "Winter Sunshine."

Beginners' Class.—Any Subject.—Bronze medal, A. E. Cox, bromide enlargement of a waterfall.

Lantern Slides.—Silver medal, W. Bates (Longton); bronze medal, Ashworth (Fenton).

EXHIBITION OF PHOTOGRAPHS ON LUNA PAPER.

A LITTLE exhibition is now being held at the Regent Gallery, 69, Regent Street, W., of photographs printed on Luna paper. The particular feature of the paper is that, unlike ordinary papers in which the sensitising compound is in the form of an emulsion; the sensitising material is incorporated in the substance of the paper, and is not merely upon the surface. The advantages claimed from the adoption of this method, which is equally applicable to textile fabrics as a base, is that the image is of a depth and richness which is practically unattainable when it is merely a surface image, that there is no tendency to curling during manipulation or in the finished print; that cracks, blisters, or reticulation are impossible; and that a great range of tones are attainable with the same toning bath. The paper may be printed on either side with practically the same result. In practice, the paper is printed in the usual way, or it may be partly printed developed. After printing, it is washed until the washing water is free from milkiness, and toned in a chloroplatinite bath. The toning is exceedingly rapid, less than ten minutes being required for black tones. An acid fixing bath is employed, and the subsequent washing is performed in the usual way. Alternately, many of the ordinary gold-baths may be used. The exhibition is held in a very pleasant little gallery, and is open, free, to the public. Amongst the examples shown are several more than average interest, which show that the advantages claimed for the paper, or, at any rate, some of them, are not undervalued. Particularly noticeable were those pictures in which silk and other textile fabrics formed the base. It is evident that pleasant tones are attainable at whatever stage the print is removed from the toning bath, and the colours vary from a pronounced red to a very good black. A series of prints from the same negative illustrate the point very well.

In addition to the prints, some transparencies which are also exhibited are worthy of notice. The base consists of a translucent paper, and the sensitising material is the same as that used for Luna paper, the treatment being the same. The results shown are indistinguishable from transparencies made on glass plates, as far as grain is concerned, but they have the advantage of the range of colours natural to the process under the action of the toning bath.

KODAK EXHIBITION OF PHOTOGRAPHS OF JAPAN.

TAKING advantage of the interest the outbreak of war in the Far East has stimulated in Japan and the Japanese, the Kodak Company has organised an exhibition of photographs illustrative of the scenery of Japan and the manners and customs of its inhabitants. The exhibition is at the Kodak Gallery, 40, Strand, W.C., and will remain open, free, for some time. The pictures are all enlargements upon bromide paper, and have been produced at the Kodak factory at Harrow. The original negatives, with but few exceptions, were upon rollable film, and have been taken in a Kodak.

The pictures, which number a few short of 150, do not constitute a series made upon a settled plan to illustrate the subject, but they are hardly less interesting on that account. The intelligent traveller who uses a hand camera to make records of his travels, naturally chooses the most typical scenery of the lands he visits, the most famous monuments, and the incidents of life which least accord with his ordinary experience, to commemorate, and although perhaps the joint efforts of even a number of casual visitors may fail to give an insight into the inner life of a people, the general aspect, as it strikes a visitor, of a country and its inhabitants is almost as well presented in a scratch collection of photographs by many people as it would be in a series more elaborately projected. At any rate, the collection of photographs now on view greatly helps one to realise what a marvellous upheaval the adoption of Western ideas by the Japanese nation is accomplishing, and it is well worth a visit, if only to acquire some of the local colour of the events which are now agitating the civilised world.

The object of the exhibition is, of course, primarily to advertise the excellence of the Kodak Company's manufactures, and this it very successfully does in demonstrating that Kodak film negatives made in the ordinary way will enlarge many diameters without an appreciable loss in any way of their original quality. It is really an excellent exhibition of photographic work, and, in these days of aggressive advertising, we cannot help feeling grateful to the Kodak Company for having adopted a method of furthering their own interests which is not only inoffensive, but of benefit to those who come within its influence.

Most of the pictures were taken by Mrs. Lazenby Liberty, Miss Davidson, Messrs. G. Ralph Cox, F. F. Paget, and Adam Sykes, but there are also some very fine portraits—members of the Japanese Legation, etc.—by Messrs W. and D. Downey.

FORTHCOMING EXHIBITIONS.

February 27 to March 5.—Birmingham Photographic Society. Particulars of L. Lloyd Hollies, Church Road, Moseley, Birmingham.

February 29 to March 3.—Cripplegate Photographic Society. Hon. Secretary, George H. Depledge, 17, Hazeldene Road, Goodmayes, Chadwell, Essex.

March 5.—South London Photographic Society. W. Calder Marshall, F.C.A., 41, Glenton Road, Lee, S.E.

March 5-12.—Brechin Photographic Association. Hon. Secretary, J. Kirk, 1, Infirmary Street, Brechin.

March 8-9.—G.E.R. Mechanics' Institution (photographic section). Hon. secretary, A. Woolford, 16, Grove Green Road, Leytonstone.

March 9-12.—Nottingham Camera Club. Hon. Secretary, Arthur Black, 9, Bowers Avenue, Nottingham.

March 15-17.—Brentford Photographic Society.

March 15-19.—Arts and Crafts Exhibition (Shrewsbury).

March 22 to April 5.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.

March 25 to April 9.—Northern Photographic Exhibition. Hon. Exhibition Secretary, Chas. F. Inston, F.R.P.S., 25, South John Street, Liverpool.

April 6-13.—Croydon Camera Club. Hon. Exhibition Secretary, C. U. King, Hurst Bank, Selsdon Road, Sanderstead.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Feb.	Name of Society.	Subject.
26.....	Aberdeen Photographic Assoc.	<i>Advertisements.</i> Illustrated. Mr. W. P. Webster.
26.....	Watford Photographic Union	Open Night.
26.....	Glasgow Southern Photo. Assoc.	Social Evening.
26.....	West London Photo. Society.	<i>The Three Colour Process.</i> Mr. O. M. Bartlett.
27.....	Ashton-under-Lyne Photo. Soc.	Chess Match, "D" League, Russell-street End, home.
29.....	Ilford and District Photo. Soc.	<i>Carbon Printing by Single and Double Transfer.</i> Mr. D. S. Whitelaw.
29.....	Southampton Camera Club.	<i>Seascope Photography.</i> Illustrated. Mr. F. J. Mortimer.
29.....	South London Photo. Society	Architectural Work.
1.....	Royal Photographic Society.	<i>Platinotype Printing.</i> Mr. E. T. Holding.
1.....	Glasgow Southern Photo. Assoc.	Closing date for Entries for Exhibition.
1.....	Rotherham Photo. Society	<i>Natural History Photography.</i> Mr. G. T. Harris.
2.....	Nottingham Camera Club	<i>Social. Photography Prize Slides.</i>
3.....	Southport Photo. Society	<i>Natural Colour Photography.</i> Illustrated. Mr. D. B. Benson.
3.....	Bath Y.M.C.A. Camera Club.	<i>Hand Camera Photography.</i> Illustrated. Mr. E. Wallis.
3.....	Dundee & E. of Scotland P.A.	<i>Orthochromatic Photography.</i> Mr. P. Henderson, M.A., B.Sc.
3.....	Watford Camera Club	Competition. Members.
3.....	Liverpool Amateur Photo. Assn.	Members' Lantern Night.
3.....	London & Prov. Photo. Assn.	Open Night.
3.....	Richmond Camera Club	Lantern Night.
3.....	Gainsboro' Camera Club	<i>Lenses.</i> Mr. Wilkinson.
3.....	Hull Photographic Society	<i>Photographic News Prize Slides.</i>
3.....	Glasgow Southern Photo. Assoc.	<i>Portrait Printing.</i> Illustrated. Mr. Thos. Rennie.

CAMERA CLUB.

PHOTOGRAPHY has been for a long time so intimately associated with astronomy that Mr. Maender's lecture last week on the "Canals of Mars" aroused much interest among the members of the club, and drew a large audience. Captain Hills occupied the chair and introduced the lecturer. Mr. Maender acknowledged that there was no other club or society before which he would have greater pleasure in appearing as a lecturer, for the debt of astronomy to photography was beyond all calculation. It had multiplied by ten the effectiveness of the astronomer's instruments, and have divided by ten his difficulties. He was sorry, therefore, that the subject of his address would not be more photographic in character. He was to speak to them of the planet Mars, and planetary photography, for reasons which he would refer to later on, had made little headway. Mars is invested with greater interest for us than any of the other wanderers in space. Of course, we had our far more conspicuous satellite, but the moon was ever the same. Jupiter, the giant planet, showed abundance of change. Saturn was more beautiful, but it was too far off for any details to be observed. Venus was brighter than Mars, but its cloudy envelope veiled any details which might otherwise be apparent. Mars was usually clear, and for the past two centuries its distinct markings had been mapped by several careful observers, and it was noteworthy that several of the features depicted in the earliest charts were recognisable in the most modern ones. In looking through a telescope at Mars we see a very small object in the middle of a wide field, and to give some idea to those who are not astronomers as to what Mars looks like, he would say that it appears, in a telescope of high power, very much like the moon as seen through a child's spy-glass, having a magnification of two or three diameters. The orbit of Mars when compared with that of the earth is eccentric, and therefore the planet is much nearer to us at certain times. In 1877 it was at its nearest possible point to the orbit of the earth, and many astronomers took this opportunity of studying the planet and making drawings of it. And among these might be specially mentioned Nathaniel Green, whose drawings of Mars were certainly the best ever made. Comparing these drawings with the older ones by Beer and Mädler it was quite evident that the chief markings on the surface of Mars were of a permanent character.

The year 1877 was also noteworthy with regard to observations of Mars, because in that year Schiaparelli announced the discovery on the planet of a great number of channels (canals). This was a somewhat unfortunate term to apply to these markings, because a canal is an artificial construction, which carries with it the idea of human handiwork, and thus the inference drawn was that Mars was an in-

habited globe like our own. This discovery excited the greatest interest, and many observers looked for, and found, the canals.

The next prominent observer of Mars was the American astronomer Mr. Lowell, who built for himself an observatory at Arizona, and devoted himself to planetary research. He drew many detailed charts of Mars and found there many more canals than his Italian predecessor had done. In fact, on the chart which he drew, these canals appeared as a most complicated network, and the system covers, not only what is regarded as the land portions of the planet, but the lighter "sea" portions as well. So complex is the system as described on this chart that it is difficult to recognise many of the old permanent features of the planet. Mr. Lowell confessed that the appearances seemed to him to be unnatural, and thought that the canals were perhaps the work of intelligent beings, due in the first place to the melting of the snows at the polar regions of the planet, and subsequently devoted to purposes of irrigation. He corroborated Schiaparelli's observations that the markings changed with the seasons.

The year 1877 is also remarkable for the discovery of the satellites of Mars—Phobos and Decimos, as they were subsequently named. They give little light to the planet, and they are so small that they can exert very little tidal influence, so they may be regarded as useless to Mars. But they have helped our astronomers to determine the mass of the planet. And they have been able to estimate the atmospheric pressure, and the amount of heat which Mars receives from the sun, only about half as much as this earth gets. This would render the presence of life as we know it almost impossible, hence it came to be thought that Mr. Lowell was wrong in his canal theory.

It might be asked, "Why not settle the point once for all by means of photography?" But the camera cannot help us here. The planet is always revolving on its axis for one thing, and for another its prevailing colours are orange and deep yellow. Moreover, the dark markings are bluish grey, and when an object with such colouring is presented to the lens the photographer is powerless, unless he adopts such expedients as are out of the question when dealing with such a distant and moving body as Mars. And it must be remembered, too, that Mars is an exceedingly small object when compared, for example, with the moon. It could easily be put into one of the smaller lunar craters.

When Mr. Lowell subsequently stated that he had also found a network of canals on Venus, it began to be suspected that the Martian canals were possibly due to the personal equation, and that Mr. Lowell's observations were the result of an optical illusion. The lecturer had made a number of experiments, and he had come to the conclusion that when a surface was covered with dots or any irregular markings, and was viewed from a certain distance, there was a tendency in the observer to link those markings together into straight lines. He then hit upon the expedient of making a drawing of Mars, in which the canals were replaced by such irregular markings, and he placed that drawing before a number of boys, who were seated at different distances from it, and they were directed to make as truthful a copy of it as they could. They all drew in the canals, although canals were non-existent in the original. It was amusing, said the lecturer, to hear the boy's remarks as they afterwards crowded round the drawing. "Why there are no lines," said they, and evidently thought they had been hoaxed. Mars had been hoaxing the astronomers in the same way. There were no markings upon it which gave any evidence of life.

A long and animated discussion followed this most interesting lecture, in which Mr. Porter took up the cudgels on behalf of Mr. Lowell. He, too, had experimented with his own pupils in much the same way as Mr. Maender had done with his class of boys, but the results were not similar. The proceedings closed at an unusually late hour, with the customary compliments.

SOUTHSEA PHOTOGRAPHIC SOCIETY.

FEBRUARY 17TH.—Reports from the treasurer (Mr. F. S. Hoyte) and assistant hon. secretary (Mr. F. J. Lawton) gave evidence of the sound financial condition of the Society, and its efforts on behalf of its members' interest. The following executive was elected:—President, Mr. H. T. Lilley, M.A.; vice-presidents, Mr. Fisher, A.S.A., Mr. L. G. Bonham Carter, and Mr. H. J. Hissett; hon. treasurer, Mr. F. S. Hoyte; hon. secretary, Mr. F. J. Lawton, 20, Clarence Square, Gosport; assistant hon. secretary, Mr. Gilbert Wood, A.R.I.B.A.; hon. lanternist, Mr. E. H. Purvis; council, Dr.

lips, Messrs. S. O. Black, W. M. Cliffe, A. B. Casey, G. Slan-
, and A. A. Lawton.

CROYDON CAMERA CLUB.

FEBRUARY 17TH.—Following two prior demonstrations, illustrating to make transparencies, and enlarged paper negatives, Mr. Lionel proceeded to show how the latter printed in carbon, and though he disavowed any intention of giving a demonstration as to the complete way in which he dealt with his subject, he nevertheless introduced itself into a capital exposition of this beautiful pigment process.

During the evening he also brought forward a new procedure introduced by the Autotype Company, patented by them, and hitherto made known. In the ordinary way, the tissue is either left in a sensitive condition, or sensitised by the user, and dried, then, as a distinct operation brought into contact under water with one of the many varieties of single transfer paper, or temporary support, as the case may be. The novelty under notice apparently lies only in tissues in an insensitive condition, and consists of producing a piece of thin unprepared paper into the sensitising process simultaneously with the tissue, both are removed together, pressed into contact, and allowed to dry. The adhering paper is made translucent by means of paraffin oil, and the tissue placed under a negative in the ordinary manner, the thin paper intervening. On exposure, the print is developed in the usual way, but it was found to be able to support it on a piece of wood, which might be allowed to float in the developing tank. The increase of exposure, owing to the interposition of the paper, it was stated, is of a negligible quantity, and if a suitable paper is chosen the grain should not be excessive. Mr. Kough also said, that the "bête noir" of carboners, namely, "blisters," had never made their appearance, and that, in printing in general, these more frequently occurred when using thick single transfer papers than with the thin ones.

The new method appears to have distinct advantages over the old, and recently suggested of printing through the paper backing the tissue. The worker has obviously a choice of papers, and a semi-transparent one is selected, a variety of pleasing effects can be secured by laying the print down on tinted or coloured supports. It would also be easy to intensify or subdue portions of a print by locally tinting or toning down the paper behind. Whether this would be advisable to lay down a paper saturated with paraffin or a negative which has been retouched is perhaps open to doubt, but it might mean removal of the medium and the retouching with it at the application of the paraffin would appear to be chiefly after affecting speed of printing, and not an essential. It was stated that any thin paper might be used, but not all papers successfully withstand soaking in water at 110 degrees Fahr. But the Autotype Company will supply a suitable paper.

The process being patented, it is not open to anyone to practise it, but it was understood that the Company would raise no objection to being worked in conjunction with the Autotype tissues. At the conclusion of Mr. Kough's demonstration, Mr. G. Noaks made a capital contact bromide prints from the same negatives, the process used being Messrs. Wellington and Ward's. The chairman, Mr. A. Salt, in proposing a vote of thanks to Messrs. Kough and Noaks, acknowledged the club's indebtedness to Mr. Sawyer for giving them an early opportunity of inspecting an interesting modification of the Autotype or carbon process.

The following letter appeared in last week's issues of the "Croydon Camera Club" and "Croydon Guardian":—

THE PRESIDENCY OF THE CROYDON CAMERA CLUB.

—May I be permitted to make known in your valued journal the methods and attitude of a section of the members have asked me to resign the Presidency of the Croydon Camera Club? I would also like to thank a host of friends who, during the past ten years, by their loyal, cordial, and energetic co-operation encouraged me to do my best for the club. To them is due the remarkable prosperity to which the club has attained. They have so to speak, toiled at the oars, set the sails, and worked the ship through many a storm, while I have done little more than steer clear of rocks and quicksands.—Faithfully yours,

HECTOR MACLEAN.

February 17th, 1904.

CATFORD AND FOREST HILL PHOTOGRAPHIC SOCIETY.

A LECTURE entitled "Some Notes on Gothic Architecture," was recently delivered by Mr. J. Borthwick Panting, F.R.P.S., at the Society's headquarters. Briefly referring to the earliest types of architecture known, Mr. Panting passed through the various periods to the late Gothic. The lecturer dwelt on the necessity for a photographer to specialise if he wished to excel in any particular branch of photography, and emphasised the fact that some of the most beautiful examples of architecture were to be found in Northamptonshire. The lecture was profusely illustrated by photographs, from Mr. Panting's camera, taken in different parts of the country. A fine series of windows brought one of the most successful lantern evenings to a close.

BLAIRGOWRIE AND DISTRICT PHOTOGRAPHIC ASSOCIATION.

THE annual general meeting was held in the Photographic Rooms, Blairgowrie, Mr. John B. MacLachlan presiding. The secretary reported the results of last month's competitions. Best four prints, for special medal—1, James Donaldson; 2, Luke Falconer, jun.; 3, D. G. Monair. Mr. Donaldson having won the medal twice it becomes his own property. Best lantern slide, illustrating a quotation from Burns—1, 2, and 3, Luke Falconer, jun. The results of the session's competitions were:—Class "A," the "Macgregor" champion medal: Luke Falconer, jun., 14 points; 2, D. G. Monair, 11 points. Class "B" (Mr. J. D. Petrie's prize): George S. Grant; 2, James Richardson. Two new members were admitted. Messrs. D. G. Monair and W. D. M. Falconer, delegates to the Scottish Photographic Federation, reported as to the annual general meeting of the Federation at Perth.

The Secretary's report showed a slight decrease in membership, and the Treasurer's a substantial credit balance. Both reports were adopted. Office-bearers for the season were elected as follows:—President, A. Geekie; Vice-Presidents, D. G. Monair and W. D. M. Falconer; Secretary, Luke Falconer, jun., James Street Cottage, Blairgowrie; Treasurer, John Cameron; Auditors, James Donaldson and D. S. MacLennan; Hon. Lanternist, H. S. Fyffe; Executive, J. D. Petrie, John B. MacLachlan, James Donaldson, James Richardson, and H. D. Ross. Mr. James Patrick, S.P.F. judge, was reappointed judge of the monthly competitions. After discussion it was agreed to promote an international exhibition at Blairgowrie early next year, and it was remitted to the Executive to make arrangements for the same. A draft syllabus for the session was submitted, and, with slight alterations, approved.

ULSTER AMATEUR PHOTOGRAPHIC SOCIETY.

FEBRUARY 8th.—At the monthly meeting, Mr. Brown, F.R.S., gave a lecture on "Halation." The President, Mr. David Elliott, B.A., was in the chair, and there was a large attendance of members and friends.

Mr. Brown suggested first that in carrying out any process in the arts it was desirable not only to know how to do it, but also how it was done—i.e., to understand the scientific theories underlying the art. This knowledge gave an intelligent interest even to so simple a matter as that described by the title of his paper. Halation was, as all photographers knew, a sort of local fogging or "halo," which appeared round the high lights in a picture, causing indistinct contrasts, sometimes even blotting out details, such as in branches of trees against the sky, or the mullions of windows when interiors were being photographed. That the effect could be avoided was illustrated by a number of very beautiful prints from negatives by Mr. R. Welch, under what might be called very trying circumstances—photographically speaking. Mr. Welch was here, as always, the amateur photographer's friend, and the help kindly given to the members of that association in its embryonic days was always gratefully remembered. The lecturer then explained that halation was due to stray rays of light that had passed through the film when a plate was being exposed, and, after passing through the glass, were reflected to the back, or underside of the film. If such rays entered the glass at an angle other than 90 degrees they were reflected to one side or other of their point of entry, and thus caused the film to blacken on development in a wrong place. That much reflection took place was illustrated by an observation of the two images of a candle flame seen in its reflection from a plain glass

plate, or if the fine images that appeared (if the glass were silvered on the back) as in looking-glasses. In order to prevent halation it was only necessary to prevent the stray rays referred to from reaching the film, and this might be accomplished in two ways. One was to use a very thick coating on the plate, so thick that very little light could pass through it to enter the glass. This, however, involved a costly coating, and was not so efficient as the alternate method, even with a coating of the usual thickness through which light easily passed to the glass under it. Inconvenient light in photographic apparatus was usually got rid of by absorbing it by a blackened surface, a black or red pigment. As such pigment could not be put into the glass plate itself without obvious objections, it became necessary to induce the objectionable light to come out of the glass, to come out and be killed as it were, instead of being reflected back to the film. It was pointed out that when light passes from one transparent medium (in this case, glass) into another (in this case, air), part of the light was reflected without change if the dividing surface was polished, and that the amount of light so reflected depended on the indices of refraction of the two media. If these were equal no reflection occurred. It was therefore only necessary to replace the air in contact with the glass by some substance having the same refractive power as glass. Canada balsam, for instance, had nearly this characteristic, and, if spread on the back of a glass plate no reflection occurred there, but all the light emerged from the glass into the balsam. The light had thus been induced to come out of the glass, and having got it out it could very easily be absorbed and got rid of by mixing with the balsam any dark pigment. This mixture of balsam and pigment was, in fact, a backing. In its construction it was to be noted that the chief matter for consideration was the nature of the medium employed to mix the paint. The colour of the pigment was of little consequence so long as it was non-actinic. To illustrate this an experiment believed to be quite novel was shown. A little flat cell or box had been prepared, one side of which was formed of a polished slab of glass, the opposite side of blackened metal. The double images of an illuminated narrow slit, as reflected from the front and back surfaces of the glass slab, were shown on the screen. The medium in contact with glass surfaces being air, considerable reflection took place, and the images were approximately equal in brightness. On filling the cell with a mixture of Canada balsam and turpentine, thus removing the air and substituting a substance with nearly the same refractive power as glass, little or no light was reflected at the back of the glass, but all passed out into the balsam and on to the blackened metal side of the cell, where it was absorbed. The second image therefore practically disappears. It was, however, sometimes desirable or interesting to compare the qualities of certain backings whose constituents were unknown. This was easily accomplished in a manner also devised by the lecturer. The backings to be compared were painted in strips across one side of a glass prism. The prism was then held horizontally with the backed side down, when the internal reflection of a candle flame or of daylight from this backed side could be readily seen. Where the glass was backed the amount of reflection was small or nil, and the quality of the backing was easily judged by the relative brightness of the image reflected at its surface. In this way it was seen that there was not a very important difference between the nearly perfect backing of balsam and lampblack and the penny India ink so long successfully used and often recommended by Mr. Welch. The very fine slides used in illustrating Mr. Brown's lecture on the various points were kindly lent by Mr. Welch. Mr. C. Mitford Martin, hon. lanternist, carefully worked the lantern. The members present learned many tips which should prove useful in the coming season, and Mr. Brown received hearty thanks from all. Samples of "halogene" for backing plates were shown. There is little mess with this excellent medium, and it dries quickly. Afterwards members tried the new "daylight developing" medium, "coxin."

The Hon. Secretary (Mr. Thomas N. Murray) announced that the Lord Mayor (Sir Otto Jaffe, J.P.), who is a member of this society, had kindly promised a gold medal for competition amongst members, which notice was received with applause. By the courtesy of Mr. Hall, managing director of Messrs. Wellington and Ward, sample negatives were sent for the use of members to judge what class of a negative should be aimed for, for enlarging purposes on bromide papers.

BURTON AND Y.M.C.A. PHOTOGRAPHIC SOCIETY. On February 15 a lecture, entitled "The Eye Compared with Camera," was delivered before the members of this society by A. W. Butterfield, who said that one could not help but notice remarkable similarity in many respects of the eye and the camera, the eye being really a camera and nothing more, though certainly a most beautiful type. As cameras in themselves are merely apparatus for the production of impressions on a plate or film, so with the eye, and in a similar way to which these impressions received on the plate at the back of the camera, so are impressions received on the plate at the retina at the back of the eye, and this by a marvellous piece of apparatus, conveyed to the brain, which is really the organ that gives the power of sight. Though a person may have a perfect eye, yet he might be unable to see, as blindness is not always due to a defect in the eye itself, the cutting of the optic nerve, or injury to the seat of vision in the brain, for instance, rendering the eye useless. In taking the component parts of the camera, the eye it would be found that the latter was far superior to the camera invented, and though, like the camera, it was fairly simple yet when examined under a microscope would be found to be a most intricate and marvellous mechanism. By means of a series of diagrams thrown on the screen it was shown that the eye and camera have their cap, lens, diaphragm, dark chamber, and plate, with their respective ports; though in the case of the eye the dark chamber is not filled with air but contains a peculiar kind of vitreous substance, which takes its place. The plate or retina of the eye, however, being curved instead of flat, as is the case with the camera plate, possesses an enormous advantage over the latter, as rays of light from distant near objects can be focussed more accurately than on a flat surface as on account of the convex nature of the photographic lens it is impossible to bring all rays to a focus on the same plane, though for all practical purposes sufficient accuracy may be attainable. A minute examination of the structure of the eye, and more especially the retina, the lecturer went on to explain the adjustment for near or short distances, pointing out the necessity of altering the distance of the lens and plate in the camera, and showing how the eye, though fixed, accommodates itself to various distances by altering the convexity of the lens. The different range of vision was next touched upon, and it was also demonstrated how the defect known as spherical aberration could be obviated to some extent by "stopping down" the process in both the eye and the camera being almost identical. A few remarks were afterwards made on the subject of binocular vision, and it was much to be regretted that time would not permit of more than a glance at colour vision, which had to be dismissed by merely touching on the fringe of one of the most interesting sections of the lecture, which had been made more intelligible by the use of an excellent set of microscopic slides and diagrams.

ROYAL Photographic Society.—The third of the series of practical demonstrations will be given at 66, Russell Square, on Tuesday, March 1st, 1904, at 8 p.m., by Mr. E. T. Holding, the subject being "Platinotype Printing." Synopsis: The negative—the varieties of paper-printing—developing (a) cold bath; (b) hot bath—modification in development for (a) under printing; (b) over printing—toning. G. Lamley will occupy the chair.

In connection with the St. Louis Exhibition, which opens on 1st, Sir Benjamin Stone, M.P., who has forwarded to America a large-sized portraits, for the display of which a separate room has been specially prepared, has written an elaborate catalogue describing the series which he has selected to illustrate the educational value of his collection, the object of which is to preserve a pictorial record of current British life and history. The principal subjects depicted are the May Day Festival at Knutsford, the Corby Pole Fair, the Welsh Eisteddfod, Tynwald Day in the Isle of Man, the Corn Law Array at Lichfield, the Stratford-on-Avon Mop, the Hock-Tid-Hungerford, the distribution of the Maids' Charity at Biddenden, Baal Fires of Northumberland, the Horn Dance at Abbots Bromley, the collection of Wroth Money at Knightlow Hill in Warwickshire, Garlands' Day at Abbotsbury, the Tissington Well-dressing, various incidents and scenes of historical interest in connection with places in London, such as the Tower, the Houses of Parliament, Westminster Abbey, and the old Christ's Hospital.

Commercial & Legal Intelligence

are asked to state that the Debentures issued by Speaight, and the child photographers, in connection with the building of new Bond Street Studios, which were offered privately to clients, have been over-subscribed.

PENSON v. LE COUTEUR.—In the Chancery Division of the High Court of Justice on Friday, the 19th, before Mr. Justice Byrne, Mr. Parker said he had a motion against Mr. Le Couteur, who was engaged in the photographic business, and he asked by the notice for three injunctions. On the present occasion he only asked for one injunction. The plaintiff formerly carried on business as the "Photographic Association," which he sold to a company, under the conditions of sale was that he should not carry on any business on his own account within five years of his ceasing to be the company as managing director. Mr. Druce, who appeared for the defendant, said he was willing to give an undertaking in terms of the third part of the notice of motion, which was as follows: "And also for an injunction to restrain the defendant, Wm. John Le Couteur, his partners, servants, and agents, until the said action or further order, from applying to any person who was a customer of the plaintiff's said business before April, 1899, the date as from which the same was sold by the defendant, Wm. John Le Couteur to the Photographic Association, limited, the predecessors in title of the plaintiff, privately, or personally, or by a traveller, asking such person to deal with the defendant, Wm. John Le Couteur or not to deal with the plaintiff." Mr. Parker said that the defendant ceased to become managing director, but he continued to serve as manager under a verbal agreement. There were certain ambiguous terms in the agreement, and the question might arise as to whether the agreement superseded the first, and, if so, could the plaintiffs get an injunction. What was proposed to be done was that the matter be set down, so that there might be a speedy trial. Mr. Druce asked for a fortnight in order to make preparations. Mr. Parker said ten days would be sufficient. Mr. Justice Byrne, however, would split the difference, and allow the parties twelve days. **Amusing Case.**—At the Clerkenwell County Court, on February 23, Thomas Gardner, tailor, 267, Liverpool Road, sued Percy Barnsbury Artistic Studio, Barnsbury Street, N., to recover in respect of alleged damage done to photographic negatives. Mr. Lewis, solicitor, appeared for defendant. Plaintiff said some time last summer, or the summer before, he was in the studio, he took a photograph of a wedding group and returned with the negative to execute a number of photographs. When they came home, after considerable delay, he found they were all spoilt. The Judge: In what way?—Plaintiff: There was a spot on each one as though he had been tampering with the negative. The Judge (examining the photographs) said they looked like a stray sunbeam. (Laughter.) Plaintiff added he had an order for two dozen photographs, but owing to bad weather he lost every order. Defendant said plaintiff asked him to return the negative, which he did, and agreed to print them for ten per dozen. He did eight of each negative within a week, and expressed his great satisfaction with them. After several unsuccessful applications for payment, he went to plaintiff's house and he hoped he was not going to treat him (defendant) as he treated other people. With that, plaintiff raised his crutch and threatened to strike him. Later on plaintiff came to him at a public hall and used such dreadful language that he had to go to a constable and have him removed. The Judge: We are asking the question of his language. Defendant: It was the first time ever heard. There was a religious meeting going on inside, and we were afraid of it being upset by his language. The Judge: A religious meeting was not going on at the time, was it?—Defendant: It was just over then. The Judge: What is the cause of the cloud setting over the head of one of the wedding party?—Defendant: I put it down to the plate not being properly washed and was first done. Plaintiff: I would like to say a word or two about the question of the religious meeting. The Judge: Never mind the religious meeting. If you used the language he said you used, it was time to have one in order to clear the atmosphere.

(Laughter.) Mr. Lewis pointed out that plaintiff was not clear as to whether the order was given last year or the summer before. And, further, he had not brought one witness or member of the wedding party to show that the photographs had been refused. The Judge said there was a small objection to the photographs owing to the spot or cloud, but this did not affect in any way the features of the group. As far as the printing was concerned, it was quite as well done as the copy itself, and the verdict would be in the defendant's favour on the claim. A counter-claim for 4s., the balance due for work done in connection with the order, was dismissed.

News and Notes.

A SECOND edition of Mr. Hector Maclean's "Popular Photographic Printing Processes" is in active preparation, and will be issued early in March by L. Upcott Gill, Bazaar Buildings, Drury Lane, W.C., under the amended title of "Photo Printing." The whole of the matter has been recast and the information brought up to date. The price of the book has been reduced from 2s. 6d. to 1s. net.

SOMETHING for Greenhouse Owners.—In Cowper's time greenhouses were the exception rather than the rule, and it is more than probable they did not cause their owners so much anxiety as those of the present day do. Anyway, the modern greenhouse owner finds by experience that his floral pets have many enemies, but his knowledge of natural history is not always sufficiently erudite to recognise them, or to know what steps to take to circumvent their mischievous exploits. "Amateur Gardening," in its issue of February 20th comes to his assistance, by providing him with a coloured-plate containing portraits of the chief greenhouse pests. Moreover, the journal also describes the peculiar vicious habits of each pest, and tells the reader the simplest and most effectual way of banishing it from the greenhouse, and thereby allowing his floral pets to grow and blossom without risk of injury to their subtle beauties. It appears that this is the first of a series of plates of garden pests and friends to be issued by our contemporary.

MR. THOS. SHARP writes to the "Morning Post":—"Your issue of the 13th inst. records the awarding of the Royal Astronomical Society's gold medal to Professor Hale 'for his method of photographing the solar surface and for other astronomical work.' Not for a moment do I wish to detract from Professor Hale's merits, but in common fairness I think attention should be drawn to an article by Mr. T. R. Dallmeyer in the 'Photographic Journal' of March 29th, 1895, entitled 'Inequality in Illumination in Photographic Lenses and De la Crouée's Remedy for the Defect,' in which it is shown that 'there is little risk in facing the light, and that the sun can be faced with impunity providing the lens is stepped down and made to fall upon the apex of the triangular figure produced in the ground glass.' Special attention is drawn by Mr. Dallmeyer to the value of M. De la Crouée's invention in astronomical and celestial work.

THE annual meeting of the Royal Astronomical Society was held at Burlington House last week. Mr. Choate, the United States Ambassador, attended to receive the Society's gold medal for presentation to Professor G. E. Hale. The medal had been awarded to Professor Hale 'for his method of photographing the solar surface and for other astronomical work.' Professor H. H. Turner presided. In awarding the medal he said that he did not intend to give a complete account of Professor Hale's work, but there were at least two important researches, independent of his work with the spectro-heliograph, which must be mentioned. The first was his determined search for some method of observing the corona without an eclipse. Hitherto it had been unsuccessful, but that was owing to the difficulty of the problem. Secondly, he must refer to the work done at the Yerkes Observatory from 1898 onwards in photographing the spectra of the fourth-type stars and measuring the photographs. In handing the medal to Mr. Choate, the President said: "Mr. Choate,—It is but three years since your Excellency did us the honour to attend our annual meeting to receive the medal on behalf of Professor Pickering. May I say that we

are in every way much pleased to see you here again. It will, I am sure, not lessen the value of this medal, which we ask you to send to Professor Hale as a token of the high value we set upon his work, if I add that it is also in some sort a symbol of our cordial admiration of the great advances made in our service by the astronomers of the United States and by the citizens of the United States, who have so generously aided their efforts." Mr. Choate, in receiving the medal, said that he considered it a very great honour to be asked to attend and to receive the medal, and would have much pleasure in transmitting it to Professor Hale. It was a medal the awarding of which was the crowning honour of any astronomer's work in the world. American astronomers enjoyed very rare facilities for prosecuting their work. They had 300 clear days and nights out of 365, and with that facility they certainly ought to do something. Public and private munificence also contributed very largely to their opportunities.

Correspondence.

*** Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** We do not undertake responsibility for the opinions expressed by our correspondents.*

LANTERN SLIDES ON "BARNET" PLATES.

To the Editors.

Gentlemen,—We venture to send you at foot list of engagements during March for the lantern lecture on "Majorca" by Mr. G. E. Thompson, which is illustrated by fifty slides made upon "Barnet" Lantern Plates, especially with a view to demonstrating the wide range of colours obtainable by variations in their development. This lecture has been in circulation amongst the various photographic societies during the past few months, and its reception has been most gratifying, a very large number of appreciative letters having reached us regarding it.—We are, yours faithfully,

ELLIOTT AND SONS, LTD.
T. H. COAD.

Barnet, N., February 23rd, 1904

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| March | 2nd.—Tunstall and District Photographic Society. |
| " | 2nd.—Goldsmith's Institute, New Cross. |
| " | 3rd.—Sunderland Camera Club. |
| " | 4th.—Wimbledon Camera Club. |
| " | 8th.—Doncaster Camera Club. |
| " | 9th.—Stockport Photographic Society. |
| " | 9th.—Sheffield and Hallamshire Photographic Society. |
| " | 10th.—Beverley Photographic Society. |
| " | 10th.—Gravesend Camera Club. |
| " | 15th.—St Helens Camera Club. |
| " | 15th.—Sligo United Y.M.C.A. Camera Club. |
| " | 16th.—Cambridge Y.M.C.A. Camera Club. |
| " | 16th.—West Surrey Photographic Society. |
| " | 22nd.—Heaton Amateur Photographic Society. |
| " | 22nd.—Thornton Heath Photographic Society. |
| " | 28th.—Wood Green Congregational Literary and Debating Society. |
| " | 30th.—Scarboro' and District Photographic Society. |

ILLICIT REPRODUCTION.

To the Editors.

Gentlemen,—In your last issue Mr. Turner, of Hull, reverts to a subject often discussed in your columns, namely, illicit reproduction of the photographer's work by copying firms and unfair newspaper competition. Their work is, as he says, inferior to the original maker's; but they "cut" the poorer class of bonâ fide photographer considerably. All this is true, and pity 'tis 'tis true. Will enclosed paragraph cut from an old copy of the "Photo Chronik" help them a little to gain their own:—

"As a guarantee against illicit reproduction the name of the photographer, or some design or mark, should be painted on the photograph in quinine sulphate, or some similar compound. It is not visible to the eye, but appears in black on a negative taken of it.

A mixture of water, glycerine, and a small quantity of fluorescein especially recommended for the purpose."

Being an amateur in a humble way, I do not know whether the above advice is known to many of the vast army of your readers give it as I received it.—Yours truly,

EDWARD D.
124, Osborn Road, Sparkbrook, Birmingham.
February 23rd, 1904.

REMOVING SILVER STAINS FROM NEGATIVES

To the Editors.

Gentlemen,—Having noticed in the columns of "Answers to respondents," several queries as to silver stains on negatives, we have been experimenting in this direction for some time, and have discovered a formula with which we have been very successful, in removing stains from negatives, which were in such a state as to be entirely despaired of.

We should be pleased to give a practical proof of what we are able to do, if your correspondent would send a stained negative to us.—Yours faithfully,

JAS. HARGREAVES.
1, St. John's Buildings, Christchurch Road,
Boscombe (Bournemouth).
February 16th, 1904.

THE DECIMAL AND METRIC SYSTEMS.

To the Editors.

Gentlemen,—In a paper on "The Metric and Decimal Systems" published in this journal on February 12th, Mr. J. R. Gotz endeavored to convince us that decimals involve fewer figures than vulgar fractions and lend themselves more readily to multiplication; in proof of which idea he suggests a simple problem that most emphatically proves the contrary. It is far easier to multiply $6\frac{1}{2}$ by $4\frac{1}{2}$ than 6.5 by 4.75 , because the result is apparent in the first case and not in the other. Any person practically skilled in the use of figures would at once mentally convert the decimals into fractions, knowing that the result could be seen without any working out on paper. The fractions would be used in the incomprehensible fashion described by Mr. Gotz, yet in the authorised manner of the arithmetic books. They would be worked by cross multiplication, or, perhaps, by a method founded on some algebraical formula. The user would have several methods available, and would instinctively use the shortest one. In the majority of cases decimals representing simple fractions are best worked as fractions, for if you write in decimals and think in fractions the result can generally be written straight down. Even whole numbers are often best treated by inserting a decimal point and converting the result into a vulgar fraction, when your product or "square" is once apparent. For example; $1225 \times 1.225 = 1225 \times \frac{1225}{1000} = 1225 \times \frac{1225}{1000}$ all be squared without any working out by simply writing in decimals the square of $12\frac{1}{2}$ and then shifting the decimal point to the place. I wonder if Mr. Gotz would multiply out to find the square of 21.142857 , or of 12.083 , or the product of $.3$ by $.6$, or of $.142857$, or of 931.7861 by 333.3 . (He should solve all five within a minute and a half.)

If, instead of speaking of the "incubus" of the vulgar fraction, Mr. Gotz had pointed out that fractions were often necessary to the advantageous use of decimals, he would have shown much more practical knowledge of his subject.

The great defects of purely decimal systems are that they do not lend themselves to the quick calculation essential in the business world. That they seldom show obvious results; that they frequently require the use of surplus and unnecessary figures to arrive at small exact results; that repeaters constantly lead to confusion and wholly unnecessary complications; and that decimal points and repeater points get into the wrong places. It is generally necessary to use decimals and fractions together to save the time and work that is of pecuniary value in the practical world.

It is remarkable that Mr. Gotz should be of opinion that a duodecimal system has advantages when he only considers the fanciful question of duodecimal notation. He ignores the fact that we have in common use a most invaluable duodecimal system, by which we can count squares in feet and inches in far less time than is possible with the metric system. We can multiply, say, $12\text{ft. } 7\frac{1}{2}\text{in.}$ by $4\text{ft. } 9\text{in.}$ more quickly than the corresponding dimensions of 3.848m. by 1.401m. for the former sum only requires a maximum of six working figures.

the latter needs twenty-seven figures and at least thrice the time—seconds against fifteen seconds—according to a rough trial. The defects of the metric system are very obvious to all who are acquainted with it and with the sundry English systems. First, series only of units, all increasing in geometrical progression, is inefficient, for practical experience shows that units must be varied for secure economy. It is not practically possible to devise any one series of uniform ratio that will fit all requirements. Again, the fact that the metric system acknowledges only decimals is a serious defect, as I have endeavoured to point out, decimals are most seriously inconvenient in a variety of cases. Then, again, there is the worst defect of all, which is the lack of economically efficient units. The new fashion in which the length of the metre was fixed has spoilt the system, for even that unit is slightly too long, though it is the best of all the metric units. As Mr. Gotz seems to consider the exact length of the metre to be of little consequence, it is evident he does not appreciate the advantages of economical units. It is, however, a curious fact that if for any particular purpose you use a unit that is either longer or shorter than it should be, you suffer a loss of time, energy, or efficiency; possibly in all three. We have now in use in England two decimal systems that are far superior to the metric system, one being the system of land measurement with the almost perfect economical unit of the chain, and the other the system of small parts of an inch used for small measurements, which contains a good economical unit of the inch, the hundredth of an inch, and the thousandth of an inch. The small units of the metric system cannot compare with these. To expand this system by adding new units of 100, 1000ths, etc., would be of no use, for we should then lose our valuable duodecimal system and only gain a series of uneconomical units. Our linear units are fairly good as they stand, and though our measures generally have many defects and require reform we do not want decimals introduced everywhere, nor do we want to measure all commodities by the same units. A perfect system would be a very simple one, not an academic compilation, including useless units put in for no other purpose than that of filling up a pedantic series, and containing a large number of units of real value.—Yours, etc.,

C. WELBORNE PIPER.

February 17th, 1904.

LADIES' FIGURES.

To the Editors.

Gentlemen,—According to the daily papers about sixty ladies and many more gentlemen have joined the Anti-Corset League at Leeds. The league is an off-shoot of the Leeds Society of Physical Culture. The male members of the league have, it is said, vowed not to marry "Corset Wrecks," and the ladies are exhorted, at peril of excommunication from the society, to abandon the use of corsets entirely, and there is a hard and fast rule that every male member shall have no restriction bands or other light things round the waist. If the Anti-Corset League are successful in bringing about a revolution in feminine fashions—and figures—there should be good for professional portraitists. Ladies always want portraits in the most fashionable attire, and if corsets were abandoned they would no longer tolerate their portraits with their faces "trussed" up as they sometimes are by this unseen garment, which renders them anything but a model of the *Venus di Medici*. At the present fashion rules, and I think that it will take some time before any leagues will displace it. If it were displaced, it is questionable if photographers would be quite so successful with any of their lady sitters as they are at present, or, at least, give equal satisfaction to them. However, the revolution is not yet at hand, and it is doubtful if the corset-makers are very much disconcerted about what the anti-corset leagues are doing.—Yours, etc.,

APOLLO.

LIVERPOOL Amateur Photographic Association.—At a Council meeting recently, it was resolved that, with a view to presenting the secretary, Mr. Simmett, with a suitable memento of his term of office, a subscription list be opened, and that the members of the association be requested to intimate their willingness to subscribe. The maximum subscription has been fixed at 5s., but smaller sums will be welcomed, as the Council naturally wish the subscription list to be a thoroughly representative one.

Answers to Correspondents.

- *** All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.
- *** Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.
- *** Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & Co., 24, Wellington-street, Strand, London, W.C.
- *** For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

- J. Bell, 19, Canal Street, Heywood. Photograph of E. H. Holden.
- J. C. H. Balmain, 69, Shandwick Place, Edinburgh. Three Photographs of Miss A. Russon as "Cinderella."
- D. Ross, Norman Place, Leslie, Fifeshire. Three Photographs of the Dule Tree on Lyle Green.
- J. A. Horsburgh, 4, West Maitland Street, Edinburgh. Photograph of the late Dr. R. M. Murray.
- L. Anthony, 2, High Street, Killarney. Three Photographs of "The Killarney Colleen."
- E. W. H. Butler, 117A, High Street, Croydon. Photograph of Group of Eight Clergymen.
- H. J. Comley, 10, Russell Street, Stroud. Photograph of W. B. Stewart.

DRAWINGS REGISTERED:—

- J. S. H. Bates, 13, Evington Street, Leicester. Two Drawings for Booklet Covers.
- W. H. REYNOLDS.—We have no fuller address than that we gave you in our previous answer.

ENLARGEMENT (Uddingston).—The enlarger, mentioned in your letter, is a very good one for the money, and excellent results may be obtained with it.

REGISTRATION OF COPYRIGHT.—R. J. CROSBY says: "I have a portrait of a gentleman that I want to have registered. I am informed you undertake to see to registering. Will you kindly say what I shall send re prints and fees; by so doing you will do me a great favour?" In reply: If you send us two copies of the portrait, and one shilling and sevenpence in stamps, we will effect the registration for you.

BOOK WANTED.—"BLACK AND WHITE" writes: "Would you be so good as to recommend me a reliable text book on 'black and white' for pen and ink work; especially such as is required for paper or magazine illustrating? I do not wish for an elementary book on pen and ink drawing, but in black and white for process reproduction." In reply: "Hints on Drawing for Process Reproduction," by C. J. Vine. It may be obtained through any of the dealers.

STRENGTHENING ALCOHOL.—W. A. WILSON asks: "Will you kindly tell me in which edition of the ALMANAC or number of the Journal I shall find the recipe for getting water away from methylated spirit? I believe I have seen it, but cannot turn it up at present." In reply: Shake the spirit up with some welldried and powdered carbonate of potash. That will absorb the water and sink to the bottom of the bottle when the spirit can be decanted off.

COLOURING.—H. R. HOGGEN says: "Kindly inform me which is the best preparation to use as a smooth coating previous to colouring photos, its composition, mode of use, and treatment in making up before using?" In reply: You do not say the sort of paper you have to deal with, or kind of colouring. As a rule no coating is required. If the paper is repellent of the colour a slight wash of prepared ox gall, as sold by artist's colourmen, may be applied, or the surface of the print may be rubbed over with a piece of pencil eraser.

FLIES IN WINDOW.—"TORMENTED" asks: "Can you enlighten us as to any means of keeping flies out of shop window?" In answer: This query in no way relates to photography. But as you are a firm of professional photographers we reply. If you have an inner casement fitted to the window, such as

is usual in shops where fancy and delicate things are shown for sale the flies will not be able to get in the window if the casement is kept shut. An alternative plan would be to catch the flies as they enter the shop and kill them at once.

BURNISHING UNMOUNTED PRINTS.—"BURNISHER" says: "I have just bought a new globe enameller, and my work being mostly for publication the prints are unmounted. Now the difficulty is, I cannot put them through this class of burnisher because it creases the prints. Have tried cardboard (thick and thin), also blotting paper, etc., without success. Can you suggest anything, or must the burnisher be a flat one for rolling unmounted prints?" In reply: Burnishers are not well suited for unmounted prints. They are best dealt with in a rolling press provided with a polished steel plate.

PHOTOGRAPHIC PAINTINGS.—"PAINTER" asks: "Could you kindly inform me of the correct plates and colour filter to use for photographing oil paintings (sea and sky chiefly) to produce such results as are obtained in the Royal Academy 'Pictures of the year,' etc.?" In reply: All the plate makers supply orthochromatic plates, and many of them light filters to use with them. But it is against our rule to recommend any particular maker's goods. You must keep in mind that the reproductions you refer to are produced by photographers who are highly skilled in that class of work, and also that as much depends upon skill as plates.

COLOURED LIGHT.—"LIME LIGHT" asks: "Would you kindly inform me how to make the different coloured tinters, viz., crimson, blue, green, amber, mauve, pink, etc. as used in theatrical lime boxes? I don't mean the ordinary coloured glass, as it is too dense; but some sort of stain that is used, like coating a glass with coloured collodion and binding like a lantern slide. (1) What vehicle is used to hold the colour? (2) How are the various colours made and with what substance?" In reply: (1) We have had no personal experience in this kind of work, but we should think that glass plates coated with gelatine and then dyed with coal-tar colours would answer. An unexposed and fixed dry plate would probably answer. (2) Judson's dyes would be suitable.

BLINDS FOR STUDIO.—"BLINDS" writes as under: "If you would kindly answer the following questions I should feel greatly obliged: (1) What would be most suitable for blinds and colour of same for the studio of which I send you sketch with dimensions? (2) What is the most suitable colour for paint and paper for the walls of studio? (3) After spring rollers (which I am afraid I cannot afford) what is the most efficient system for fixing and working blinds?" In reply: (1) A light green window Holland would be very suitable. (2) Any light tint, say a French grey or other colour that will accord with the surroundings. (3) Spring blinds would be the best. But cords and pulleys, such as are used for window blinds, can be employed.

FEES FOR REPRODUCTION.—"W. H. DEE" asks: "Can you kindly inform me what the usual charges are for cabinet photos with right to reproduce. I have never taken less than 5s. for cabinet and 10s. 6d. or 21s. for 8½ by 6½ or 12 by 10 groups. But enclosed you will find copy of letter from Manchester, stating my charges are extremely excessive, and as I do a fair amount of work with papers I shall be glad if you can answer what the usual charges are?" In reply: The usual fee, to a newspaper, is 10s. 6d. for sizes up to cabinet, and larger sizes in proportion. What you have been charging are only about half those suggested by the Professional Photographers' Association. See pages 977-80 of the "Almanac." The prices offered by the Manchester house are ridiculous.

ELECTRIC LIGHT.—"ELECTRIC" writes: "Will you kindly oblige by answering the following questions: (1) Who are the makers of portable studio electric lamps? (2) What would likely be the exposure with one of these lamps, using same lens, stop, and plate which would give a fully exposed negative at three seconds ordinary daylight in studio? (3) What would be the distance required for vignette head, three-quarter, and full

length figure; that is, how far would the lamp require to be distant from the subject? In reply: Messrs. W. M. Still & Co., 24, Charles-street, Hatton-garden, makers of the Addison light. (2) Depends upon which size apparatus you employ. (3) This depends upon the lighting required. Better write the Messrs. Still for a prospectus. We do not answer queries by post.

METOL TROUBLES.—"E. J. Sander" says: "I shall be glad of advice on the following subject: 'My thumb and first and second fingers of right hand have started to dry up, and the skin to crack and open, not very badly, but sufficiently to have to keep them covered with rubber finger stalls. I am inclined to think it is due to the use of the Velox acid fixing bath. I have lately taken to making it up, and have only lately got the skin trouble. I have used metol, quinol developer for a long time, but much more frequently lately, and I am certain to which to attribute it. Any advice or treatment you can give me I shall be glad to adopt, as I am very loath to give up either the acid fixing bath or the metol quinol developer.'" In reply: There is very little doubt that the trouble is due to the metol and to nothing else. If you relinquish its use we have no doubt but that your fingers will get all right. If they do not, better consult a medical man.

LENS QUERIES.—"STUDIO" says: "I am building a small studio rear of house, and should like your advice. Owing to lack of space it is only 16 ft. in length, 9 ft. wide, 8 ft. to eaves, 11 ft. to highest part of roof. It is being built along brick wall, as shown in sketch enclosed, which rises above roof 6 feet, cutting off a good deal of top light, though side light is unobstructed. As length of studio will not permit use of long focus lenses, I am thinking of using a Busch 7 in. f6 Portrait Aplanat F 6 for full length figures, and same perhaps 11 in. focus for bust. What I should like to know is: Would the lenses named at F 6 and using the new rapid series of plates be fast enough; (2) would the focal length be sufficient to prevent distortion; (3) would the light be improved by whitewashing wall obstructing top light; (4) as only one end of studio would be used, how much light should be blocked at sitter's end, and how much top and side light should be given; (5) what colour blinds would you advise?" In reply: (1) Yes, for general purposes. (2) Yes, fairly so, unless they are brought very near to the sitter. (3) Not material, not worth the trouble. (4) About four feet. (5) As to aspect of the studio is not stated, we cannot say what colour would be best.

We have received from Messrs. H. Poths and Co., of 4, Bury Court, St. Mary Axe, London, E.C., a thirty-six page catalogue of specimens and show bottles for exhibitions, museum collections, etc.; also sample bottles, cardboard boxes, and sample bags. A copy of the list may be had on application to Messrs. Poths.

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* The Editor can only be seen by appointment.
* We do not undertake to answer letters by post.

EX CATHEDRA.

tical Much has been said during the recent
ISS. fiscal controversy concerning the loss this
country has sustained by the importation of optical glasses
in Germany, but to whichever political party those who
present the fact may belong, they must admit that the great
damage Germany has made in the manufacture of this
material is due to the perseverance and skill of two men,
who were brought together by a happy chain of circum-
stances. But orators and partisans are guilty of much
aggravation with regard to the commercial importance of
this article, as may be seen from the following statistics,
taken from the German paper "Photographische Indus-
trie." It appears, from the official returns, that Germany
imported M624,000 (about £31,200) worth in 1902 and
M74,000 (about £28,700) worth in 1903. On the other
hand, Germany imported optical glass in 1902 of the value
M233,000 (about £11,605), and in 1903 of the value of
M204,000 (about £10,200). It may be gathered from these
figures that Germany, like Great Britain, does not produce
the optical glass it uses, and it must derive some advan-
tage either in price or quality, from that which it imports.
From the fact that the quantity is proportionate to the
value in each case, it may be inferred that the optical
industry has suffered considerable depression during the
last year. In turning to optical instruments, including
photographic apparatus, we find remarkable confirmation of
this German loss of trade. In 1902 the exports amounted
to £665,200, but last year they fell to £444,600, the greatest
decline being in the trade with Belgium, France, and Great
Britain. The imports into Germany have not declined

much, being £27,050 in 1902, against £23,200 in 1903. These figures not only show that the foreign trade has declined very considerably, but that the market in Germany for foreign-made instruments, etc., has not suffered to anything like the same extent. Some explanation of these facts would be very interesting.

* * *

Tilting the Lens.

The Austrian Photographic Association, with commendable enterprise, have recently started the publication of a photographic newspaper, which is called the "Oesterreichische Photographin Zeitung." We send the Association our best wishes for success in their new venture. We cannot, however, refrain from adversely criticising one of the methods mentioned by Herr Max Jaffé in an article entitled "Some Photographic Dodges." As one means of curing distortion he mentions the tilting of the lens, taking care that the focussing screen be perfectly upright. The recommendation is a sound one so far as the screen is concerned, but why tilt the lens? Herr Jaffé is careful to point out that the definition will suffer considerably at the top and bottom of the picture when the focus is adjusted for the centre, and he recommends the use of a very small stop, measuring about $f/1000$, to obtain tolerable marginal sharpness. Did Herr Jaffé ever try the method? We suppose the tilting of the lens is advised for reducing the foreground and including the upper part of the building, or other object, it may be desired to photograph; but will tilting the lens help much? One of the devices for finding the optical centre of a lens is to place it on a block of wood pivoted at its centre, when, by rocking and sliding the lens backwards or forwards, a point may be found at which the image is quite stationary. But the lateral movement near that point is not much, and of little or no value for the purpose indicated. Perhaps the diameter of the stop, through a printer's error, may be incorrectly given, but if the author was guilty of this indiscretion he will find, by working out the comparative exposures, taking 1.5 sec. for $f/16$, that the lens must remain uncapped for at least 13 minutes for $f/1000$. Even then no allowance is made for diffraction and the inertia of the plate. In the illustration showing how the lens may be tilted we notice that the screw by which the camera front may be swivelled and clamped in position runs in a groove, which would permit of raising of the lens to a considerable extent. Were the lens raised a little the effect could be obtained without destruction of definition and the use of an absurdly small stop.

* * *

A Weather Plant.

A few plants about a studio are always useful, and, properly disposed, ornamental; but if among them there were included one capable of prognosticating the weather their

usefulness would be increased manifoldly. Recently, at the Society of Arts, Baron Fridland described such a plant in his lecture, "Forecasting of Atmospheric and Seismic Disturbances on Land and Sea." Fortunately, we do not in this country, at any rate, as they do in Japan, for instance, want to know much beforehand about earthquakes, though we have heard such a description given of the results of a careless printer having broken a valuable negative; but if we could have a plant in the studio or reception-room capable of telling us what the weather was going to be like for the next day or two its advantages would need no argument to prove. The *Abrus Precatorius Nobilis* is the name of this wonderful vegetable product, which, with suitable precautions, can be grown by anyone, the lecturer stated. According to variations in the distribution of the electric and magnetic forces of the atmosphere of the earth which takes place, the plant performs peculiar and abnormal movements, each having its definite signification, a knowledge of the meaning of which enables the observer to predict the weather almost a month in advance. From a single station—say London—he could, said the Baron, issue special charts 24 to 28 days in advance showing the "critical" barometrical centres, the atmospheric and seismic disturbances, and signs of fire-damp explosions that might result therefrom; issue daily charts, showing from two to seven days in advance the lines of equal barometrical pressure; and, most important of all to photographers, the districts of rainy, fine, and foggy weather; and, finally, to publish daily a detailed forecast, 48 to 72 hours in advance of the weather, within a radius of from 40 to 60 miles. Lest every reader should at once rush to purchase an *Abrus*, we have to add that the lecturer stated that, though almost anyone could grow the plant, it was impossible to interpret its indications without a great deal of training and subsidiary knowledge. The vast importance that a knowledge of how to successfully forecast the weather would be to photographers needs no discussion, and it cannot be doubted that already the public forecasts given are less untrustworthy now than they were a number of years ago. Many new facts are discovered which go towards perfecting the system of forecasts, many old notions are exploded, and some resuscitated. Most interesting among the latter is one dealt with by Mr. H. C. Russell, the Government Astronomer of New South Wales. The old popular notion of the moon's influence upon the weather has long been scouted by all scientific men, yet Mr. Russell states that he has discovered, to his own satisfaction, that the rainfall is governed by the moon, and he gives a diagram showing that when the moon's course is to the southward, in the southern hemisphere at any rate, more rain falls than when the moon moves to the northward.

* * *

Incandescent Electric Lamps and the Osmium Lamp. Users of incandescent electric lights in the studio have a fair experience of the cost of glow-lamps, and their gradually diminishing efficiency as their age increases, and everyone is familiar with the blackening of the interior of the bulb that gradually takes place, though sufficient attention is not commonly given to its concomitant phenomena. The blackening is accompanied by a very serious decrease in power, and especially for photographic purposes, thus: the discolouration naturally absorbs some light; as it arises from particles of the filament being thrown off, the filament being altered, and its emissivity for heat increased, its temperature, *ceteris paribus*, is consequently decreased, its light diminished in intensity, and, naturally, in actinic power, which also suffers still further through the thinning of the filament increasing the resistance, with consequent passage of less current and fur-

ther diminution of intensity of light. We would direct particular attention to this latter feature. The photographic power of the glow-lamp diminishes far more than the illuminating; as the brightness of an arc lamp is raised, the greater the photographic efficiency. This is well shown by the fact that it is possible so to reduce the intensity as, for example, in running several lamps in series—that a suitable dark-room light will be produced, sufficient to read by, for example, but insufficient to fog a plate unless by long exposure. The "life" of the lamps is variously estimated at from 800 to 1,000 hours; but long before that time has passed the wise photographer will have smashed and replaced them. It seems a pity that a spent lamp cannot be utilised again, but, so far as we are aware, there is no market for them when worn out. Such being the case, any promise of a lamp with a longer life of efficiency will be examined with interest, and this appears to be the case with the Osmium lamp, a short account of which, by Professor F. G. Baily, recently appeared in the "Electrician." It consumes rather less current than the ordinary carbon filament—1.9 watts, as against 2.1 watts, per candle—the colour being practically the same as carbon. This would mean a diminution of about 10 per cent. in the bill for electricity; but that is not all, for Professor Baily considers that the main cause of the higher efficiency is the greater temperature which the Osmium filament can stand, and this, as we have just pointed out, means higher photographic power. It appears the only trustworthy life tests available are those of Professor Wedding, who, testing eighteen lamps, proved their life to be on an average about 1,900 hours—perhaps twice that of the carbon lamp. The diminution of luminous power worked out at 20 per cent. at the end of the trial compared with their power at the start. The drawback at present seems to be the inability to produce a high voltage lamp, 55 volts being the highest p.d. for which at present they are manufactured.

THE OLD PHOTOGRAPHY AND THE NEW.

At the conclusion of a previous article on the above topic (see page 123 *ante*), in which the difference in the principle involved is the production of negatives prior to the introduction of gelatine emulsion photography, with regard to the probable stability of the results, was treated upon, we intimated that we might revert to the question with reference to prints. No one will dispute the fact that a very large proportion of the silver prints made, say, during the past decade or so, show a marked lack of stability, while many may be seen in old family albums that were made some thirty or forty years ago which are practically unchanged, and some even as good as when first produced. Prints, it is true, were made in the early days of the art that have not withstood the test of time, but it would be safe to say that a proportionately far larger number of silver prints produced now show earlier signs of decay than did those of thirty or forty years ago.

We shall here point out, as we did with regard to negatives, the different conditions under which the earlier prints were produced and those obtaining now. We refer particularly to printing-out processes, as the development ones were dealt with in connection with paper negatives. Up to the time of the introduction of gelatine papers, albumenised paper was the one in vogue. Going back to the earliest days of its use, we are reminded that what was then termed albumen paper was what would now be called a matt surface one, inasmuch as the albumen employed was largely diluted with water.

If we refer to the third edition of "Hardwick's Photographic Chemistry" (1856), we find the formula for this

paper stands thus:—Chloride of ammonia, or chloride of sodium, 200 grains; water, 10 ounces; albumen, 10 ounces—that is, equal parts of water and albumen, with 10 grains of chloride to each ounce. On this the paper, which was of a thinner and purer kind than is necessary for gelatine O.P.'s, was floated for a minute and a half. When dried it was sensitised by floating it on plain solution of nitrate of silver, 60 grains to the ounce of water, for three minutes. A much stronger solution than this used to be frequently employed. Here, it will be seen, the chloride of silver as formed by a double decomposition. Now it will easily be realised that the albumen and the chloride, with the one and a half minute floating, would penetrate well into the body of the paper, and with the three minutes on the silver bath the solution would soak deeply into the paper, and could, also, have much remaining on its surface when dried. As a consequence, the image, when printed, was as much in the body of the paper as it was on the surface. But this was not all, for the negatives in vogue then were totally different from those of the present time. They were collodion ones, having great density in the lights, and perfectly clear glass for the deepest shadows. They took a long time to print, and, as a consequence, they were deeply frozen in the shadows, and the image was well in the body of the paper, and with specially strong negatives it showed strongly on the back, proving that the image was composed of a large quantity of reduced silver.

At the time referred to the toning bath employed was the combined one. It was very strong, and contained only gold, with sometimes a little silver, hypo, and water. No such things as alum, lead, acid, etc., were used as in the modern combined bath. We have said that the bath was very strong. Here is the formula as given in the edition of Hardwich just quoted from:—Chloride of gold, 4 grains; nitrate of silver, 16 grains; hyposulphite of soda, 4 ounces; water, 8 ounces. The toning took a tolerably long time, usually from a quarter to half an hour, and frequently much longer, as the gold became exhausted, so that there was little question as to whether the pictures were fixed or not. Notwithstanding that, some workers further fixed the prints by an immersion of ten minutes in a fresh solution of hypo. With plain salted paper, which at that period was largely used, similar conditions obtained; the paper was heavily salted, and was sensitised in a strong solution of silver—either the ammonia-nitrate or plain nitrate.

At a later period the albumen was less diluted. Hardwich (1861 edition) gives the proportions:—Albumen, 15 ounces; water, 5 ounces; the chloride remaining as above. When the *carte de visite* became the rage a more glossy surface was desired, and then the albumen was employed undiluted, and sometimes thickened up by evaporation. In this way the image was kept more in the albumen coating; still, much of it was in the paper itself. About this period a separate toning and fixing system was generally adopted, which, theoretically, added to the stability of the picture. The prints, after fixing, were washed in cold, and afterwards in warm water, and at the later stages in quite hot, so as to ensure the removal of the last traces of the hypo.

Having referred pretty fully to the old conditions, let us consider those now prevailing. With the gelatine O.P.'s, the paper is usually surfaced with a "baryta" substratum, on which the emulsion is spread. The chloride of silver is formed in the emulsion, and not, as in the former method, by double decomposition in the albumen and the paper; it also contains an organic salt to add vigour to the image, and very little free nitrate of silver. The negatives now used are very unlike in character those employed in the old days, being feeble in contrast as compared with them. In the modern prints the image is con-

fined entirely to the gelatine, whereas it used to be to a great extent in the body of the paper itself, as could be seen if a print were roughly torn across.

There is another process that should be referred to here, as it of late has come under suspicion as regards stability—namely, the collodio-chloride. This process should, theoretically, be the most permanent of all silver processes, and it has proved itself to be so when worked under the old conditions. In its early days the paper used was the same as that used for albumenising, which is the purest photographic paper made. It was first given a thin coating of arrowroot, and, after drying, the collodion emulsion was applied. In the modern collodio-chloride process a cheaper paper is used, and it is surfaced with a "baryta" coating similar to that for gelatine papers, and there is very little question that the free nitrate in the emulsion to an extent combines with the vehicle with which the "baryta" is cemented to the paper. Hence it will be seen that there is a considerable difference between the collodion paper of thirty or forty years ago and that at present on the market.

We think we have now pointed out, both with regard to negatives and prints, the difference between the principles involved in the early methods and the more modern ones. This we have endeavoured to do in such a way that the subject may be well understood by those whose experience in the art has been confined to the last decade or so, and with gelatine emulsion photography only.

CURIOUS OPTICAL ILLUSIONS.

[From *Popular Astronomy*.]

AMONG the various phenomena of nature that occur unpredicted and unannounced to mankind, there are few more interesting to scientific students, and probably none so deceptive and commonly misunderstood by the general public, as the luminous coloured circles occasionally seen around the sun, and more frequently around the moon, known respectively as the solar and lunar halo. These remarkable exhibitions of Nature, owing to the complicated appearances they sometimes present, have long engaged the attention of meteorologists, and were, until within a comparatively recent time, extremely difficult to explain. Though more frequently observed in the polar regions, there are probably few persons of mature age, residing in the temperate latitudes, who have not, at some period of their lives, witnessed one or more exhibitions of these curious and beautiful phenomena, which, perhaps more than any other manifestations of nature, have engaged the observation of the unscientific world, and attracted multitudes of thinking people to the study of physical science, particularly that fascinating department pertaining to the atmosphere.

There are probably no displays of Nature, either in the heavens or the earth, about which the people are so misinformed, and regarding which so many erroneous notions seem to prevail, as the occurrence of solar and lunar halos, together with the anomalous appearances usually presented by them, though the amount of ignorance relative to these wonderful exhibitions is not surprising when we consider their puzzling nature, and the deceptive features that invariably accompany them, which at one time the wisest philosophers were unable to correctly interpret and explain.

Whenever, under favourable conditions, we observe a luminous circle of the various prismatic colours around the moon, the sky within the circle being much darker apparently than it is upon the outside (which is the peculiar feature of a lunar halo) an observer is very naturally led to believe that a ring of light does actually surround the moon's disc, while inside the ring there is but little, if any, light at all, the sky being dark and unilluminated, and that portion just outside really much

brighter, though less bright than the ring itself. Now, it is in this belief that we are deceived by appearances, and that the perplexing nature of a halo is well illustrated; and yet people will claim, "as seeing is believing," they have an ocular demonstration that a real luminous circle does surround the moon, and that the dark sky inside receives no light from the moon's disc, being actually without any illumination, as it appears to be. But paradoxical as it may seem, it is nevertheless a fact that the sky is really no brighter where the circle of light appears than it is anywhere else around the moon, and only seems to be for the reason that owing to the refraction of the moon's light at an equal distance from her disc, on all sides, more of the luminous rays reach our eyes from the portion of the sky where the circle or ring is seen.

That there is no real luminous circle around the moon, and that the sky is equally bright where it appears the darkest—the whole appearance being deceptive, as above stated—will be manifest when the cause and nature of the singular phenomenon are fully understood. The late Professor Proctor, explaining similar phenomena in a very interesting and instructive newspaper article entitled "Seeing is Deceiving," well remarked: "'Seeing is believing,' says the old proverb, but 'seeing is deceiving' would be nearer the mark. We are deceived almost as often, perhaps quite as often as not, by what we see. We are deceived by false impressions even when we know the real state of the case, so that Nature may in some sense be compared with a conjuror who explains the trick he is about to play, yet deceives the eye as perfectly as though we knew nothing about the manner of his performance. We know that that handkerchief which we gave him to experiment upon has not been cut in half, yet we saw him cut it in half; we know he has not pounded our gold watch with a mortar, yet that is what we saw him do."

The lunar halo, which by many persons is regarded as a remarkable and unexplained luminosity associated with the moon, is to meteorological students neither a mysterious nor an anomalous occurrence. It has been frequently observed, and for many years thoroughly understood, and at the present time admits of an easy scientific explanation. It is an atmospheric exhibition due to the refraction and dispersion of the moon's light through very minute ice-crystals floating at great elevations above the earth, and is explained by the science of meteorology, to which it properly belongs; for it is not of cosmical origin, and in no way pertains to astronomy, as most persons suppose, except as it depends upon the moon, whose light, passing through the atmosphere, produces the luminous halo, which, as will be seen, is simply an optical illusion, originating, not in the vicinity of the moon—two hundred and forty thousand miles away—but just above the earth's surface, and within the aqueous envelope that surrounds it on all sides.

A lunar halo, or circles of prismatic colours, seen around the moon, never occurs except when the sky is somewhat hazy, and presents a dull, leaden appearance. Usually only one circle is seen surrounding the moon, and it is always of large size, being about forty-five degrees in diameter, or eighty times the apparent diameter of the moon, corresponding to one-half the distance from the zenith to the horizon. The sky within the circle is always apparently much darker than it is for some distance on the outside—a feature which is the peculiar characteristic of a halo when seen under the most favourable conditions—and the circle exhibits the seven prismatic colours seen in the rainbow, and the inner edge being red, and quite sharply defined, while the other colours are more or less mingled and superposed, so that the outer edge of the circle is nearly white, and usually not very clearly defined.

Sometimes a number of large circles are seen around the moon, presenting a peculiar and very complicated appearance, and they are seldom concentric as in a lunar corona, but intersect each other with mathematical exactness, exhibiting a struc-

ture that is often wonderful to behold. A true halo is never produced when the sky is perfectly clear, as a slight haze is essential to its appearance, and the beautiful illusion is visible only under rare and peculiar atmospheric conditions. In connection with the halo, white bands, crosses or arches, are sometimes observed, which also result from the same conditions in the atmosphere at great elevations above the earth.

A halo may form around the sun as well as around the moon, and all the curious features above described are similarly observed; but a halo is most frequently noticed about the moon for the reason that we are too much dazzled by the sun's light to distinguish faint colours surrounding its disc, and to see them it is necessary to look through smoked glass or view the sun by reflection from the surface of still water, by which means its brilliancy is very much reduced. When a halo is seen around the sun, a white circle passing through the sun and parallel to the horizon is sometimes observed, which is known to meteorologists as the "parhelic circle," from the fact that parhelia or mock-suns are frequently noticed in connection with it. These productions, which are commonly called "sun-dogs," are faint images of that luminary, appearing at one, two, or more points in connection with a halo, and at those parts where the circles cross each other, or cut the parhelic circle above mentioned. The number of these mock-suns, or parhelia, visible at the same time, is variable; sometimes one or two only are to be seen, at other times four or five, and on some occasions as many as seven have been observed at once. These mock-suns usually appear about the size of the real sun, but not quite so bright, though on rare occasions they are said to rival their parent luminary in brilliancy and splendour.

Such appearances, which are also seen about the moon (known as mock-moons or "moon-dogs") are most frequently observed in the polar regions, but often occur in the more temperate latitudes, and are produced by the extra light concentrating at those points where the circles intersect, there being at such places a double cause of illumination, presenting the singular spectacle of a faint white disc, resembling that of the sun or moon. Parhelia, or mock-suns, are generally red on the side toward the sun, and they sometimes have a prolongation in the form of a tail, several degrees in length, which coincides in direction with that of the parhelic or horizontal circle. A recent writer on the subject says: "Parhelia have been observed frequently both in ancient and modern times. Aristotle records two appearances of these meteors, and Pliny mentions their occurrence at Rome. A double parheliion, which was noticed before the Christian era, is referred to by St. Augustine. Many others have been observed from different points of the Continent. On January 2nd, 1586, Christopher Rotham saw at Cassel, before sunrise, an upright column of light of the breadth of the sun's disc. As he rose to view he was preceded and followed by a parheliion, which appeared in contact with his orb, and continued visible for thirty minutes, and then was hidden by a cloud. On February 28th, 1551, mock-suns were seen at Antwerp; and on March 17th of the same year a similar phenomenon, with two halos, was witnessed at the same place. Four days after the last-named two parhelia, with three halos, were seen at Madgeberg."

A halo may be produced artificially, and its appearance beautifully illustrated, by crystallising some salt (such as alum) upon a glass plate, and then looking through the plate at the sun or a bright light, then the luminous circles above described will be observed. The formation of a circle of light around the sun or moon, and the production of the dark circle to which we have referred, may also be illustrated by an interesting imaginary experiment, which is thus described by the late Professor Loomis, an eminent authority on the subject of atmospheric phenomena: "If we conceive a beam of light to be admitted through a small aperture into a dark room, and

to fall upon a large number of ice-prisms having angles of sixty degrees, and occupying every possible position, all the incident rays will be deviated from their first direction, but in no case will the deviation be less than about twenty-two degrees. A large number of spectra will be cast upon the opposite wall, but opposite to the aperture through which the light is admitted there will be a circle of twenty-two degrees radius upon which no spectrum can fall, and the red end of each spectrum will be turned toward the centre of the circle. If the number of the spectra be sufficiently great, they will together form a circle of twenty-two degrees radius, bordered with the red on the inside; but beyond the red the different colours will be so superposed as to produce a light nearly white. . . . The circle within the halo is much darker than the space without it, because from no part of this circle can a ray of the sun, refracted by the ice-prisms, reach the eye of the observer."

The halo is less brilliant and beautiful, but far more frequent, than the rainbow. Scarcely a week passes during the whole year in which the exhibition does not occur. In summer the ice-crystals that produce the halo are three or four miles high, above the limit of perpetual frost, and for this reason the exhibition is sometimes called the "frost-bow." As the rainbow is sometimes seen in dew-drops on the ground, so the "frost-bow," just after sunrise, has been noticed in the crystals which fringe the grass. A halo is the bright border of an illuminated zone; and Professor Olmsted says: "As in the rainbow, so in the halo, the visible band of colours is the only border of a large illuminated space on the sky. The ordinary halo, therefore, is the bright inner border of a zone, which is more than twenty degrees wide. The whole zone, except the inner edge, is too faint to be generally noticed, though it is perceptibly more luminous than the space between the halo and the luminary."

A corona is an appearance of faintly-coloured rings, often seen around the sun and moon when a light, fleecy cloud passes over them, and should not be mistaken for a halo, which is much larger and more complicated in its structure, as explained above. These two phenomena are frequently confounded by inexperienced observers, but they exhibit peculiar features by which each may be easily distinguished from the other. Both exhibit the seven prismatic colours; but in a corona the colours are reversed, the red being on the outer edge instead of on the inner edge, as in a halo; and the circles of a corona, besides being smaller, are concentric with each other—the inner one being small, the diameter of the second being double, and that the third treble, the diameter of the first. The structure of the corona is quite simple, and never exhibits the attractive features observed in the halo, which is a production of comparatively rare occurrence, while a corona may be seen every time a light, transparent cloud comes between us and the sun or moon, and is produced by the diffraction of light passing between the minute globules of condensed vapour in a cloud.

What we have said regarding the size of a halo will alone enable an observer to recognise this phenomenon, and distinguish it from a corona. Professor Loomis says: "The mean of eighty-three measurements of the radius of the red circle of a halo is 21 degrees 36 minutes, which is almost identical with the radius computed from theory." The diameter of the numerous circles of a corona is not always the same, and while they are never large, the diameter of the first red ring varies from three degrees to six degrees, and that of the second red ring from five degrees to ten degrees.

A corona, like a halo, may be easily produced artificially. If we sprinkle upon a pane of glass a small quantity of lycopodium, or any very fine dust of nearly uniform fineness, and then look at the moon through this glass, we shall see it surrounded by luminous rings of prismatic colours, precisely like those that are formed by a cloud; and if, on a cold winter evening, we breathe upon a pane of glass, the breath will condense into

very small globules and freeze. If we look at the moon, or even at a street lamp, through this glass, we shall see a similar system of coloured rings, having violet on the inside.

More solar and lunar halos are usually seen in winter than in summer, owing to the favourable conditions of the former season for the formation of ice-crystals in the upper regions of the air for their production, and the singular appearances they present. During the cold weather that prevailed in the winter of 1887-8, the frosty condition of the atmosphere was particularly favourable for the production of these curious displays, and many exhibitions of the kind were observed in various portions of the country where such appearances are uncommon, and have seldom, if ever, occurred before. Many reports of such luminous circles appeared in the newspapers at that time, some of the exhibitions having been unusually interesting and remarkable; but none of the accounts seen by the writer—with one or two exceptions—explained the phenomena correctly, or mentioned their real nature, which was evidently not known, or misunderstood, by those who described them. On the evening of March 30th, 1890, a beautiful lunar halo, accompanied by a "moon-dog," was observed by the writer, and on the following morning a brilliant solar halo, with two "sun-dogs," appeared about one hour after sunrise, which attracted great attention from those who were fortunate enough to witness the interesting exhibition.

In January, 1888, a leading metropolitan newspaper published the following account, which illustrates the deceptive nature of such appearances, and the erroneous ideas regarding them: "Yesterday, shortly before noon, the sun shone through a heavy bank of dull clouds. On each side were two lesser luminaries scarcely less bright than the sun, and about the same altitude as it. Well up toward the zenith appeared two rainbows, joined like two C's placed back to back. These were not brilliant, but were clear and distinct. High above these rose two more rainbows, placed in a like manner, the colours mingling in the most harmonious blending at the junction. These two were brilliant, and the ends of each bow were as even as if cut off with a knife. At the right of the upper bow was another equally brilliant bow standing alone. This lasted several minutes, and was seen by a great number of people." Now, the "two lesser luminaries" mentioned by the writer of the above were really not "luminaries" at all, but simply parhelia, or mock-suns, the nature of which we have already explained; and the "two rainbows" were doubtless portions of an incomplete circle, or the curious arches to which we have referred, the whole representation constituting a typical solar halo, which is exceedingly rare in this portion of the country. The reference to a "rainbow" in connection with the exhibition described is certainly amusing, and it is perhaps unnecessary to state that a rainbow, though exhibiting the prismatic colours seen in a halo, is never observed in the immediate vicinity of the sun, but always in the opposite part of the heavens, and is never produced except when rain is actually falling from the clouds.

Of all the numerous weather proverbs current among the people, those relating to the production of a halo should be included with the few for which there is considerable scientific foundation, justified by actual experience and observation. There is perhaps no better known, or more popular, weather prognostic than that pertaining to the lunar halo, which has long been recognised, even among scientific persons, as an almost unfailing sign of foul weather, and reliable indication of an approaching storm. One of the old familiar proverbs relating to the lunar halo is expressed in the lines:—

"When round the moon there is a bough
The weather will be cold and rough."

Professor John Westwood Oliver, in a recent article on "The Moon and the Weather," published in *Lloyd's Magazine*, says: "The halo is an old sign of bad weather. Of sixty-one

lunar halos observed in the neighbourhood of London, thirty-four were followed by rain within twenty-four hours, nineteen by rain within four days, and only eight by no rain at all." As a halo is never seen except when the sky is hazy, it indicates that moisture is accumulating in the atmosphere, which will form clouds, and usually result in a storm. But the popular notion that the number of bright stars visible within the circle indicates the number of days before the storm will occur is without any foundation whatever, and the belief is almost too absurd to be refuted. In whatever part of the sky a lunar halo is seen, one or more bright stars are always sure to be noticed inside the luminous ring, and the number visible depends entirely upon the position of the moon. Moreover, when the sky within the circle is examined with even a small telescope hundreds of stars are visible where only one, or perhaps two or three, were perceived by the naked eye.

A lunar halo, when seen under favourable conditions, with all the curious features that usually accompany it, is one of the most interesting and beautiful exhibitions of Nature; and there are many remarkable facts connected with its formation and appearance that can not be dealt with in a popular description of the phenomenon, but which are fully explained in nearly every work on natural philosophy, meteorology, or physical geography. In Professor Loomis' "Treatise on Meteorology" may be found a clear and exhaustive description of halos and coronas, fully illustrated and scientifically explained. There is an instructive popular article entitled "The Lunar Halo," by the late Professor Proctor, in his admirable work, "Flowers of the Sky," which contains an excellent engraving illustrating the one-ring halo, most commonly observed, and showing the dark space around the moon, which is always noticed in a perfect halo, and is thoroughly explained in the above-mentioned work, together with many other paradoxical features and curious illusions associated with the wonderful atmospheric spectacle.

ARTHUR K. BARILETT.

ON DEVELOPMENT IN DAYLIGHT, ETC.

For a long time it has been sought to do without the dark-room lamp and its coloured glasses in the developing room, for the reason that it is difficult to procure commercial glasses which will only pass practically the non-actinic rays, and, on the other hand, because by means of the lantern only a very feeble light is obtained.

The methods hitherto employed have been either to previously stain the coating of the plate, or to dissolve in the developer a suitable colouring matter. It is in this manner that M. Ludwig* tints the plate, before putting it in the developer, with a solution of croceine 3B, which stains the gelatine sufficiently to prevent the action of light on the haloid salts of silver contained in the film. This is the method known as "Coxin."

A simpler method, and also an older one, consists of the addition of colouring matter to the developer without permanently colouring the film, the chosen substance completely absorbing the chemical rays, in order that they may not attack the sensitive film.

Notwithstanding its simplicity, this last method has not hitherto been generally used, owing to the difficulty of finding colouring matters fulfilling the numerous necessary conditions. These should not only make with the developer a solution coloured to absorb actinic radiations, but should not permanently colour the gelatine or provoke fog, or destroy the latent image; further, they should not stain the operator's fingers. The ability to remove the colour must be certain, especially if used for the development of papers. It is necessary also that they should be capable of use with different developers without giving precipitates, and without changing colour when mixed with the developer or with its additions (sulphite of soda, alkali, etc.)

We have methodically searched amongst the numerous commercial colouring matters for those which fulfil these conditions most perfectly, but have found none that do so absolutely. The following

colouring matters possess properties most akin to those stated: Croceine scarlet 3B, phenoflavine, ponceau 6R, uranine, tartrazine. None of these possesses the necessary properties in a sufficiently strong form to allow of development of papers with them as coloration remains which alters the freshness of prints.

We have also sought for the existence of a non-colouring substance which would destroy the sensibility of the bromide of silver without acting on the latent image, by this means permitting development in ordinary light without the addition of colouring matter. After, however, experimenting on innumerable substances, particularly the different oxydants and reducers, we have found nothing whatever with this property.

We then experimented with coloured compounds not having tintorial properties, properly so-called. After having tried a long series of materials of this nature we have found the picrates dissolved in sulphite of soda to give non-tintorial coloured solutions, and of colour capable of absorbing practically the whole of the actinic rays.

In order to be able to dissolve in water a sufficient quantity of substance we have chosen the most soluble picrates which are not precipitated by sulphite of soda. Those of soda, ammonia, and magnesium realise most fully these conditions. Picrate of ammonia could not be used, as it gives dichroic fog; pure picrate of soda gives equally as good results as that of magnesium, but the necessity of employing soda in its preparation, and the difficulty of obtaining with this alkali a perfectly neutral picrate, makes us prefer magnesium picrate.

Instead of dissolving the picrate of magnesium in the developer solutions it appeared to us more simple to mix this in a dry state in suitable proportions with anhydrous soda sulphite, and to constitute by this means a product which may be used to replace sulphite of soda in the preparation of developers. It is possible also by this means to prepare directly developers suitably coloured for development by ordinary light without having to weigh a number of substances as usually required in the preparation of an ordinary developer.

We then experimented as to the most suitable proportions of picrate of magnesium and sulphite of soda for making a mixture capable of being employed for the different commercial developers. The mixture which has given in our hands the best results is the following: 100 parts anhydrous soda sulphite, 50 parts picrate of magnesium. This mixture, used with certain developers in suitable quantities that the solution may be sufficiently rich in alkaline sulphite, gives solutions too highly coloured to enable the appearance of the image to be easily followed. We used with these developers a mixture less rich in picrate of magnesium composed as follows: 100 parts anhydrous soda sulphite, 15 parts picrate of magnesium. We have called these mixtures under the name of "chrysosulphite," that richer in picrate being No. 1, and the other No. 2.

PREPARATION OF DEVELOPERS WITH CHRYSOSULPHITE.

Developers are prepared with chrysosulphite by simply replacing in the development formulae soda sulphite by chrysosulphite. We have fixed the best proportions of chrysosulphite for use with the principal commercial developers. Chrysosulphite No. 1 is only employed with the following developers: Metoquinone, metol-hydroquinone, hydroquinone, pyrogallol acid, edinol, eikonogen, metadur, pyrocatechin, ortol. Chrysosulphite No. 2 is employed with the following developers: Diamidophenol (dianol), paramidophenol (paranol), hydramine glycine.

The following formulae are those which we have adopted with different developers:—

(I) WITH CHRYSOSULPHITE No. 1.		Edinol.	
Metoquinone (now Quinomet).			
Water	1,000 c.c.	Water	1,000
Quinomet	9 gr.	Chryso. No. 1	60
Chrysosulphite No. 1	60 gr.	Edinol	10
Acetone	50 c.c.	Tribasic sodium phosph.	60
NOTE.—In all formulae for Quinomet developer it suffices to replace soda sulphite by the same quantity of chrysosulphite No. 1.			
Eikonogen.		Ortol.	
Water	1,000 c.c.	Water	1,000
Chryso. No. 1	30 gr.	Ortol	7
Anhydrous Carb. Soda	40 gr.	Chryso. No. 1	60
Eikonogen	10 gr.	Anhydrous carb. soda	40

* 318-193 Patent, June 13th, 1902.

METOL-HYDROQUINONE.
(In 2 Solutions.)

A.		B.	
Metol.....	500 c.c.	Water.....	500 c.c.
Hydroquinone.....	2½ gr.	Anhydrous carb. soda.....	35 gr.
Chryso., No. 1.....	60 gr.		
Hydroquinone.....	4½ gr.		

For use take 100 c.c. of A and 100 c.c. of B.

HYDROQUINONE.

In 1 Solution.		In 2 Solutions.	
A.		A.	
Hydroquinone.....	1,000 c.c.	Water.....	500 c.c.
Chryso., No. 1.....	40 gr.	Hydroquinone.....	10 gr.
Hydroquinone.....	10 gr.	Chryso., No. 1.....	60 gr.
Anhydrous carb. soda.....	56 gr.		
		B.	
		Water.....	500 c.c.
		Anhydrous carb. soda.....	70 gr.

For use take 100 c.c. of A; 100 c.c. of B.

METOL.
(In 2 Solutions.)

A.		B.	
Metol.....	500 c.c.	Water.....	500 c.c.
Chryso., No. 1.....	40 gr.	Anhydrous carb. soda.....	15 gr.
Metol.....	5 gr.		

For use take 100 c.c. of A and 100 c.c. of B.

PYROGALLIC ACID.
(In 2 Solutions.)

A.		B.	
Pyrogallol.....	500 c.c.	Acetone solution.....	100 gr.
Chryso., No. 1.....	100 gr.		
Pyrogallol.....	20 gr.		

For use take 50 c.c. of A; 150 of water; 20 c.c. of acetone.

ADUROL.

(In 2 Solutions.)

A.		B.	
Adurol.....	500 c.c.	Water.....	500 c.c.
Chryso., No. 1.....	50 gr.	Anhydrous carb. soda.....	35 gr.
Adurol.....	8 gr.		

For use take 100 c.c. of A and 100 c.c. of B.

Pyrocatechin.

Pyrocatechin.....	1,000 c.c.	Pyrocatechin.....	15 gr.
Chryso. No. 1.....	40 gr.	Anhydrous Carb. Soda.....	40 gr.

WITH CHRYSOSULPHITE No. 2

Diamidophenol.		Paramidophenol.	
Diamidophenol.....	1,000 c.c.	Water.....	1,000 c.c.
Chryso. No. 2.....	30 gr.	Chryso. No. 2.....	75 gr.
Diamidophenol.....	10 gr.	Canstic lithia.....	6 gr.
		Paramidophenol.....	10 gr.

Hydramine.

Hydramine.....	1,000 c.c.	Glycine.	
Chryso. No. 2.....	16 gr.	(A)	
Hydramine.....	8 gr.	Water.....	500 c.c.
Hydramine.....	5 gr.	Glycine.....	15 gr.
		Chryso. No. 2.....	60 gr.

(B)	
Water.....	500 c.c.
Carb. of Potash.....	40 gr.
For use take 100 c.c. of (A), and 100 c.c. of (B).	

METHOD OF DEVELOPMENT.

(1.) Development of Plates and Films of Extreme Rapidity.

A.—Development in artificial light.—A sufficient quantity of developer is used to cover the plate with solution to a depth of about centimetres, about 200 c.c. for a 9 x 12 dish or a corresponding face.

The plate is taken from the dark slide in the dark-room, and put exactly into the developer. If a special lamp is not available this may be done in darkness.*

Once the plate is immersed in the developer it may be developed the light at variable distances according to the nature of the light used. The distance should be about half a metre from a candle, one from a gas jet, three-quarters of a metre from an ordinary petroleum lamp, or one and a half metres from an ordinary incandescent lamp of about 16-candle power.

Note.—In developing plates of very high sensibility it is not wise to keep the dish at such a distance during all the time of development, but it is better to place it in a less brightly lit part of the dark-room, turning the back to the source of light, and only bringing the dish to the above indicated distances when wishing to remove the plate.

The dish should be slowly rocked during development, care being

An improvised darkroom lamp. A non-actinic lamp may easily be made by using before a candle a litre bottle filled with a 50/50 solution of Chrysosulphite, placing to right and left of this bottle two other similar bottles resting on their sides. This will do instead of a lantern. Under these conditions the back of the plate should be turned to the light when lifting the plate from the slide and placing it in developer.

taken that the liquid always covers the plate. The developing formulae indicated above have been chosen in order that duration of development need not occupy longer than about five minutes. After a couple of minutes the plate may be taken out of the developing bath, turning the back to the light, examining it rapidly for a second or two by transparency, without risk of fogging. This examination should not be made, however, at a nearer distance than the following: Candle, 1 metre or 3½ ft.; petroleum lamp, 1½ metres or 5 ft.; gas flame, 2½ metres or 8 ft.; electric lamp, 3 metres or 10 ft. If it is necessary to get nearer the light, interpose a piece of yellow glass.

Fixing and washing.—When development is finished, turn the back towards the source of light, and rinse the plate in running water; then fix and wash in the usual manner.

Development in daylight.—Instead of the different sources of light mentioned, development may be carried out by daylight, provided that the sun does not shine in the workroom, and that the blind be drawn across the window by which the light is admitted. Work as far as possible from the window, and have the back turned thereto throughout development. It is not possible, however, without risk of fogging, to examine the plate by transparency, unless an upright glass tank be used. The plates are placed in the bath, washed and fixed exactly in the preceding manner.

(2.) Development of Lantern Plates.

By reason of their lower sensibility lantern plates may be developed without taking further precautions for the lighting of the room than for bromide papers (see under). For black-toned lantern plates the same formulae for development may be employed as those given for papers.

(3.) Development of Bromide Papers.

A.—By daylight.—Two formulae follow for development of bromide papers that have given good results:—

Quinomet.		Diamidophenol.	
Water.....	100 c.c.	Water.....	100 c.c.
Quinomet.....	0.9 gr.	Chrysosulphite No. 2.....	3 gr.
Chrysosulphite No. 1.....	6 gr.	Diamidophenol.....	1 gr.
Acetone.....	33 c.c.	10% solution pot. bromide.....	2 or 3 drops
10% solution pot. bromide.....		2 or 3 drops	

Development may be carried out without other precautions than keeping the corners of the paper at the bottom of the dish to prevent the paper floating, lighting by the different sources of light given above, without taking account of the distances indicated for plates. One may approach sufficiently near to the light to follow easily all the phases of development.

Exposure, however, should be sufficient to prevent development occupying longer than about 40 to 50 seconds. The papers are placed in the developing bath exactly in the same manner as plates.

B.—By artificial light.—Operations by this method are carried out in the same manner as for plates. Care should be taken that the corners of the paper are kept at the bottom of dish, as if they are not submerged they will veil quickly. They may be fixed in daylight, employing a fixing bath coloured yellow or orange by a little chrysosulphite. Fixing done, they should be abundantly washed in the ordinary manner until the back is perfectly clear.

Finally, the mixtures of sulphite of soda with picrates, and particularly with picrate of magnesium, give coloured aqueous solutions which directly absorb the actinic rays and permit development to be easily controlled. These solutions do not colour the gelatine or paper in a persistent manner, will not stain the fingers, and will show every advantage that may be sought in rendering possible development in ordinary light.

A. and L. LUMIERE and A. SEYEWETZ.

SOUTH Essex Camera Club.—Under this title in future the East Ham Teachers' Photographic Society will be conducted (Mr. Walter D. Welford, F.R.P.S., President). The club is open to lady and gentlemen photographers in East Ham, Stratford, Leytonstone, Ilford, Barkings, and the surrounding district generally. The next meeting is on March 9th, when Mr. H. W. Bennet, F.R.P.S., will lecture upon "Control in Printing." Visitors are invited, and all information may be obtained from Mr. R. P. W. Rotherham, 270, Thorold Road, Ilford.

SOME RAMBLING OBSERVATIONS ON THE METRIC SYSTEM.

It is an amusing and not uninteresting play to put oneself quite outside of the decimal periodic system of expressing numbers and notice the difference between the properties of an abstract number and its numeral.

We can do this by supposing we have eight or twelve digits instead of ten. With the former number seven will be the largest number to be expressed with a single digit, eight will be expressed with two; or in the latter case we can keep the present digits up to nine and invent two new ones for ten and eleven, so that the smallest number requiring two digits will be twelve, which will be written ten. The square of ten, or 100, will then be a gross, and 1,000 will stand for twelve gross.

This duodecimal system is really better than our present, although we shall never be able to change to it. We use ten digits not because this is a better number than eight or twelve, but because our ancestors in India, whence the ten digit system was brought to us by the Arabs, had ten fingers, and not eight or twelve. Having ten digits it is easy to calculate in tens and its powers. If we had twelve digits it would be equally easy to calculate in dozens and gross, then the multiplication table would seem odd to us. 5×6 would be 26 0.9 would be three-quarters, 6 would be half of ten. Then the magic properties of nine would disappear, it being no longer the largest of the single digits, and eleven would become the pet of fortune-tellers. The number 100, being nothing but the square of 5×2 , would hardly be more important than is the square of 7×2 now. It would be written 84, and nobody would use it to express the rates of interest, or the number of years in a natural division of time, or as a convenient number to express the strength of a solution. A small boy who was asked to calculate in "per gross," the strength of a solution of one part in ten, would say to himself that no one but a fool of an examiner would ever think of making up such a solution. The answer would be 12.4972 . . . parts per 100, which the reader will do well to calculate for himself, using the letter T for ten, and see how he is tied to the "wheel of things."

It is difficult to think in abstract numbers. Forty millions would seem to be most certainly a naturally important even number. But suppose a meter stick to be dropped on to a neighbouring planet, with the information somehow conveyed that it is an aliquot part of the planet earth's circumference. The stick is given to a professor of mathematics, who hands it over to his assistant. The assistant reports that it is of such a length that 11,490,194 are equal to the circumference of the earth. "That is quite impossible," the professor would say, "either there is some error or—," and here an idea would strike him. "Just factor that number will you?" The factors would prove to be $5^7 \times 2^3$, and this would show that for some strange reason the inhabitants of the earth used a periodic system of ten digits instead of twelve. Possibly the professor might be shrewd enough to conclude that they had originally only ten tail-feathers.

The most important numbers are two and three, and the multiples of these raised to various powers. If we used a system of eight or twelve digits to express these multiples, we could multiply and divide them as easily as we can the decimal numbers, which are multiples of five and two. Since we cannot we sometimes prefer to take the case of multiplying, more often than we should we prefer the natural multiples.

Thus for instance a dozen is a natural common multiple. It is a natural number of dry plates to put into a box, and when these plates cost a shilling a dozen then each plate costs a penny, and only one change is necessary for a perfect system, namely, to write that dozen ten, and a gross 100. But we cannot make this change. A sheet of paper can be folded into thirds, quarters, eighths, twelfths, and sixteenths; not so well into fifths and tenths. The shilling, foot, and clock-dial are divided into twelve parts, the pound, inch, and bushels into eighths and its sub-divisions. If we had the best possible system of expressing numbers, these natural divisions would also be the easiest to use. We have not this system, and all we can do is to compromise; to use decimals whenever we can, and dozens and sixteens as little as possible, and that is what the metric system does. It is useless to attempt to improve this system, for its weak points belong to the use of ten digits, a number not divisible by four or three.

Here in Germany the metric system is in universal use, and it is interesting to watch this conflict between the artificial ease of dealing

in tenths that results from the use of ten digits, and the natural tendency to use the simpler factors and multiples.

The weights in an ordinary shop are the kilogram and half kilogram (1,000 and 500 grams), and the smaller 200, 100, 50, 20, 10, 5, 2, and 1 gram weights. These smaller weights are made of brass and are stamped in grams, the larger from half kilo up are stamped in kilos. They all have a knob, which is not really necessary for small weights, and makes it difficult to read the numbers. It would be better to have these smaller weights cast with a flat top and large raised numerals.

If you go into a shop in Germany and ask the price of something you are told it is so much a pound, by which is meant the half kilogram. Most countries had a pound weight before the metric system was introduced, and these pounds were not very different in mass from one another and the half kilo, so the latter was called a pound. No doubt it will be called a pound in England and America. It is a pity that we cannot then grumble about the good old honest pound for the new one will be larger by ten per cent. But at any rate the Germans will then have to stop picturing a pair of scales with the English pound of meat extract badly outclassed by the German pound. And our friend with the bass drum can no longer get excited about the smallness of the American gallon of paste. On the other hand the litre will of course be called a quart, and it will not be as large as the old quart, that is, not in England. In America it will be larger.

Goods put up in English pounds may not be sold in Germany, the writer has been informed, if so marked. For instance, quarter pound parcels of tea must be marked "115 grams of tea" in order that the buyer may clearly understand that he is not getting 125 grams, that is the quarter of the half kilo. Something of the sort will be necessary in America and England. It will probably be necessary to prohibit the use of the word "pound" even when qualified by "old" or "avoirdupois," if it is also used for the half kilo.

To return to the shop in Germany, you may perhaps order by weight a pound of the substance you want. For this very common order the dealer has no single weight, because half a pound is a quarter of kilo, and the decimal system deals only in halves and fifths. He puts on a 200 and a 50 gram weight. If you order a quarter of a pound, also a very common order, he puts on the 100 gram, the 50, and the 5. Sometimes if in a hurry he uses the two first only, and gives good weight for the missing 5. Sometimes the three weights are tied together with a string. If you order three-quarters of a pound it is necessary to use the 200, 100, 50, 20 and 5 gram weights and it is not easy to identify all of these, because the numerals are not conspicuous.

Here we see the disadvantage of the decimal system. If a pound is too much the average person does not and perhaps never will consider all the tenths, but rather three-quarters, a half, a quarter, an eighth. With a set of avoirdupois weights the dealer uses a half and quarter to get the three-quarters. If we had an eight digit system he could do this exactly as at present. Even with a decimal system, which is not so favourable for dividing in eighths, only three weights would be required for the three-eighths of a kilogram that require five in the metric system.

Below a quarter of a pound (125 grams) here in Germany they usually switch off on to decimals, ordering 100 grams or 50 grams etc. This change is not difficult (and this is an important point for Englishmen to note), because the coinage is decimal. If a substance costs M3.50 a pound, 50 grams will cost 35 pfennigs and 100 grams 70 pfennigs. But in England this will not do. Having learned to calculate what a quarter, eighth, and sixteenth of a pound will come at so many shillings and pence a pound, the Englishman is not going to learn to take a fifth, tenth and twentieth of this sum as well. He will demand four ounces and get 125 grams, two ounces and get 50 grams, one ounce and will get 31 grams; that is, the quarter, eighth and sixteenth of the new pound. Possibly the Government recognizes this tendency to order as of gold, might allow weights to be made of these masses, of a different shape, so as to be easily distinguishable from the decimal weights. The least of these being 31.25 grams, a sixteenth of the new pound, would be ten per cent. larger than avoirdupois ounce, and therefore nearly equal to the troy ounce. By dividing the litre into thirty-two parts (as the quart is in America) the confusion between troy, avoirdupois and liquid ounce is removed. The new ounce would probably be divided into drachms.

grains so that the gram weight and the decimal parts of the kilo would disappear altogether from practical use. These changes would simplify matters somewhat. The larger units of weight and volume would be identical with those of other countries. Three ounces would be satisfactorily amalgamated, the minim of water would weigh a grain, and the confusion between the various terms would disappear. On the other hand another ounce, drachm, minim, grain, quart, and pound would be added to the present supply, and the advantage of the decimal system would be lost, except in small measures. The change would hardly be worth making; a jump in the frying pan into the boiling tea-kettle; from an ounce of 28 grains to one of 31.25 grams. An alternative would be to make a new ounce 32 grams, which would simplify the relationship between smaller weights, but at the expense of unity amongst the larger. The other change is really worth making. We must go over wholly to the decimal system. We must learn to think in tenths below a half quarter. We might add two weights to those used in Germany, a half and a quarter "pound," and below these switch off on to decimals; "switching" will not be difficult in the United States, because the American coinage is decimal, but in England the whole change to the metric system can only be made successfully by changing the coinage to the decimal system, that is by dividing the shilling into one hundred parts. What is required is firstly that the unit of length shall determine the unit of volume, and the mass of the unit volume of water shall be the unit of weight; and secondly, that these units and the coinage shall be divided and multiplied in agreement with the periodic system of numbering. That this fundamental unit of length be the yard is not so important as that these other conditions be fulfilled, including that of dividing the shilling into one hundred parts. But Russia is going to change along with the United States and England would be very much better not only for Russia, but also for the other two countries to have Russia adopt the same fundamental unit. It would be a great advantage in exporting goods to Russia, and the other parts of the world Russia may soon be finding herself unable to do. This would certainly not be the case if the English inch were retained. After all, no better unit and system than the metrical can be devised as long as we use a number of digits not divisible by three or four.

DUODECIMAL.

A MAN WHO HAS A DIFFICULTY ABOUT GETTING IN HIS ACCOUNTS.

(From "Process Work.")

SIR,—Yours is the old trouble. Everyone who is in business knows it. The man who won't pay up is the bugbear of all business, big or little, successful or otherwise. Business life would be comparatively easy and certainly free from half the worries and anxieties which now attend it if we could only deal with people who have ready money, or who can be trusted to settle regularly and promptly if they take credit. But this is an impossible ideal. In any business there will be some customers who are irregular with their payments, being unsafe to trust, and for such it is justifiable to make special provisions. Like all exceptions, however, they prove the rule, and expediency and discretion must teach us when to depart from it. To know when and to whom to give credit is an art in itself which cannot be taught; it is generally learnt by bitter experience. The way to avoid having bad eggs in your business basket is not to let them get there. When you get a new customer who wants to try your first duty is to eye him with suspicion. You ought to have some good reason why he wants your goods without paying cash for them, and you want a still better reason for knowing whether he is in a position to pay for them when you have extended him the credit he has asked for. He may have great hopes and expectations, but these things don't pay the people from whom you buy your stuff, and even if you make it yourself you have work to do whose expectations only last six days and who expect to be paid at the end thereof. If you are so foolish as to accept orders from every Tom, Dick, or Harry who comes along without understanding as to terms of payment you must expect to have trouble about getting your accounts in. A man can't go to a shop and demand cash over the counter without giving some equivalent for it, and there is no reason why you should let any one have your goods, which are the same thing as cash, unless he can show his ability to pay for them. It may be a delicate question

to put to a customer, but you need not put it bluntly, perhaps you need not put it at all, if you know the class of man you are dealing with. There is generally some indication to warn you as to the character of your customer. It is fortunate that the kind of man who is not likely to pay generally shows the cloven hoof. He betrays some traits or characteristics that warn the keen sighted man of business how to deal with him. He is probably plausible, affable, and flattering, lavish in giving orders, careless as to the price of your goods, and not exacting as to discounts. When you encounter a man of that kind you will almost always find out afterwards that he is lacking in judgment, wanting in energy, inattentive to business, lacking in punctuality, reckless in promises, and wanting in principle. Just as there is seldom a storm without some previous indications of its coming, so there will always be some premonitions of the character of the unsatisfactory class of customer, and if you neglect these warnings you have only yourself to blame if you suffer the consequences. Even though you may take all possible precautions to weed out undesirable customers, you may still get them, as all firms do. Various methods have been adopted for dealing with them, but most methods end up with the matter-of-fact argument of the solicitor's letter. With a certain class, not necessarily the dishonest ones, no other form of persuasion is of any avail. You may decorate the accounts with rubber stamps, and stick little flags on them—red, blue, yellow, black, or any colour you like—following this up with letters of more or less mild remonstrance, but the case-hardened debtor is proof against it all. He knows the routine, and waits for the lawyer's letter, sometimes even for the County Court summons before he scrapes up the needful. This class of customer is, however, generally cheerful about it, considering perhaps it has paid him to gain time. Another class, which we all know, wax indignant about the receipt of the solicitor's letter, and probably write something like this:—"I am surprised that you have done such a dirty action as to press me for my account. I shall never trouble you with any more orders," etc., etc. When a man writes like that I think you can generally make up your mind to do without his orders. I never knew a man who wrote like that whose orders were worth anything. The good business man who is honestly in difficulty does not meet a request for payment in that way, in fact, he never lets it get to that stage. He manfully makes a clean breast of it and asks for time, which no good business house will refuse him, because we can all sympathise with the man who is honestly in a tight corner. We have all been there at times and know what it is.

This is about all the advice I can give you on this vexed question of getting your money in. I would only say in conclusion that you must steel your heart to be firm with your debtors. You must learn to say "No" in this matter when you feel that the occasion demands the direct negative. If you want something to stiffen your backbone, get it into your mind that to lose money by a bad debt is not your loss only, but the loss of those who are dependent on you. You must feel as the great lawyer Erskine said he did when he was making his way in the world, that your children are tugging at your coat-tails.—Yours sincerely,

JONATHAN JOBLOT.

MESSRS. W. WATSON AND SONS, of 313, High Holborn, London, W.C., notify that they can now supply the Patent Antinous Shutter Release in a form suitable for use on the Goerz Sector Shutter. The price remains the same as for the other patterns, viz., 2s. 6d.

PHOTOGRAPHIC Survey and Record of Surrey.—The annual meeting will be held, by kind permission of the Mayor of Croydon, in the Council Chamber, Town Hall, Croydon, at 8 p.m., on Saturday, March 12th, 1904. The President, Viscount Midleton, will give an address, and the report of the Council and the accounts of the year ended 31st December, 1903, will be submitted. The meeting is open, not only to members of and contributors to the Survey, but to all interested in its work and aims. Arrangements have been made for an exhibition, consisting of a representative selection from the 700 prints already in the Survey collection, in the Lecture Room, Town Hall, Croydon. This will be open on the day of meeting, from 3 to 9 p.m., and again on the following Monday, Tuesday, and Wednesday, from 3 to 5 p.m., and 7 to 9 p.m. A short lecture, illustrated by lantern slides, will be given each day.

THE INVARIABILITY OF THE WAVE-LENGTHS IN THE SPARK AND ARC SPECTRUM OF ZINC.

[From the "Chemical News."]

I.

THE breadth of the lines in the arc and spark spectrum is a complicated, and as yet only partially known function of the temperature, pressure, and the density of the luminous layer of vapour (H. Kayser*), and is probably dependent on the kind of electric excitation, and of the dielectric (Hartmann†). The experimental observations of these phenomena of broadening are as yet by no means finally concluded. In particular it is not yet known whether the intensity maximum—in a certain measure the centre of gravity of a spectral line—is displaced when it broadens or not, which is a question of fundamental importance for the whole of spectrum analysis.

Actual displacements of spectral lines (i.e., clearly demonstrable alterations of the wave-lengths) have undoubtedly been proved by Humphrey and Mohler‡ as a consequence of variable external pressure.

But F. Exner and E. Haschek went distinctly further when they said that these displacements occurred with greater intensity in the spark spectrum than in the arc, and depended not only upon the external atmospheric pressure, but also on the partial density of the vapour under examination (Exner and Haschek, "Wellenlängen Tabellen für Spektralanalytische Untersuchungen," Leipzig und Wien, 1902, p. 13). They further stated that many spark spectra show considerable displacements of the spark lines as opposed to the analogous lines in the arc spectrum (in both cases at ordinary external atmospheric pressure), and tried to explain this by the pressure phenomena in the spark (These *Sitzungsber.*, 1897, et seq.), and would calculate from the magnitude of the displacements of the lines the magnitude of the pressure in the spark; E. Haschek and H. Mache (These *Sitzungsber.*, 1898) tried to demonstrate the pressure in the spark directly, but could obtain no agreement of the values calculated from the "displacement of the line" with the observed values. From his further researches, E. Haschek (These *Sitzungsber.*, Bd. ex., Abt., II.a, März, 1901, p. 181) afterwards concluded that the laws which hold good for the displacements of the lines in the spark are different from those which obtain in the case of the arc, and that therefore a calculation of the spark pressure from the displacement of the lines is not admissible; the spark pressure observed from Haschek's measurement showed so little agreement with that calculated by him that he himself said: "The calculated pressures differ so much among themselves that there can be no doubt that other causes are responsible for the displacements of the lines" (Haschek, *loc. cit.*). As such another cause of the "line displacements" Haschek mentions "the increasing density of the luminous vapour"; with equal increase of the vapour density it is said that "the lines in the spark spectrum are displaced more than those in the arc spectrum"; thus, for example, according to Haschek, in the zinc spectrum the lines λ 3282, 3302, 4680, 4722 have in the spark spectrum a wave-length greater by 0.03 to 0.16 Angström units than in the arc; in other cases Haschek mentions displacements up to 0.2 A.U. for elements with many lines, and up to 0.07 A.U. for elements with few lines, which are very considerable amounts, lying far beyond the limits of errors of observation permissible with grating spectra. As a proof of the correctness of these observations he performed numerous wave-length measurements (with different elements, e.g., B, Al, Zn, Ca, Si, Zr, Cr, Ti, Ce, Va, etc.). From these statements it seemed as if the existence of real line displacements was certainly proved for the spark (as opposed to the arc lines) for ordinary external atmospheric pressure. Also the quantity of the vaporising substance, according to Haschek, is said to have an appreciable influence on the actual wave-length of the lines, so that

* "Handbuch der Spektroskopie," Leipzig, 1902, Bd. II., p. 296.

† *Sitzungsber. der Königl. Preussischen Akad. der Wiss.*, Berlin, 1903, pp. 40 and 234.

‡ *Astrophys. Journ.*, 1896 and 1897. Humphrey and Mohler increased the pressure of the gas, in which the arc is produced, to several atmospheres, and observed the displacement of some spectral lines towards the red, and they found that the increase of wave-length is proportional to the pressure of the surrounding gas.

§ No notice at all is taken in this treatise of displacements of lines caused by rapid movement of the sources of light in the radius of vision in the sense of Doppler's principle, which displacements are used for the measurement of the movement of the stars in the radius of vision.

|| Meanwhile, N. A. Kent has proved that in the case of the titanium lines Haschek's displacements of 0.13 A.U. do not exist (*Astrophys. Journ.*, 1903, Bd. xvii., p. 286).

in his opinion a method of quantitative spectrum analysis could be based on the measurement of these so-called line displacements (These *Sitzungsber.*, Bd. xli., Abt. II.a, February, 1902, p. 232). For example, for pure zinc (spark spectrum) the wave-length 4722.510 is said to be correct, while it amounts only to 4722.399 for the same zinc line, using a 5 per cent. zinc alloy instead of pure zinc as electrode. Thus the partial density in the luminous vapour would have a definite influence on the wave-length.

The theory relating to the dependence of the wave-length of the spectral lines on the partial density of the vapour under examination occupies a prominent position in the work by F. Exner and E. Haschek, "Wellenlängentabellen für Spektralanalytische Untersuchungen auf Grund der Ultra-violetten Funkenspektren der Elemente" (Leipzig und Wien, 1902, I. Teil., p. 13). The comprehensive numerical results which the above authors give as obtained in their wave-length measurements would force us to acknowledge the value of this evidence in their favour, if we could suppress our well grounded doubt concerning the value of the evidence afforded by their photographic material.

On an earlier occasion we had already obtained results which did not agree with their statements in the case of the spark spectra of calcium and lithium, as we pointed out at the time (we drew attention to the fact that photographic errors might have occurred*), and when we began new wave-length measurements in the zinc spectrum we again met with experimental results which were contradictory to Haschek's statements. Also our results with regard to the spectra of alloys both poorer and richer in zinc do not agree with Haschek's statements and measurements.

H. Kayser, of Bonn ("Handbuch der Spektroskopie," Bd. II., pp. 297, 308, 309, and 310), also opposed Exner and Haschek's statements; he stated that during his spectroscopic researches on the electric arc he had never observed any influence exerted by the mass of the element present on the wave-length, and according to his view the partial pressure of the vapour in the arc could produce no displacements, as can be easily proved if we work with apparatus of considerable resolving force, while otherwise apparent displacements may result. As regards the comparison of the wave-length in the spark with the arc lines, and the influence of the partial pressure on displacements of the lines in the spark spectrum, we present no further experimental confirmation exists regarding Exner and Haschek's assumption of displacements of the lines.

It may here be stated explicitly that it is not a question of the breadth of the lines in the so-called asymmetrical phenomenon of broadening, which has been known for many years, and which amongst other things manifests itself in such a way that with pure metal electrodes (e.g., zinc, lead, etc.) spectral lines in the spark from a jar are decidedly broadened towards the red, and, on the other hand, the same lines become fairly well defined if these metals in the electrode occur only as small impurities (thus with small partial density) in the vapour. In the case of Exner and Haschek's phenomenon of the displacement of the lines, it is a question rather of the exact wave-length of the intensity maximum of the lines† which, in a certain measure, represents the "centre of gravity" of the lines concerned.

If we take as basis for such measurements the intensity maximum of the lines in question, which is now recognised both generally and also by Haschek (These "Sitzungsber.," 1902, Bd. III., Abt. II.a, p. 233) as the only permissible method of taking such measurements with correct photographic procedure, and the most accurate possible resolution of the spectra, we arrive at results which contradict Haschek's statements.

We first attacked the zinc spectrum and devoted ourselves exclusively for a long time to eight zinc lines, which could be taken as typical, and which, in addition to other similar spectra, were brought forward by Haschek as affording specially valuable evidence in favour of his theory.

Our grating is an excellent large Rowland's concave grating with radius of curvature of 15 English feet (i.e., the same radius of curvature as that of the grating used by Exner and Haschek), which H. Kayser of Bonn, who saw our spectrum photographs, calls a grating "of the very first order." Now, with asymmetrically broadened lines—

* Eder and Valenta, "Über das Funkenspektrum des Calciums und Lithiums Seine Verbreiterungs und Umkehrerscheinungen," *Denkschr. Akad. der Wiss. Wien*, 1898, Bd. lxvii.

† Specially discussed and illustrated by us in our treatise, "Funkenspektrum des Calciums und Lithiums und Seine Verbreiterungs und Umkehrerscheinungen" (*Wiener Akad. Denkschr.* 1898).

Herschel's research only applies to such—the possibility of finding the intensity maximum with certainty depends on restricting the broadened band part by the most careful photographic procedure. We worked with a slit of 0.008 to 0.03 m.m. breadth (sharp steel knife edges), which last even gave good definition of the lines, ascertained the photographic focus of the grating by empirically removing the photographic plates $\frac{1}{2}$ m.m. at a time, and bent the photographic error plates confocally with the curvature of the image. We arranged the photographing of the lines one over the other in such a way that a blind for the slit, which could be easily removed to and from, could be interposed before the photographic apparatus, and by giving this blind every line could be photographed in three parts one after the other. At each separate operation the whole grating was fully illuminated. The illumination of the plate was short.

No agreement has yet been arrived at regarding the idea of a "short illumination" or "minimum illumination" with the best clearness and sharpness and correct development. As long as this is the case, differences of observations with regard to the so-called displacement phenomena of spectral lines, as E. Haschek repeatedly describes them, in contradiction to other spectroscopists, will exist, and it will be difficult to avoid deception. In order to fix definitely the sharpness of the lines, the breadth of the measured lines should not only be expressed in Angström units (A.U.), but the "degree of blackening" of the line in question on the photographic negative should also be given; the latter could be fairly small. It may be regarded as a criterion whether a photograph will meet the strictest requirements if an asymmetrically broadened line is obtained with medium or least blackening with a certain minimum breadth. We measured the breadth of the sharp iron lines resulting under favourable experimental conditions in the arc spectrum; they were, for example, 0.03 to 0.04 m.m. broad with a slit 0.03 m.m. breadth (with minimum illumination) when they produced, measured in Hartmann's microphotometer a blackening of 0.5 to 1.0; while the zinc lines, when strongly subjected to the broadening under exactly the same conditions, were never narrower than 0.06 m.m. in the negative of the spectrum. If the scale is reduced to A.U. the zinc line 810 has thus in the arc a breadth of 0.07 A.U. against 0.19 A.U. in the spark (in both cases with minimum illumination); nevertheless, we can easily prove the coincidence of the two lines at the position of their greatest light intensity. But if we illuminate the zinc spark twice as long, the asymmetrical broadening is so marked that the total breadth of the line amounts to 0.53 to 0.71 A.U., and then it is difficult to find the maximum of the light intensity; the central part of the line is shifted towards the red; but it is still possible to think that the maximum has been reached, and thus an apparent displacement of 0.003 A.U. may be found, which increases to 0.02 A.U., and with long illumination, bad development, and imperfect reading in consequence of feeble light, can amount to still more. The reason for this apparent displacement is to be found in the fact that the central part of the line is not more resolved. Also the placing has an appreciable influence. When it is not perfectly exact, asymmetrically broadened lines become recognisable and disappear.

It is difficult to decide whether this is sufficient to explain the very contradictory statements of different spectroscopists who have photographed one and the same phenomenon, but it is a fact that by carefully carrying out the spectrographic process as described, we succeeded in proving the non-existence of all alleged displacement phenomena, which Haschek described for zinc, as well as for other spectra.

J. M. EDER and E. VALENTA.

The "Daily Chronicle," in conjunction with Messrs. G. W. Bacon and Co., Ltd., and with the help of a geographical expert, have compiled a War Map, comprising the principal districts of the war; special inset of Port Arthur is also included. The book, however, comprises a complete Guide to the War, the work of an expert. The "Daily Chronicle" War Guide includes a sketch of the Korean-Manchurian Question, a tabulated comparison of the armed strength of the nations, the history of the war up-to-date, and an A.B.C. guide of places, people, and points of interest. The "Daily Chronicle" War Map can be obtained from Messrs. Edward Lloyd, Ltd., 12, Salisbury Square, for 1s. 1d. post free.

In such spectrum photographs, in which the highest definition is required, a range of 1 mm. in the plane of position (with a total focus of 6 m.) produces very considerable disturbances.

COPYRIGHT NOTES.

THE committee of the Photographic Copyright Union has decided to issue an occasional paper in order to keep better in touch with their members and to inform them as to their doings, which must in itself prove most useful, especially as the great advantage of committee and members being united and stimulating each other cannot be over-estimated.

SPECIAL NOTES.

At our annual meeting a member thought it would be desirable that it should be clearly understood that whenever any doubt is felt as to the amount of fees to be charged, etc., the secretary of the Union should be consulted on the subject. At the same time it will not be out of place on the present occasion to print the following suggestions which have been so clearly and carefully drawn up by a member of the committee, Mr. Alfred Ellis.

Permission to Reproduce.—Members are advised not to give permission for their copyright photographs to be reproduced until they have full particulars of the size and style of the proposed reproduction, when they can formulate their charges accordingly. For example: a newspaper should pay a fee of not less than 10s. 6d. for half-tone black-and-white reproduction not exceeding 6 by 4 inches, when printed with letterpress in one issue of a newspaper; but, if it is to be printed as an inset the fee should be at least one guinea. If printed in colours, collotype, or photogravure, it should be a still higher fee. If a photograph is to be reproduced for advertising purposes, a higher fee should be charged than for newspaper work. In all cases, the permission must be in writing, and should state the fee to be paid, the process by which the photograph is to be reproduced, and whether in black-and-white or colours, the size limit, and the purpose for which the reproduction may be used.

The fee for reproduction on post-cards should be not less than 10s. 6d. royalty per thousand for half-tone or collotype, and £1 1s. per thousand for bromide or ordinary photographic processes.

On the same occasion sincere regret was expressed that so many photographers, whilst sympathising with the objects of the Union, felt debarred for certain reasons from joining as members. At the same time they acknowledged having benefited by the existence and influence of the Union, and consequently would be willing to support it financially if they knew that such help would be welcomed. We need hardly say that such assistance would be most welcome and friends thus helping would be styled contributors and doubtless as they became more in touch with the important work and realised the duty to help by personal adhesion to Rule 23, they would soon become full members.

Reasons for not Joining!—Will our members, when they hear of difficulties in the way of friends joining, communicate at once with the secretary, so that the matter may be brought before the committee for their consideration and see if they can be met consistently with adhesion to Rule 23.

The Work Done.—No one outside the committee has the slightest idea of the importance of the business usually transacted at its periodical meetings, and the reading of the secretary's "Log Book" of work done during the previous month, would convince not only members, but also those still holding aloof from its membership, of the great service which the P.C.U. renders to photographers generally. Surely the annual report printed in the present number speaks eloquently for itself.

Just Ask!—So often when permission to reproduce is sought by editors and publishers, the preparedness of certain members to charge fees lower than the minimum is quoted as a lever to secure more liberal terms and consequently the photographer applied to finds it very difficult to know what to do. Our advice is—write and ask the photographer whose name is mentioned if such information is correct, or failing that communicate with the secretary.

We would strongly recommend photographers to be very wary in dealing or selling rights to reproduce their copyrights for post-cards or in any cheap form, moreover not to accept any ordinary fee, but to insist upon a royalty, the amount of such royalty to be mutually agreed upon, on the basis of the number printed, etc. There is no doubt that the sale of photographs has been absolutely spoilt by the indiscriminate sale of copyrights for these cheap reproductions at ridiculously inadequate fees. The secretary of the Union will always be happy to give advice on the subject, the matter having often been discussed in committee.

The secretary has copies of the late Mr. Elliott's useful pamphlet entitled "A Few Facts Relating to Photographic Copyright," which has rendered such good service in placing the question of photographic copyright clearly and authoritatively before our brethren generally. If you have lost your copy, send for another one; or if you never had one, by all means write at once.

Will our members remember that the secretary is always at their command to answer questions, to register photographs at Stationers' Hall, and give advice on all questions of copyright, to help in fixing the amount of fees to be charged, and to suggest the form in which permission should be drawn up and assignments made, and in short to help our members generally.

Subscriptions are now due and should be sent at once to the secretary, at 23, Soho Square, London, W.

PHOTOGRAPHY AS A PROFESSION.

[Extract from "Works of the Nation," by Elison Willets.]

WITH the rise of the illustrated daily paper, with the impetus given to weekly journalism by the camera, with the advent of ten-cent illustrated magazines, professional photographers were divided into two great groups; the studio photographer and the newspaper photographer. The studio photographer includes the conservative element representing all the traditions of the art; the newspaper photographer scorns tradition and proceeds to take pictures at any time and at any place, by night as well as by day, making the whole world his studio.

The studio photographer takes pictures by rule. He studies light and shadows and the pose of the sitter, and consequently his pictures may represent expression, but seldom action. The newspaper photographer has no time for rules, does not study light and shadow, has no regard for the position of the head, hands, or feet of the persons whose appearance he is about to perpetuate—in short, he is the realist of photography; his pictures show persons as they are in everyday life, in their usual pursuits or on extraordinary occasions. Many of the pictures made by news-photographers are of vastly greater importance than those made in the studios. The work of the news-photographer is of greater educational influence than all the nice, "look-pleasant," dead-calm pictures made under skylights.

The great demand for photographs by newspaper and periodical editors and publishers has caused a large number of amateurs to enter the field as professionals. Having reached a creditable degree of excellence in photographic work as a fad or as a source of amusement and pleasure, the amateurs have proceeded to master every detail of the work, and are now pursuing it as a business. Those who are ambitious, those who, as amateurs, were energetic and painstaking, are making a success as professionals. As a professional, of course, a small capital is required, but capital is not the only requisite—the professional must possess energy and enterprise and courage. He must know how to secure patrons if he is a studio photographer, and he must study the market for pictures if he is a newspaper photographer. In addition to the demand created by the illustrated papers, the scientific world makes many demands upon the camera. Physics, mechanics, astronomy, chemistry, zoology—all these branches of science give employment to enterprising photographers. Science now demands pictures of birds in flight and of animals in motion. Such pictures bring a high price.

NEWS-PHOTOGRAPHERS.

The successful newspaper photographer is one who can take pictures without the accessories of the photographic gallery. He is one who can use the camera by night as well as by day, at sea as well as on land; briefly, he is one who can take a picture of anything under any circumstances, and who can sell the picture after he has made it. He must make good pictures under conditions the most unfavourable. He must be able to photograph the deck of a movable battleship from the Brooklyn Bridge; he must be able to take pictures of the manoeuvres of a troop of cavalry when his camera faces the sun; he must photograph the celebrity as he comes down the gang-plank; the President of the United States while he is making a speech from the platform of a railroad train; the bride as she comes forth from the church.

The nature of their duties has made the leading newspaper photo-

graphers rich in experience at least. During the last four years Mr. James H. Hare, as the staff photographer of "Collier's Weekly," has been present at almost every event of national importance which has taken place in this hemisphere between San Francisco and Halifax and between Manitoba and Venezuela. When Mr. McKinley made his transcontinental tour, Hare was on the train. When the beloved President was shot at Buffalo Hare was present, and it was indeed he who, in picturing Mr. McKinley as he mounted the steps of the Temple of Music, took the last photograph of the living President. Four days after the "Maine" disaster in Havana harbour, Hare was on the scene with his omniscient camera, and that same instrument recorded all the exciting events that took place in the Cuban capital before the war. When war was declared, Hare shouldered his camera instead of rifle, and marched with the troops to the very firing line. In camp and under fire, in the depths of the Cuban forests in search of Gomez, and on the transport on the way back to Montauk Point, Hare continually "pressed the button." Since the war, the launching of every battleship, the scene following every flood and great fire, every wreck cast up on our shores, every international or intercollegiate athletic contest, every political convocation, all the manoeuvres of the army and navy, and, indeed, every event having a place in news has been pictured either by himself or by his colleagues on "Collier's Weekly." Hare's work serves as an example of what is expected of the modern newspaper photographer. The narrative of his experience, between the covers of a book, would show that the newspaper photographer's life, as well as that of the correspondent, is intimately connected with all that is picturesque and dramatic.

Patent News.

The following applications for patents were made between February 15th and February 20th, 1904:—

Negative Boxes.—No. 3,773. "Improvements in boxes for transporting photographic negatives and the like." Joseph Hart Balfour.

Flash-lights.—No. 3,794. "Improvements in the flash-lights for photography." (Actien-Gesellschaft für Anilin Fabrikation, Germany.) Charles Denton Abel.

Developing Machines.—No. 3,799. "Improvements in or relating to photographic developing machines." (Frank A. Brownell, United States.) Kodak, Limited.

Dark Slide Adapter.—No. 3,822. "A new dark slide adapter." Howard Seymour Taylor.

Washing Apparatus.—No. 3,830. "Improvements in apparatus for washing and draining photographic plates." John Henry Sykes.

Tissues.—No. 3,855. "A process for preparing photographic tissues." Complete specification. Ignaz Hoffsummer.

Printing Apparatus.—No. 3,900. "Improvements in apparatus for the production of prints by photography or combined with typographic or other printing." Oscar Robert Richter.

Film Plates and Holders.—No. 4,018. "Improvements in photographic film plates and plate holders therefor." James Wyndham Meek.

Cameras.—No. 4,127. "Improvements in cameras." Complete specification. Hugh O'Donnell and William Clinton South.

Printing Apparatus.—No. 4,171. "An improved photographic printing apparatus." Elea Luboshey.

Apparatus.—No. 4,298. "Improvements in and relating to photographic apparatus." Felicien Blanpain.

Mr. W. B. SAMUEL, who makes a special feature of restoring faded or tarnished Daguerreotypes, asks us to state that he has removed from 87 to 103 Clapham Road, London, S.W.

Exhibitions.

BIRMINGHAM PHOTOGRAPHIC SOCIETY.

On Saturday, February 27th, the nineteenth annual exhibition was formally opened by the President, Mr. A. J. Leeson. The exhibition secretary, Mr. Lewis Lloyd, is to be congratulated on having got together an excellent show. It is quite above the average level in quality, and contains a greater proportion of large work than last year. It follows the prevailing fashion in being decidedly low in price, but here and there one comes across a sunny, breezy bit of work that refreshes one like a draught of fresh air in a stuffy room. One of the striking features of the exhibition is the high position attained by the lady members of the society, chief among them being Mrs. G. A. Barton, whose work is extraordinarily strong, but we cannot but feel that her reputation would have been still more enhanced by the exclusion of several of her twenty-one exhibits, especially No. 89, "The Singing Boy," which is deplorable in line and powerful as Mrs. Barton's work is, it lacks one peculiar quality, that indefinable essence known among painter-artists as "restraint," a quality always found in the work of another member, Mr. Cruwys Richards.

The west room is filled with a distinguished collection of seventy-four photographs by Dr. Grindrod, among which the fine portraits of H. A. Acworth, C.I.E., and Dr. Elgar are at once noticed. It is a very good "one-man show," but the prevailing low tone of most of the work becomes rather depressing after a time. Mr. Cruwys Richards shows three interesting prints in Nos. 183, 186, and 189. Gum prints in colours, they are clever and fairly successful, but we cannot call them "photographs in natural colours," and we cannot help feeling that if Mr. Richards had tinted his monochrome prints with a brush, he, at least, would have produced a better result with one-fiftieth of the trouble.

In the loan collection there are a few beautiful prints by Robert Demachy, some large dramatic landscapes by A. Horsley Hinton, some of Dr. Douglas English's exquisite "wee tim'rous beasties," and some excellent photographs of reptiles by Dr. Frederick Graves.

The judges, Messrs. W. R. Bland, Harold Holcroft, and R. Catterton-Smith (the last-named being the recently-appointed head master of the Municipal School of Art), have been lavish with their awards, and it is rather unfortunate that practically all the prizes have gone to work of the most dull and depressing character, and one wonders why one of the silver medals in the open class should have been given to an attempt to produce a sentimental picture called "The Awakening" (No. 264), by Mrs. Barton, in which we have a mother who might be a negress nursing an equally dusky baby, with badly drawn legs, while next to it is a vigorous, life-like bit of work by the same lady, "The Village Belle" (268). An equally depressing print (175), "A Storm at Sea," has also been awarded a silver medal; and this the value of the fine rendering of the waves and flying spray is greatly discounted by the introduction of an impossible ship in distress. "Eleanore" (189), by J. Cruwys Richards, is a dainty little print in colours, but not quite convincing. "The Watcher" (324), by the same clever artist, is extremely good, but the shadows seem unnecessarily black. "The House on the Marsh" (225), J. C. Warburg, is a huge "gum" in dirty green, in which the values appear to us altogether false. "A Silenced Highway" (201), Harold Burkinshaw, one of the most beautiful pictures in the exhibition, is a masterly rendering of a snow-covered road. "Norman Work a Contrast" (315), Rev. H. R. Campion, is a delicate print full of radiation and charm. "An Old Inn, Vitre, Brittany" (217), J. H. Brindley, deserves its awards, and is a rich print of an old plastered house, but the shadow, in the bottom left-hand corner, is a little weak.

One wonders why "The Approach to Newcastle" (256), Dr. Alf. Miller, a commonplace snapshot of some fishing-boats, has secured an award, while "Evening on the Nile" (182), Arthur G. Peck, well-nigh perfect in the arrangement of the composition of the boats with huge sails, and in its suggestion of the end of a day of blazing sun, has received no recognition whatever.

The two best portraits in the exhibition, "George Phoenix, Esq." (145), David Murray, and "Clover" (147), J. Cruwys Richards, have been passed over by the judges.

In the members' class the silver medal goes to Mrs. Barton's "The Madonna of the Rose" (49), a work far inferior to others by the same lady close by. "On the River" (24), P. B. Rider, a coarse black "gum" with a crooked horizon, secures a bronze medal; we hope this will not induce Mr. Rider to abandon those beautiful effects he secures in carbon of old buildings. "The Hill Path" (28), Harry Goode, is a very good bit of woodland scenery, but unnecessarily low in tone. "The Rosary" (69), Ivo F. Lewis, looks as if the lady was in the last stage of consumption and knew it. "A Portrait" (76), Mrs. G. Arbutnot, is a very dainty and delicate portrait of the Vicar of Stratford-on-Avon, but he appears to have donned a white coat for the photograph. The novices class has some remarkably fine work in it. The exhibition is not so rich in architecture as usual, and even those shown have the same lowness of tone even when they are intended to represent gleams of sunshine; a refreshing exception must be noted, however, in Mr. Greatbatch's "Chipping Campden" (231).

The exhibition will remain open till Saturday, March 5th.

LIST OF AWARDS.

MEMBERS' SECTION.

Silver Medal.—(49) "The Madonna of the Rose," Mrs. G. A. Barton.
Bronze.—(24) "On the River," P. B. Rider; (28) "The Hill Path," Harry Goode; (69) "The Rosary," Ivo F. Lewis.
Hon. Mention.—(50) "Repose," J. C. Batkin; (76) "A Portrait," Mrs. George Arbutnot.

OPEN SECTION.

Silver Medal.—(175) "A Storm at Sea," F. J. Mortimer; (189) "Eleanore," J. Cruwys Richards; (264) "The Awakening," Mrs. Barton; (324) "The Watcher," J. Cruwys Richards.
Bronze Medal.—(306) "Desolation," J. M. Whitehead; (225) "The House on the Marsh," J. C. Warburg; (201) "A Silenced Highway," Harold Burkinshaw; (315) "Norman Work—a Contrast," Rev. H. R. Campion; (217) "An Old Inn, Vitre, Brittany," J. H. Brindley.
Hon. Mention.—(185) "A Wind Sea," F. J. Mortimer; (256) "The Approach to Newcastle," Dr. Alf. Miller; (335) "On Cannock Chase," D. Murray; (331) "Evening," J. R. Capey; (299) "A Country Gentleman," Mrs. G. A. Barton; (127) "Miss Olive Heygate," J. Page Croft; (347) "Calliope," F. S. Marks; (222) "The Eastern Crypt, Winchester," W. A. Clark.

NOVICES, MEMBERS.

Silver Medal.—(381) "Reflections Deep," H. Gilbert.
Bronze Medal.—(378) "Cwm Enian," W. Partridge.
Hon. Mention.—(373) "Contemplation," T. Edward Silvester; (377) "At the Fountain," B. Shirley Smith; (394) "Solitude," Thos. Clarke.

WARWICKSHIRE SURVEY.

Silver Medal.—Rev. A. Corbet.
Bronze Medal.—Thos. Clarke.

LOCAL SOCIETIES' COMPETITION.

Silver Medal for best set.—Erdington.
Bronze Medal for best in any set.—(21) "A Lowland Farm," W. Smedley Aston.

Hon. Mention.—(1) "Landscape," J. C. Taylor; (22) "The Chaucer," W. Smedley Aston; (23) "Marguerite," W. Smedley Aston; (28) "Autumn," E. Welburn; (35) "The Thames, Ifley Mill," A. Gibbons; (39) "A Portrait," Geo. Carder; (32) "The Daily Round, the Common Task," A. Gibbons; (51) "The Alien," Miss L. Hanman; (52) "Sunshine After Rain," Mrs. H. J. Shepherd; (53) "Thoughts," Mrs. H. J. Shepherd.

LANTERN SLIDES—MEMBERS.

Bronze Medal.—W. A. Clark, A. G. Patterson.
Certificate.—P. T. Deakins, Ivo F. Lewis.

LANTERN SLIDES—OPEN.

Silver Medal.—Rev. E. T. Clark.
Bronze Medal.—W. A. Clark, Rev. W. R. Campion, F. G. Mortimer.
Certificate.—Robert Burnie, G. A. Booth, W. A. J. Hensler, Dr. Rodman.

CRIPPLEGATE PHOTOGRAPHIC SOCIETY.

The fifth annual exhibition of the Cripplegate Photographic Society was held on the 29th ult., and the 1st, 2nd and 3rd inst., at the Cripplegate Institute, Golden Lane, E.C.

A young society, as this is, can hardly expect its member's classes to compete successfully with those classes which are open to all the world; but the principal educational value of an exhibition lies in the opportunity it gives the members of the society holding it comparing their own work directly with that of acknowledged experts. Doubtless bitter disappointment often arises in the comparison, but to those who can take advantage of the lessons to be learnt there is the consolation that if the physic is nauseous its effect is benign. Many of the members of the Cripplegate Society evidently take the utmost pains to improve their work pictorially as well as technically, and that their efforts are not unavailing is proved by the steady advance that is shown in the members' classes of each successive exhibition. In the present exhibition, not only is the quality of the members' work better, but there is a considerable increase in number of frames sent in to the exhibition. In the landscape class for members we were surprised to find Mr. B. C. Wickison competing for a medal. Naturally he gained a medal; but is it not playing even the medal hunting game a little low for one of his calibre to set to work to capture prizes from such photographically youthful opponents. The prevailing craze for bromide enlargements was as strongly manifested here as elsewhere, and some of the most evident faults in the work were undoubtedly due to want of recognition of the particular conditions which must be complied with to achieve success. There were many pictures for instance which were excessively hard, apparently from the employment of negatives of unsuitable scale of gradation for bromide enlargements by artificial light, but on the whole the work was much more interesting than that shown in the same class at previous exhibitions. In portraiture and figure subjects the members' class showed quite a remarkable advance, and contained quite a number of pictures of notable good quality. "A Fisher," by H. Gordon Stollard, was excellently treated, and a portrait of a gentleman, by the same, in spite of some minor faults was more than usually successful. C. G. Lacey's portrait of a child was equally good, and "Asleep," by H. W. Coke, while not excelling in pictorial treatment, was at least a great improvement upon the usual amateur's attempt at the same kind of thing. Other exhibitors in the same class which included all subjects except landscape were H. E. Staddon, W. J. Appleby, H. V. Abbott and A. Rogers.

The open class for pictures, which had been previously medalled, as usual in a champion class, was not a particularly interesting one, the best known pictures were by P. W. Crane, J. H. Gear, N. Judge Graystone Bird, F. J. Mortimer, H. G. Stollard, and G. H. Capper. The portraiture class was not a particularly strong class; in fact it contained some very poor examples. Among the pictures which appealed to us most were "A Cavalier," by J. B. Johnson, "A Little Sunbeam," by R. S. Webster, "Deborah and the Smile That," etc., etc., by A. Marshall, and "The Blacksmith," by B. Bishop. A fairly large class of landscapes contained many interesting pictures. "Eventide on the Bure," by J. E. Latham, several mountain scenes by J. E. Gunston, "The Glow of Evening," and "Thistle-down," by B. C. Wickison, "Schwarzwald Peasants," by J. H. Gear, "View from Bankside," by G. H. Capper, "Weary they Wend their Way," by E. W. Taylor, "Woodland Waters," by C. Scull, and "A November Afternoon" and "On the Thames" by W. L. F. Wastell, and some fine wave studies by F. J. Mortimer particularly attracted our attention. A small class of architecture perhaps reached the highest average in quality of any. The trade exhibitors were The Photographer's Art Paper Company, of Thornton Heath, The Autocopyist Company, and Messrs. Burroughs, Wellcome and Co., A. and M. Zimmermann, J. Barnard and Son, and W. Watson and Son. The judges were Messrs. J. T. Ashby, H. W. Bennett, and Fred Hollyer.

The following is the award list:—Class A.—Champion Picture.—Gold Medal—F. O. Swaine, No. 14, "Morning Service." Honorable Mention—P. W. Crane, No. 2, "Crypt de l'Aquilon." Class B.—Champion Slide.—Gold Medal—John Gunston, "Lake Brienz." Class C.—Portraiture.—Gold Medal—Withheld. Silver Medal—A. Marshall, No. 64, "The Smile that, etc." Bronze Medal—C. Treasurer, No. 70, "Man's Head." Bronze Medal—Miss M. Woods,

No. 44, "Study of a Boy." Class D.—Landscape, etc.—Gold Medal—John H. Gear, F.R.P.S., No. 102, "Schwarzwald Peasants." Silver Medal—John Gunston, No. 82, "Mer de Glacé." Bronze Medal—W. L. F. Wastell, No. 162, "A November Afternoon." Honorable Mention—John Gunston, No. 83, "In the Gorges of Trient." Class E.—Architecture.—Gold Medal—Alfred T. Ward, No. 176, "And all Below is Strength." Silver Medal—S. C. Stearns, No. 185, "Across the Nave, Winchester." Bronze Medal—John H. Gear, F.R.P.S., No. 172, "St. Mark's, Venice." Honorable Mention—W. L. F. Wastell, No. 186, "Altar Tomb, Cobham." Class F.—Lantern Slides.—Gold Medal—W. A. J. Hensler, "The Woodman." Silver Medal—John Gunston, "Mer de Glacé." Bronze Medal—F. J. Mortimer, No. 4.

Members' Classes.—Class G.—Landscapes, etc.—Gold Medal—B. C. Wickison, No. 189, "An Autumn Morn." Silver Medal—W. J. Appleby, No. 214, "After the Rain." Bronze Medal—G. H. L. Jackson, No. 230, "Down a Leafy Lane." Class H.—Any Subject not included in Class G.—Gold Medal—W. J. Appleby, No. 238, "Soapsuds." Silver Medal—H. Gordon Stollard, No. 267, "Repairs." Bronze Medal—C. G. Lacey, No. 262, "Portrait of a Child." Class J.—Lantern Slides.—Silver Medal—G. H. King, "The Valley Stream." Bronze Medal (extra)—A. T. Ward, "Little Cloister Passage, Gloucester." Class K.—Any Subject.—For Members who have not previously taken an Award.—Bronze Medal—J. B. Parrish, No. 289, "Near High Beech."

FORTHCOMING EXHIBITIONS.

March 5.—South London Photographic Society. W. Calder Marshall F.C.A., 41, Glenton Road, Lee, S.E.

March 5-12.—Brechin Photographic Association. Hon. Secretary J. Kirk, 1, Infirmary Street, Brechin.

March 8-9.—G.E.R. Mechanics' Institution (photographic section) Hon. secretary, A. Woolford, 16, Grove Green Road, Leytonstone.

March 9-12.—Nottingham Camera Club. Hon. Secretary, Arthur Black, 9, Bowers Avenue, Nottingham.

March 15-17.—Brentford Photographic Society.

March 15-19.—Arts and Crafts Exhibition (Shrewsbury).

March 22 to April 5.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.

March 25 to April 9.—Northern Photographic Exhibition. Hon. Exhibition Secretary, Chas. F. Inston, F.R.P.S., 25, South John Street, Liverpool.

April 6-13.—Croydon Camera Club. Hon. Exhibition Secretary C. U. King, Hurst Bank, Selsdon Road, Sanderstead.

May 11-18.—Plymouth Photographic Society. Hon. Secretary Wilfred Grist, 105, Old Town Street, Plymouth.

DEVONPORT Camera Club.—An exhibition in connection with the above will be held from May 24th to 28th. Last day for receiving entry forms, May 12th. Hon. Secretary, A. J. Catford, 78, Charlotte Street, Devonport.

ADAM HILGER, Limited.—This company has been registered with a capital of £10,000 in £1 shares. Object, to adopt agreements with Mrs. Anne E. S. Hilger and F. Twyman to acquire the business of an optical and astronomical instrument maker, carried on at 75a, Camden Road, N.W., as Adam Hilger, and to carry on the same and the business of, makers of, and dealers in telescopes, spectacles, field glasses, eye-glass guards, and chains, spectacle cases, compasses, barometers, thermometers, and optical, astronomical, electrical, chemical, nautical, photographic, surgical, and scientific apparatus etc. No initial public issue. Mrs. A. E. S. Hilger is the first director, and may retain office while holding a quarter of the shares acquired by her under the purchase agreement. If J. A. Hilger should become director he may retain office while qualified. Directors' qualification £200. Remuneration as fixed by the company. Registered office, 75a, Camden Road, London.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

March	Name of Society.	Subject.
	Plymouth Photo. Society	<i>The Life and Work of Mr. A. Horsley Hinton</i> , Illustrated. Mr. Chas. H. Dymond.
	Ashton-under-Lyne Photo. Soc.	Chess Match, "B" League, Stockport 2nd. home.
	Aberdeen Photographic Assoc.	Lecture, Mr. Fred. W. Hardie.
	Glasgow & W. of Scotland P.A.	Exhibition Closes.
to 12	South London Photo. Society	Fifteenth Annual Exhibition.
	Bowes Pk. and District Ph. Soc.	Competition. <i>Interiors</i> .
	Burton-on-Trent Photo. Soc.	Members' Enlarging Night. <i>The Use of Bichromate Salts in Photography</i> . Mr. Edwards.
	Ilford and District Photo. Soc.	Affiliation Prize Lantern Slides.
	Glasgow & W. of Scotland P.A.	<i>Photomicrography</i> . Demonstrated. Mr. Rob. Garry, B.Sc.
	Southampton Camera Club.....	<i>A Photographic Tour Round the Isle of Wight</i> . Illustrated. Messrs. Geo. R. Johnson and A. C. Berry.
	Glasgow Southern Photo. Assoc	<i>Further Notes on Composition</i> . Mr. J. W. Eadie.
to 12	Nottingham Camera Club.....	Exhibition.
	Cricklewood Photo. Society.....	<i>Landscape Photography</i> .
	Everton Camera Club	<i>Bromide Enlargements</i> . Demonstration. Mr. J. F. Wilde.
	London & Prov. Photo. Assoc.	A Paper by Mr. A. Haddon.
	Watford Camera Club	Lantern Evening. <i>Amateur Photomicrography</i> . Prize Slides.
	Liverpool Amateur Photo. Asso.	<i>Photography Prize Slides</i> .
	Richmond Camera Club.....	<i>Northamptonshire Church Architecture</i> . Mr. J. F. East.
	Woolwich Photo. Society	<i>Some West Country Scenes</i> . Mr. J. Northwick Pauling, F.R.P.S.
	Hull Photographic Society	V. P. U. Invitation Folio.
	Gainsboro' Camera Club	Print Exhibition by Club Members.
	Aberdeen Photographic Assoc.	<i>Artificial Light Photography</i> . Mr. J. Milne.

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

FEBRUARY 25TH.—Mr. J. W. Hodges in the chair. A vote of thanks was passed to Mr. Welford for his gift of a set of convention slides portraits of photographic celebrities. A paper was read by the hon. Recorder, entitled "Up-to-Date Photography," in which was advocated the catering for a large portion of the community prevented present from being able to patronise the professional photographer, the establishment of studios fitted with artificial light, and also the adoption of quick printing methods for prints, so that orders could be completed in hours, instead of days or weeks.

A very animated discussion took place, but the principal point was scarcely touched, the main lines taken being the admitted facts at professional photography of the present day was not a great success, and that the great majority of photographers took far away to long to execute their orders.

The Hon. Secretary and Mr. T. K. Grant were heartily thanked for their services in connection with the supper and entertainment.

PHOTOGRAPHY UP-TO-DATE.

Amateur photographers, as a general rule, are up-to-date in plates, paper, in apparatus, in methods, and in procedure. Process and plate photographers are also quick to embrace opportunities of progress, but the average portrait or professional photographer moves very slowly, indeed, the sole idea of the majority of professional photographers seems to be that the only way of being up-to-date is to cut down prices a shade below his rival over the way. Snooks and Co. will advertise 12 cabinets for 5s., guaranteed to be permanent and finished in the best West-end style; Jones goes one better, and offers in a 12 by 10 enlargement finished in black and white, and mounted in a handsome gold frame. One photographer advertises artistic portrait postcards at 4s. per dozen; next day his rivals in the same road offer them at 3s. 6d. and 2s. 6d., and in one case I saw exhibited a sample of dirty, fly-blown specimens called "the latest artistic novelty," 12 postcards for 2s.; two positions, 2s. 6d.

All this sort of thing indicates an utter want of business method, and also the frantic bidding for the patronage of a limited supply of customers, and all this in the face of the fact that passing their doors continually is an unlimited quantity of customers willing and able to pay good prices for good work, but who are absolutely neglected, viz., the great army of workers, male and female, who cannot spare the time, or get the opportunity, of being photographed simply because no provision is made for anyone who cannot attend during the ordinary working hours, i.e., in daylight.

Of course, as a pure matter of photography, portraits taken in day-

light may be the best, but as a matter of business, just as good results can be obtained by artificial light, and it must be better policy to cater for customers who at present have no chance of becoming patrons, than to cater for people whom you can only induce to patronise you when the charges are such as to leave little or no margin for profit.

In the "Photographic Chronicle," in October, 1903, was published an article by myself indicating the general lines upon which such a business could be carried on, and, given such an establishment, there would be no doubt as to its ultimate success. That the idea is feasible admits of no doubt, because at the present time the photographer has ample choice as to methods of lighting: incandescent gas, acetylene gas, arc or incandescent electric installations are all advertised, and each has its possibilities, advantages, and disadvantages. For success, artificial lighting must be continuous, not just turned up for the moment, and for this reason flashlights, etc., are not of the nature suitable for studio work. Such studios must be open at a later hour than is now customary, but that can be met by commencing later in the morning. With artificial light, P.O.P. can be discarded, and prints made upon bromide, or slow contact paper, matt or glossy, and with proper installation the orders can be delivered within twenty-four or thirty-six hours after the sitting. To do this is merely a matter of detail routine, and would not entail a larger staff than is at present necessary in an ordinary establishment. The operator would pose and expose, the developer would see the negative through, and deliver it to the retoucher, from the retoucher it would go to the printer, who would have no difficulty in printing a dozen copies all alike in, say, an hour, and delivering them to the mounter, who would not take long to mount and dry them; with ordinary care, very little spotting out would be required, so that allowing an hour in the developing-room, an hour with the retoucher, printer an hour, mounter an hour, spotting and packing another hour, so that six hours after sitting the whole of the copies should be ready for delivery. Such a scheme as this will to many seem absurd, simply because where I have indicated minutes the ordinary photographer allows days, except in the printing-room, where the days often get into weeks; but let the scheme be thought out and it will be seen that it is quite feasible, given the proper organisation, and keep the staff each to their own work, then there will be no doubt as to its success.

W. D. T. WILKINSON.

RICHMOND CAMERA CLUB.

FEBRUARY 25TH.—The meeting was devoted to a discussion on "The Right Process for the Right Negative." The subject was opened by Mr. Oetzmann, who, in an interesting speech, remarked that the beginner invariably commenced his printing operations with the paper known as P.O.P.—the most difficult and most unsatisfactory process that he could adopt, especially when the combined toning and fixing bath is used, but the most satisfactory for the manufacturer. The general result is nine unsatisfactory prints out of every ten, and the tenth probably faded in a month. Better results were obtained in the old days of albumenised paper, because photographers took the trouble to work and wash the prints with the greatest care, and made strong negatives, which, by slower printing, caused the print to sink deeper into the albumen than with the modern thinner negatives and gelatine paper. Nowadays, comparatively few amateurs take the necessary trouble, everyone choosing what he considers the easiest process, and, consequently, results are generally unsatisfactory. Mr. Oetzmann considered that with but little exception, all printing processes could, with proper care, be used with almost any kind of negative, unless it were hopelessly bad. Few men can produce exactly the quality of negative that they desire, but every man should make himself acquainted with all printing processes, so that he may be able to select the one most suitable for the object he has in view. The platinotype process is far superior to P.O.P., but the carbon process is the most satisfactory in its results, and the cheapest. It affords the greatest range of shades and colours, is absolutely permanent, and is very easy to work. Mr. Oetzmann showed a number of excellent prints both in platinotype and carbon.

SOUTHAMPTON CAMERA CLUB.

FEB. 29, Mr. Wm. Borrough Hill in the chair. A lecture, entitled "Seascape Photography," was delivered by Mr. F. J. Mortimer, the well-known expert on the subject. He confined the discourse to his

labours on the rugged Cornish coast, especially the Scilly Islands, to deal with the study of the monster breakers so abundant in that locality. Mr. Mortimer not only portrayed these by the aid of numerous lantern slides of a highly-meritorious character, but gave those present his personal experience in an unstinted manner, and the various useful hints as to the method of procedure, wearing apparel, and the most suitable plate and apparatus to use, being very much appreciated by his audience. The Chairman, in proposing a vote of thanks, spoke in eulogistic terms of the lecture it had been the pleasure of himself and the company to listen to that evening. This was seconded by Mr. Kimber, the Hon. Sec., who referred to the part Mr. Mortimer, as Hon. Sec. of the Southsea Photographic Society, had taken in the promotion of the combination exhibitions of recent years between the Hove, Southampton, and Southsea Societies, which had proved so highly satisfactory. This had been due in a great measure to the personal influence and prestige of Mr. Mortimer, with prominent figures in the photographic world, and he was sure that it would be regretted by all to hear that Mr. Mortimer was giving up the Secretaryship of the Southsea Club. Mr. Sargent, the Hon. Sec. of the Hove Photographic Society, in supporting the proposition, reciprocated all that Mr. Kimber had said, and hoped that Mr. Mortimer's successor would still continue the good work in connection with the exhibitions, and added that he was glad to see the enthusiastic and optimistic spirit so prevalent in the Southampton Club, which it always gave him pleasure to visit. The vote of thanks was carried with acclamation.

Commercial & Legal Intelligence

BRITISH Biotype Company, Limited.—The above-named company has been registered with a capital of £5,000 in £1 shares. Object, to acquire an invention for improvements in coin fed photographic apparatus; to adopt an agreement with the Biotype Company, Limited, and to carry on the business of photographers, chemists, engineers, wood-workers, printers, stationers, merchants, manufacturers, purveyors of any commodities by means of automatic apparatus or otherwise, etc. No initial public issue. The first directors (to number not less than two nor more than five) are T. W. Horton, P.C. Skelton, and J. C. Stephens. Qualification 100 shares. Remuneration (after 5 per cent. dividend has been earned) £150 each per annum. Registered office, Library Chambers, 13-14, Basinghall Street, E.C.

Re GEORGE RICHARD KNIGHT, 63, Castle Road, Southsea, dealer in photographic apparatus.—The above-named debtor appeared for his public examination at the Portsmouth Bankruptcy Court on February 29th, before the Registrar, Mr. Renny. The statement of affairs disclosed liabilities amounting to £778 4s. 11d. In reply to questions put by the Official Receiver, the debtor stated that the cause of his failure was paying his father's debts, which absorbed his capital, and to buying too heavily for the Christmas trade, which was this year a failure. He took over his father's business in Middle Street, which was insolvent, and the deficiency more than absorbed his capital of £100. Debtor admitted that he had overbought, at the late Christmas season, but had it been otherwise he would have made a good turnover. The examination was closed.

BEFORE the Registrar, at the Bradford County Court, on Wednesday, Alfred Halliday Jackson, engineer, lately residing at Ivy Road, Moorhead, Shipley, came for his public examination in bankruptcy. The debtor's statement of affairs showed that he estimated his liabilities at £4,304, and his assets at £2,860, leaving a deficiency of £1,444. He attributed his insolvency to law costs and losses in connection with the promotion of certain companies. He joined Mr. R. Hope Brown in the purchase of Coe's Collo-type patent for reproducing copies of photographs. They agreed to give about £5,000 for that patent, but the inventor did not carry out his contract. Arrangements had been made to have the affair exhibited at the Glasgow Exhibition, and space was allotted for the purpose. The inventor, however, failed to have the machine ready in time, and the agreement fell through. About £500 would be spent on that affair. A writ was issued for the return of the deposit with damages. The deposit was returned but he got no damages. Later he floated the British Empire Manufacturing Company with the object of speculating in specialities by advertising. The

specialities were sewing machines and household goods. That company was in liquidation now in consequence of an action by the Singer Manufacturing Company in the High Court. The British Empire Company were describing their machines as made on the Singer system, which they thought they were entitled to do. The judge refused to grant application of Singer's Company for an injunction; but they brought another action and won, the British Empire Company being restrained from describing the machine as made on Singer's system. Mr. King was appointed liquidator, and the liquidation was still proceeding. He could not say whether any dividend would be paid. He estimated his loss in connection with that company at £500. On the application of the Official Receiver the examination of the bankrupt was adjourned.

THE Eastman Kodak Company got a favourable ruling recently in the proceedings instituted against it by Hastings and Miller for alleged violation of Chapter 690 of the laws of 1899, known as the Donnelly Anti-Trust Act, and Section 168 of the Penal Code. Mr. Hubbs, attorney for the Eastman interests, retained Delancey Nicholl, Nicholl, Anabel, and Lindsay, as counsel, and also M. B. Phillips, who has been the patent counsel of Mr. Eastman for fifteen years. District-Attorney Jerome appeared for the people, with his assistants Mr. Hart, and Samuel H. Evins, of the firm of Blandy, Mooney, and Shipman. Mr. Evins is attorney for the Anthony Seville Company, the principal competitor of the Eastman Company, and it was admitted in the hearings that the law firm first appeared for Theodore Hastings and Harry G. Miller, the complainants, when this proceeding was initiated. The following is Justice Wyatt's memorandum: "This proceeding pending before me, sitting as a magistrate, was brought against the defendants to hold them criminally liable for monopolising and attempting to monopolise the business of making and vending photographic supplies in the State of New York and throughout the United States. The complainants in their charge against the defendants proceed both under the so-called Donnelly Act, which took its final shape by the action of the Legislature in 1899, and under the section of the Penal Code in regard to conspiracy in restraint of trade. Complaints allege as criminal acts the formation of the companies by making the New Jersey company the holding corporation, and also that the manner in which the goods of the defendants were sold was in restraint of trade. In regard to the formation of the companies, after a very careful examination of the authorities and on all the evidence in the case, I am brought to the conclusion that the defendants' proceedings in regard to the organisation of the companies were entirely in accord with the statutes of the State of New York and the statutes of the State of New Jersey, and it must follow, therefore, that their acts cannot be criminal. It also should be considered that this combination was not a combination of corporations competing in the same line of business, but the various companies which the defendants are composed were manufacturing and selling not similar goods. As to the second charge—viz., the so-called credit agreement which the complainants allege, all dealers with these defendants were compelled to accept, after a careful examination of the leading cases on the subject, taking in particular the case of Park v. The National Druggists' Association, and the case called the Strauss Case in 35 App. Div. Reports, I cannot find that such agreements can be said to be in any way in restraint of trade, or as at all begotting monopoly. The goods sold by the defendants were their own goods upon which they either had patents or were manufactured under secret process, and they were entitled and had the right to sell them in any way that they thought best. It follows, therefore, that the motion to dismiss the complaint and discharge the defendants must be granted. The defendants are discharged."—*"Rochester Democrat and Chronicle."*

At Clerkenwell Sessions, on Thursday last week, before Mr. M'Connell, K.C., a deformed man, named William Morrison Crouch, 47, artist, was indicted for having obtained by false pretences £5 from Alfred Gregg Cooper, £21 from Edward Fuller Cripps, £20 from Edward Krebser, £100 from Wm. Wardle, £36 15s. from Fanny Elizabeth Montfort, £30 from Esther Margaret Blythe, £50 from Robert Clark Williamson, and £3 from Charles Edward Carpenter, in each case with intent to defraud; the prisoner was also accused of incurring debts and liabilities by fraud. Mr. Guy Stephenson, for the Treasury, said that the prisoner was indicted for obtaining a total sum of £317 in connection with a photographic business at 22c, Ebury Street, Westminster. The method he adopted was to insert advertise-

ts in various newspapers offering situations to assistants and re-
ring pupils. The important part of the advertisements was that a sub-
stantial premium was required in each case. It was alleged by the prose-
on that the scheme was one highly dishonestly arranged to put large
s of money into the prisoner's pocket. The prisoner carried on the
svenor Studio, under the name of Beethoven, and he guaranteed
licants constant employment and claimed to teach photography
all its branches. In November, 1902, the prisoner took an unfur-
ned flat at Ebury Street, S.W., at a rental of £105 per annum, and
red into possession in January of last year. At that time he had
lung left Bexhill-on-Sea, where, said counsel, he was hopelessly
lvent. At Bexhill he had conducted a photographic business at
7 Sea Road, but it was not a flourishing one, a lady, named Jecko-
who had advanced Crouch £85, eventually taking it over. His
king account then had the large balance of one penny, and another
unt opened with £36 had dwindled to 4s. 5d. Crouch pro-
ded to engage assistants and take pupils, but for some time there
not even a camera in the studio, and when he was put in there
e no customers, so the employees occupied their time in photograph-
one another. On occasions some ladies called. These, however,
counsel, were no doubt of such attractive beauty that they were
tographed without charge. In short, the prosecution urged there
no real business, but Crouch continued to "engage the services and
" of operators in return for substantial premiums down to the
umn of last year. Then, continued counsel, the scheme was too
gerous to be proceeded with further, and he changed the premises
the quarters of a business transfer agency and employment bureau,
taking premiums from clerks and secretaries, who found their
es to consist principally of taking half-crowns as registration fees
o other applicants. About £133 worth of furniture was supplied
Messrs. Norman and Stacey for the "businesses," and only £36 was
e. Money was also owing for cameras and photographic materials.
ne case goods supplied were recovered by distress warrant. He
a great number of judgment summonses, unpaid accounts, to the
unt of £250, and a lot of finely printed notepaper used in the
ness. His assistants received only a portion of their salaries, and
they received came out of the premiums which they paid. Mr.
e, for the defence, after consulting with the prisoner, said that as
sult of counsel's opening statement, Crouch recognised that there
nothing else to do but plead guilty to incurring debts by false
ences in the cases of Cooper, Wardale, and Williamson to the
unt of £200. Mr. McConnell, K.C., said that in some of the cases
people had probably invested their all, and that was the worst
ng, showing that Crouch had a disregard for the interests of others
ong as he profited. He had been in custody six or seven weeks,
would be kept in the second division for five months.

News and Notes.

MEETING of the National Photographic Record Association will be
at the Midland Grand Hotel, St. Pancras, on Wednesday, March
Afternoon tea will be served at four o'clock. A report will be
ented and a discussion invited upon record work, and a collection
ir J. Benjamin Stone's more recent work will be exhibited.

RADIUM BANQUET.—The Technology Club of New York city
ntly held a radium banquet, in which the health of the Massa-
etts Institute of Technology, of the alumni of which the associa-
is composed, was drunk in "liquid sunshine." The lights were
ed, and Lester D. Gardner began the radium display. Mr.
ner showed a diamond which glowed when excited by the presence
bit of radium. He showed kunzite, excited under the same
itions, and then held up a tiny tube, of which he said: "I hold
y hand a minute portion of pure radium; it is difficult for you who
a few feet away from me to see the small particles in the glass.
e are in this tube twenty-five milligrammes of radium bromide
an activity one million times as strong as uranium. One gramme
his radium would cost 15,000 dols. and one pound would cost

approximately 8,000,000 dols. In the world all of this radium in exist-
ence could be placed on a twenty-five cent. piece, and therefore we have
before us the rarest specimen of mineral on the earth. With this I
intend to excite into luminescence diamonds, willimite and esculin." Mr. Gardner then produced a dancing skeleton and other objects
which had been coated with phosphorus paint, which, he said jocularly,
had been impregnated with an infinitesimal quantity of radium to make
its radiance permanent. Said Mr. Gardner: "I now call your atten-
tion to radium paint, so called. This is merely a new form of our
old friend luminous paint. It has been found that radium exceeds
it in luminosity, and when radium can be manufactured in commercial
quantities there is no doubt that a production properly called radium
paint can be made.

THE Allotropy of Metals.—When first used in a chemical sense,
allotropy connoted the property of certain substances whereby they
could assume, under appropriate conditions, a state differing materi-
ally from the form in which they customarily existed. The textbook
illustrations of sulphur in its various modifications—the octahedral,
the prismatic, the amorphous, and the dubious black and more-
dubious blue; phosphorus: colourless, red, and possibly scarlet;
carbon: transparent, hexagonal, and non-crystalline; of the red
and yellow varieties of mercuric iodide, and of the reguline and
powdery forms of tin—are in everyone's mind. It is intelligible
enough that the idea should be extended to other cases where differ-
entiation between two possible forms of the same kind of matter is
less easy. Without diving too deeply into antiquity, it may be said
that the belief in the frequent occurrence of allotropy in metals,
and in the ease with which change from one form to the other
might be brought about, arose with the systematic study of the
influence of impurities on the mechanical properties of pure metals
like gold and copper. Investigation found that very small quantities
of certain elements, such as antimony or bismuth, profoundly affected
the strength and tenacity of these materials, and as—at that time
no less than now—it could scarcely be supposed that these minute
quantities were capable of combining chemically with the whole mass
of the metal in which they occurred, the not unreasonable assumption
was made that their influence must be more subtle, and that, though
not uniting with the bulk of the metal, they were able to induce it
to assume an allotropic form. The conversion of white phosphorus
into red phosphorus is much promoted by the presence of a little
bromine. It may fairly be thought that the transformation of a soft
ductile metal like gold into a short brittle material may be caused by
a trifling quantity of some foreign element capable of changing, shall
we say, a gold into the β variety. Now, as long as this view was
confined to metals like gold and copper, in which the impurities were
either deliberately added for the purpose of the experiment, or were
adventitious, and recognised as so objectionable that the desire of
the refiner was to remove them with all convenient speed, the hypo-
thesis of allotropy was satisfactory enough, because no one cared
sufficiently about its truth to contest it. But when, in process of
time, it was extended to our chief industrial metal, iron, more earnest
attention—and attention from non-academic minds—was turned
towards the question. Broadly, the *ex cathedra* view about ten
years ago was that there were two kinds of iron—the ordinary soft
kind, called α iron, and a hard variety, called β iron. The latter
existed at high temperatures, and was resolved into the former as
the metal cooled. Hence hot iron was potentially hard, and if
arrested in the β condition by sudden cooling, would remain so.
The hardening of steel by heating and quenching was therefore
explicable. The characteristic impurity of iron—carbon—was invoked
as tending to inhibit the degradation of the β to the α form. With
proper modifications to meet several little hitches in its smooth
working, this hypothesis was serviceable, and even convincing; the
notion of allotropy had been successfully extended to the most difficult
and interesting of metals, belonging already to the list of structural
materials. There is a sound rule in the conduct of all inquiry; it
is to exhaust the obvious before examining the more remote of possible
causes. But the mind of man is so constituted that it leans constantly
towards the less obvious, and prefers an ingenious and plausible specu-
lation to the statement of humdrum observation. Hence, for some
time, allotropy was as fashionable as ions are now. When the afore-
said sound rule of pursuing and exhausting the obvious was put to
use, several things happened. In the first place it was found that

the peculiar quality of gold made brittle by trifling quantities of antimony was not due to any change in the gold itself, but to the separation of its grains by a matrix mechanically weak; that the same was true of copper and bismuth; that the same held generally for metals mixed with small quantities of materials which influenced their mechanical properties; that iron looked upon in the early days as pure contained quantities of impurities approaching 0.1 per cent., an amount relatively large; and that the structure of iron is profoundly influenced by inconsiderable percentages of carbon. In short, the whole situation was changed. Whereas the hypothesis of allotropy rested on the belief that the molecules of a metal or their grouping were altered by impregnation with some insignificant germ, inspection with so coarse a means as a microscope showed that the difference was molar—that there were great masses of stuff made up of the metal and of its hangers-on, stuck together, segregated, laminated, or what not, forming a complex structure the mechanical properties of which depended on the nature, quality, disposition, and mutual adherence of its constituents. Consequently, the idea of a hard kind of iron and a soft kind of iron naturally convertible is now chiefly of historical interest. One word of warning must be added. The failure of the doctrine of allotropy in the instances named to afford a tenable explanation in no way impugns its validity in other cases. Where a substance has been actually prepared in two or more forms, allotropy *ipso facto* exists; where it is merely deduced from a change of property, as in the case of iron, the whole question is one of hypothesis; when an hypothesis gets in the way of a fact it is bad for the hypothesis; thus it is only the hypothetical kind of allotropy which is now discredited.—“The Engineer.”

Correspondence.

- * * * Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.
- * * * We do not undertake responsibility for the opinions expressed by our correspondents.

THE DECIMAL AND METRIC SYSTEMS.

To the Editors.

Gentlemen,—In my letter on this subject published on February 26th there are several mistakes that require correction. In the eighth line from the top the compositor has inserted the word “metrically” for “mentally” and spoilt the sense, while in the last few lines of the first paragraph he has left out all repeating points, and thus has very kindly afforded proof of my contention that such points often lead to blunders. The sums should be stated as follows:—

“The square of 21.142857, or of 12 083, or the products of .3 by .6, or of .16 by .09, or of .9317861, by 333.3.”

In the first line on page 179 “twenty-seven figures” should read “twenty-three figures.” This being a slip of my own, not the printer’s. Twenty-three figures includes the restatement of the sum, which is generally necessary with long decimal quantities, though not with duodecimal measurements. If the restatement is excluded, fifteen working figures are still required, as against only six with the duodecimals.—Yours, etc.,

C. WELBORNE PIPER.

February 26th, 1904.

INTERNAL REFLECTIONS IN CAMERAS.

To the Editors.

Gentlemen,—In your article on this subject you refer to the ineffectiveness of red cloth as a lining for cameras, but do not mention the use of orange paper. The following experience seems to suggest that this would be more efficient than the usual dead black. Some time ago I found a great difficulty in securing white margins on enlargements produced from a certain masked negative, the trouble being due to the fact that as the mask had to be very narrow on one side of the negative, light reached the edge of the rebate of

the carrier, which showed up distinctly on the margin of the enlargement. All kinds of dead black failed completely to stop reflections, even though I cut away the reflecting surface to a minimum, and the only perfectly successful remedy was lining the rebate with orange paper of the kind used sometimes for backing plates. The reflections were of course much more readily visible with orange paper, but they had no effect at all upon the rapid bromide paper used. Considering that these reflections were focussed by lens on to the enlargement, whereas the light reflected within camera is more or less scattered, it would appear that orange paper should be even more effectual as a camera lining than it proved to be in the particular case described. As wide-angle lenses are now too frequently used in hand cameras, it seems worth while to test the efficiency of a dull-surfaced orange paper lining.

As to the use of a lens-hood, I would suggest that this is best if rectangular; a circular hood cannot completely stop reflection. Yours, etc.,

C. WELBORNE PIPER.

February 27th, 1904.

NORTHERN PHOTOGRAPHIC EXHIBITION, LIVERPOOL.

To the Editors.

Gentlemen,—May I call the attention of your readers to the fact that all entry forms for the above must reach me not later than Saturday, March 12th, and that all exhibits, excepting lantern slides, must reach the Walker Art Gallery on or before Monday, March 14th. There can be no extension of time; the selecting and judging have been arranged for Tuesday, the 15th.

The exhibition promises to be of a very representative character, many of the foremost workers of the country having promised support, and I hope that it will be visited by many of the workers from outside Liverpool, and that any such workers will make themselves known to,—Yours truly,

C. F. INSTON, Hon. Sec.

February 25th, 1904.

THE BRENTFORD EXHIBITION.

To the Editors.

Gentlemen,—Following the action of the South London Photographic Society in extending the date of entries, as we are collecting exhibits from their exhibition, free of carriage, it is thought advisable to extend the date for receiving entry forms for the Brentford exhibition until March 10th, by which date pictures must also be received. The exhibition will be opened on Tuesday, March 15th, Mr. James Bigwood, M.P., and will remain open until the 17th inst. There are five classes in the open section in which silver and bronze plaques are offered as awards. There will also be a silver-gilt plaque offered for the best picture in the open section, irrespective of class. The plaques, manufactured to our own design by Mr. Restall, Birmingham, represent that picturesque portion of Brentford High Street, where stands St. Lawrence’s Church with its ancient tower which stood in the time of the battle of Brentford. This forms a very pleasing design worked in metal. Brentford is noted for its past, and is the scene of many events in history. Our plaques will become valuable, forming as they do a record of such an historic town which is being continually altered and modernised.—Yours truly,

FRANK H. READ.

February 29th, 1904.

ANNUAL DINNER OF THE PROFESSIONAL PHOTOGRAPHERS’ ASSOCIATION.

To the Editors.

Gentlemen,—I shall feel obliged if you will grant me space to remind members and those interested that the annual dinner of the Professional Photographers’ Association takes place at the Criterion Restaurant, Piccadilly, W., on Friday, March 11th, at seven o’clock. As this is entirely a social gathering we should particularly welcome the presence of professional photographers who are not members. We anticipate a large attendance and application should be made for tickets (6s. each) by Tuesday, March 8th.—I am, etc.,

WILLIAM GROVE, hon. secretary.

51, Baker Street, W., February 29th, 1904.

THE KODAK EXHIBITIONS.

To the Editors.

Gentlemen,—As we have been asked by the secretary of a Ramblers' Photographic Society whether it would be possible for him to arrange a visit of the members of his society to our exhibition of photographs of Japan at our Charing Cross Gallery, 40, Strand, W.C., as there may be other secretaries of clubs and societies to whom the same idea has occurred will you allow us to state:—(1) We shall all times be willing to arrange for special visits of parties and societies to our exhibition, and ensure them a cordial welcome. (2) Cases where the members of a society cannot visit the exhibition, Strand, within the hours when the gallery is usually open, we are happy to arrange to have the gallery opened at an hour most convenient to them. We need perhaps hardly add that there is no charge whatever to our visitors. Applications addressed to the manager at 40, Strand, will have immediate attention.—Yours faithfully,

KODAK, LTD.

43, Clerkenwell Road, London, E.C.

THE DECIMAL AND METRIC SYSTEMS.

To the Editors.

Gentlemen,—Your correspondent Mr. C. Welborne Piper attempts to improve my general statement that the calculation of most arithmetical problems is easier with decimals than with vulgar fractions. He seizes upon the example given by me not for proving that point, but for its simplicity and as a suitable illustration to a photographic audience, showing how a decimal fraction would stand as against a vulgar. To Mr. Piper's mind the case proves emphatically the contrary. It is an assertion without the proof, for to carry it out according to accepted rule on paper the one will require more figures than the other, which will emphatically prove what I stated to be correct, namely, that in general calculations by means of decimals are less figures than those carried out in vulgar fractions. Perhaps the method founded on some algebraical formula might be shorter, evidently the algebraical formula has to be found first, and when the multiplication of $6\frac{1}{2}$ by $4\frac{3}{5}$ might be accomplished without the decimal form of 6.5 by 4.75.

I had pointed out, we are told, later on, that fractions were unnecessary to the advantageous use of decimals I would have no more practical knowledge. This is entirely beside the question.

I was not teaching the L. and P. Association any arithmetic, I was illustrating the decimal system as a necessary preliminary to understanding and profitable use of the metric system. That is what I applied my practical knowledge, and in this point I was rebuffed by one member of my audience who knew more about the decimal system than probably the majority of those who visit photographic meetings. The next assertion by your correspondent that the great defect of purely decimal systems (most of them) is that they do not lend themselves to quick calculation. My reply is that to a mind not trained in decimal calculation it may appear so, and to a mind biased against a decimal system and in favour of the metric system they must be so, but once the prejudice is thrown off my contention stands good that generally the decimal calculation will require less figures, is less complicated, and simpler than one carried out with vulgar fraction or undecimally divided quantities; that most calculations of any magnitude or importance are always carried out on the decimal system more quickly with greater precision. In my own practice, without pretending to be an expert in calculation, I always convert all vulgar fractions into decimals, exactly contrary to what your correspondent asserts. Remarkable opinions which I hold about a duodecimal system are common, but I ignore the fact that we actually have a most invaluable duodecimal system by which we can multiply so and so better so and so.

It is quite easy to pick out a few figures in feet, yards, pounds or ounces, and vulgar fractions thereof, and put a sort of equivalent in inches or metric measurements against them, thereby trying to prove that the one multiplication is easier than the other. If I had said in my paper that it was easier to multiply say 120 cm. by 6 than its equivalent in inches—say 47½ ins.—by 6, I should have argued my own case most fatally, for the L. and P. meeting would

have laughed at me most deservedly; but that is exactly what Mr. Piper attempts to do with his example. It is hitting at the shadow and avoiding the substance. But I am anxious to learn all about the duodecimal system, which is so invaluable, and should it prove to be a superior thing to the decimal system and able to have evolved out of it a system of measures better than the metric system I should not stand out long, but should be one of its first converts. We have however first to learn what is meant by your correspondents' system, and if it be what we understand under a system, why keep it back? There is yet time while Parliament is deliberating upon the introduction of the metric system—the only rational system, according to Mr. Balfour. Let the duodecimal system be brought forward while it is time, so as to avoid the fatal step of committing ourselves to a system with so many faults, and having done so find it is too late and suffer accordingly the loss of a much better system. Perhaps Lord Kelvin, who does not care a dram for all the objections raised against the metric system, might yet become a convert to a better thing, and so would the writer when he sees it.—Yours faithfully,

J. R. GOTZ.

215, Shaftesbury Avenue, February 29th, 1904.

AMATEUR Photography at the World's Fair.—Hand kodaks may be carried into World's Fair Grounds without charge, the size 4 x 5 being the limit, and no tripods will be allowed with any size without a permit from the Division of Concessions and Admission. The rules regarding small instruments, coming under the head of hand cameras, have not been definitely decided upon. It is positive, however, that no camera requiring tripod will be permitted in the grounds other than those owned by the Photograph Concessionaires and newspapers and periodicals, which have special permits from the Concessions Department. At the Chicago Columbian Exposition hand cameras were allowed in the grounds provided their owners paid a fee of one dollar a day. There the kodak feature was under the control of the official photographer and he issued and sold the daily permits to amateurs. Here the concessionaire will have nothing to do with issuing permits for small cameras. Up to date, all cameras without tripods have been allowed in the grounds without charge. As to whether this will continue when the exposition opens lies with the Division of Concessions and Admission. It is probable that a fee will be charged during the exposition period, though this has not been definitely decided upon. An invitation is extended to all amateur photographers who come to the World's Fair city to visit the club room of the Missouri Amateur Camera Club, No. 1, North Broadway, for here is where you will meet your brother amateurs from all parts of the world. In the club room will be posted all the rules and requirements of amateur photographers who wish to take pictures inside the World's Fair Grounds. The register in the club room, we hope, will contain the names and addresses of every amateur photographer who visits the exposition.—"Professional and Amateur Photographer."

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Answers to Correspondents.

- ** All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.**
- ** Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.**
- ** Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & Co., 24, Wellington-street, Strand, London, W.C.**
- ** For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.**

PHOTOGRAPHS REGISTERED:—

- F. H. Stanley, 6, Coton Road, Nuneaton. *Photograph of Dog Sitting in Chair Smoking Cigarette.*
- R. H. Shillito, Hereford Lodge, Cornwall Road, Harrogate. *Photograph of Painting of Virgin and Child.*
- A. M. Matthews, 5, Mount Pleasant, Manningham, Bradford. *Photograph of Snow Scene.*
- A. McHarrie, County Studio, Stranraer. *Photograph of the late Rt. Hon. the Earl of Stair.*
- W. C. Adams, 1, High Street, Witney, Oxon. *Two Photographs of Accident to Water Tower.*

TONING BROMIDES.—I. V. Y. writes: "In ALMANAC for this year, p. 1,077, re toning bromides, after fixing and washing well, I have toned them successfully, but the instructions given do not state if I am to fix them again after this toning. Please say." In reply: The prints need only be washed. They do not require re-fixing.

BLACKING LENS MOUNT.—A. COLLIER says: "I would be much obliged to you if you could give me a good recipe for a black (not reflecting) varnish for metal. How are interiors of lens mountings varnished?" In reply: The interiors of lens mounts are usually blacked with a thin solution of shellac mixed with lamp-black. Bates's dead black varnish is good for metal work.

PAPIER MACHE DISHES.—"PRINTER" asks: "Can you tell me how to mend papier mache dishes which are cracking (the layers of pulp parting) at the corners?" In reply: If the dishes are really broken, marine glue will probably be the best material to repair them with. If they are only cracked, or chipped, two or three coats of Brunswick black will possibly do the needful.

LENS QUERY.—GORDON McK. asks: "Will you kindly answer this question: What focus of lens is wanted to do the general work—i.e., portraits and groups—in a studio 16 ft. long?" In reply: For so short a studio you require (if you only have one lens) a lens of short focus with good covering power. For cabinet pictures one of 8 in. or 9 in. focus, of the anastigmatic type, with an aperture of F6, would be suitable.

STUDIO BUILDING.—H. D. RIDEN says: "I am going to build a studio, and should be greatly obliged if you would give me particulars of the best kind of studio to build." In reply: As we do not know the space at your command, or its surroundings, we cannot give any useful information. Better get Bolas' work on "The Photographic Studio: a Guide to its Construction, etc." That will give you the desired information. We do not reply to queries by post.

BROMIDE PRINTING MACHINE.—"QUERY" asks: "Can you kindly inform me who manufacture a bromide printing machine for doing bromide postcards in quantity? I have inquired from all the largest stock houses, but can get no information, as they know of no one who manufactures such an apparatus." In reply: Messrs. Marion and Co., Soho Square, if we mistake

not, supply bromide printing machines. Better communicate with them.

OBSCURING GLASS.—W. ROGERS AND Co. ask: "Do you know of any liquid mixture on the market, or can you give recipe to make a mixture that can be applied by brush or rag to make frosted effect on the clear glass of our studio windows sufficient to keep out sunshine?" In reply: We know of no such mixture on the market. White paint stippled on the glass will answer the purpose. Or flour paste, mixed with whiting, is also good and has the advantage that it can easily be washed off on the advent of dull weather when it is not required.

COLLOTTYPES.—W. SMITH says: "I have enclosed you nine postcards which have been done from my negatives, which are very fine negatives of brilliant quality and sharp in detail. Will you give me your candid opinion of the postcards? Are they half-tone blocks or are they collotypes? They are done for me as collotypes, and I have refused to take them as they are such poor cards. Have I been wise in so doing?" In reply: The prints enclosed are collotypes with a rather open grain. We cannot say whether they are wise or not in refusing to take them, as we do not know the price charged for them, and further, we have not seen the negatives to judge of their quality.

VARIOUS QUERIES.—"ANILINE" says: "I should esteem it a favour if you would reply to the following queries, viz.:—(1) Where can I obtain paper, photographically pure, and sufficiently stout for postcard purposes? (2) What dyes are most suitable for dyeing gelatine for orthochromatic filters, green, blue, yellow and red? (3) In the formula for sepia paper in the ALMANAC it says: 'After printing immerse in water, and then fix in 1-50 hypo solution.' How long should they be in fixing? (4) Are prints by this process as permanent as an ordinary silver print?" In reply: (1) Otto König, and Co., Cross Street, Finsbury, E.C. (2) Any of the coal-tar colours of the colour desired. (3) From five to ten minutes. (4) If produced with care, we see no reason why they should not be fairly permanent.

REGISTRATION OF NAME.—"BISCUITS" asks: "May I trouble you to give me your opinion as to what would be the best way to get about registering the name of a preparation for photographic I wish to make for sale? If I patent the preparation, I believe the method of mixing and chemicals would have to be declared would they not? Could you oblige me with the name of firm making cheap small bottles?" In reply: If you patent your invention you must publish the method of carrying it out. You can register a name as a trade mark under the Trade Marks Act. Then you need not say anything about the composition of the preparation. If you send to the Patent Office, Southampton Buildings, W.C., enclosing a stamp, they will send you the Trade Marks Rules, which will give every information. Small bottles may be had from Kilner Bros., King's Cross.

LENS QUERIES.—"INTERNAL REFLECTION" says: "I have read with much interest the article in this week's paper concerning internal reflection in the camera. Please reply to the following: (1) I am about to buy a 12 in. focus applanat lens, listed to cover at F8 a 12 by 10 plate, to use on a $\frac{1}{2}$ p. plate. Will such a lens be any more likely to fog the plate, if the bellows are dead black, than when I use the single combination (16 in.) of a 8 in. focus applanat? (2) When using a hood, as advised, to reduce the line of view, with a lens of large covering power, what is the best kind of hood to have, and how far should the project beyond the hood of the lens? (3) Should you consider that unpleasing or violent perspective should result from using an 8 in. lens on a $\frac{1}{2}$ p. plate? (4) Can you tell me the F speed number, according to Wynne's meter, of the Premo Film Pack the Ilford Rapid Isochrom plate, and Westendorp and Welmey Rapid Orthochromatic plate?" In reply: (1) Practically no, if the inside of the camera be dead black. (2) Blackened cardboard is as good as anything. Let it project as far as possible without cutting off the field of view. (3) Not particularly so. (4) No; we have not tested any of them with Wynne's tester. When you write again, please use a sheet of paper instead of crowding so much on a postcard.

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**** The Editor can only be seen by appointment.**
**** We do not undertake to answer letters by post.**

EX CATHEDRA.

Szczepanik's colour process. At a recent meeting of the Camera Club of Vienna, Baron von Hübl gave a brief address on the "bleaching-out" process of colour photography, and specimens were shown by Dr. Neuhauss, Worel, and Szczepanik (which is, by the bye, pronounced Shepannik, as near as an English tongue can get). The first experiments in this direction were made by Vallot, but he was not very successful in consequence of the difficulty of finding dyes sufficiently sensitive to light. Neuhauss and Worel increase the instability of the dyes by sensitisers, spreads each colour film separately, and such as hydrogen peroxide, ammonium persulphate, etc., thus obtaining very sensitive films, which, however, can only be used on glass. Worel uses anethol, the crystallisable camphor of aniseed oil, which is practically the odorous or malodorous principle so easily recognisable in bath rock and cough lozenges, and is able to obtain super prints. Both these experimenters, however, make a mixture of the dyes, whereas Szczepanik, using the same sensitisers, spreads each colour film separately, and is thus able to equalise to a far greater extent the bleaching of the dyes. Von Hübl states that his paper gives very brilliant pictures and a good reproduction of greys, and expresses the opinion that this process in conjunction with coloured transparencies produced by three-colour printing, will be a valuable addition to colour photography,

and further that if the light sensitiveness of the dyes could be increased one thousand times, the problem of colour photography would be absolutely solved.

* * *

A New Incandescent Lamp. Photographers who can refer to the "Photographisches Wochenblatt" for the 1st of this month may see the illustration of a new incandescent lamp, the invention of Professor Drehschmidt. It burns petroleum, and gives a light equal to 2,200 standard candles. It has no wick, and may, therefore, be classed with the Kitson light. It differs from the latter in the construction of the generator, which is claimed to be more simple in the Drehschmidt lamp. The light is started by ignition of a small quantity of methylated spirit, and actuating a small air pump, worked by hand. When the lamp is warmed up sufficiently, it appears to require no more attention. A pressure-gauge indicates any variation, and a falling off in the light may be remedied by means of the air pump. If the lamp is well constructed and does all that is claimed for it, there should be plenty of scope for its use by photographers. Portraits have been taken by its light in from five to seven seconds, and collodio-chloride prints have been made in thirty-five minutes. It is therefore nearly comparable with diffused daylight. For enlarging and the exhibition of lantern slides it should be of great value. The mantles cost eighteen-pence, and last for one hundred hours' use. The cost of the petroleum is about one penny per hour.

* * *

The Danger of The "Daily Chronicle," one day last week, reported a serious accident through the use of a flash-light. It appears from the report in our daily contemporary that at the conclusion of a dinner at the Strollers' Club, New York, a flash-light photograph of the diners was being taken. The flash-light set fire to some of the decorations, and a panic ensued; the guests rose in fright to make their escape from the room. Many were knocked down and injured, one being stunned. This should serve as a warning to all who use flash-lights to see that the light is not fired anywhere in close proximity to inflammable materials. We have on several occasions seen flash-lights of an explosive nature fired dangerously close to inflammable materials, light curtains, and the like, the user not realising the danger incurred. Most of the flash-light compounds are of an explosive character, and evolve great heat in their combustion, which may set fire to any light material in their vicinity; also that it may not be noticed at the moment, as the intensity of the light for a time so dazzles the eyes that any smaller light is not for a time perceptible. There-

fore, this panic in New York should serve as a caution to all users of flash-lights, particularly in small rooms. We are frequently asked for formulæ for flash-light compounds, but are always somewhat chary of giving them for the reason that the majority of those who ask for them are unacquainted with their dangerous properties. In all cases when flash-light mixtures are made which contain oxygen-forming compounds, such as chlorate of potash, permanganate of potash, etc., the components should be dried and powdered separately, and kept separate, being only mixed at the time of using, and then only in quantities sufficient for a single flash, a strip of paper or cardboard being used for the mixing. If the ingredients are kept mixed together they are liable to go off spontaneously, and often when least expected; hence the source of many accidents.

* * *

Orthochromatism. We think there are notable indications that the orthochromatic plate will take a more prominent place in photography in the immediate future than has hitherto been the case. The fact, too, that manufacturers of these plates are devoting more attention to suitable screens for their special brands is one which cannot fail to induce the photographer to avail himself of colour sensitive plates. Everything which tends to promote their correct use must contribute to their ultimate success. We draw attention to this because we frequently see specimens of work done with screens accentuating the characteristics of the particular sensitiser, even to the point of error. A specimen of this kind may be seen in the last number of the "Photographische Mittheilungen," opposite p. 69. The photograph is by E. Terschak, of Cortina d'Ampezzo. In that locality the photographer has to contend with deep blue skies of Italian intensity. If the mountains were covered with snow at the time the photograph was taken, the contrast presented between the deep azure sky and the snow-clad rocks may be correct, but the foliage of some trees, near the foreground, is snowy white and provokes a smile when compared with the dark tones of the grassy slope upon which the trees stand. Photographers who use orthochromatic plates would do well to confine their attention to one brand, study its characteristics, and find the most suitable screen to use with it. They may otherwise find themselves committing mistakes as absurd as those they endeavour to avoid. Our manufacturers can do much to remedy the evil by sending out carefully-adjusted screens, and we feel certain it would be to their advantage to do this at a minimum price, as it would conduce to the sale of their plates. A good negative is the best advertisement for a good plate. Perhaps it is not out of place here to mention that a new sensitising salt called "Pinachrom" has been brought out by Meister Lucius and Bruning, of Höchst, a/M. M. Léon Vidal, in the "Moniteur de la Photographie," writes of it as being more sensitive to red even than Orthochrom T.

* * *

Photo Sculpture.

Some bas-reliefs in metal of very high quality were exhibited the other night at the Royal Institution. They aroused a good deal of interest because they were produced by a new photographic process, of which we will attempt to give a brief outline. We will suppose that it is intended to produce a profile head on a medal from the living subject. We presume that the face and head of the sitter would be powdered or whitened in some way, but this is a detail of which we have no information. An ordinary negative is taken of the subject, but under special conditions of lighting—that is to say, the lighting is, by means of lamps of special

construction, we suppose, split up into ten planes of diminishing intensity, the brightest plane illuminating the parts of the face nearest to the lens, or, in other words, the parts showing the greatest relief. Then, step by step, the lighting intensity is diminished, until at the background it almost ceases to be light. This negative is subsequently, by the intervention of bichromated gelatine, made to yield a mould in plaster, from which the final bas-relief in metal is obtained. Full details of the process will doubtless be forthcoming in the near future, but at present we are only able to give this bare outline, gathered from brief verbal description. That the process is a practical one is evident from the excellent examples shown, in which the head measured about two inches across, with a relief of about one-eighth of an inch. Should this process bear out its early promise, the artists and designers of coins and medals will have a formidable rival to face. It was much the same with the wood-engravers a quarter of a century back. At first they found in photography a most potent aid, for drawings could be reproduced to any scale and transferred to the boxwood block. Then all of a sudden photography stepped in and ousted the engraver altogether. If the die-sinker is dispensed with in the production of medals, coins, seals, and things of a like nature, it will cause a flutter in many a dovecot. But designers may take to themselves one little grain of comfort. A man is not generally appreciated until some time after he has gone over to the majority, at least, not sufficiently to cause medals to be made in his honour. The artist will still be required to shape the features of celebrities, so that posterity will know what they were like.

* * *

Star Shadows.

On a brilliant starlit night one can often see pictured in some still pool the image of those brighter orbs of heaven which for centuries have been the wonder of mankind. But it is seldom that any one of these distant bodies is bright enough to cast an appreciable shadow on the earth. Sir John Herschel notices this unusual phenomenon in his "Outlines of Astronomy." He says: "Under favourable circumstances Venus projects quite a strong shadow. This should be received on a white ground. The open window of a room with white walls is the best arrangement. In such a situation I have observed not only the shadow, but the diffraction fringes which border its contour." It lately occurred to M. Touchet, Assistant Secretary of the Astronomical Society of France, to try whether the light from Venus would cast a shadow strong enough to make its presence visible on a photographic plate after development, and the result of this effort to trap the planet's borrowed light has been eminently successful. He appears to have employed a long tubular camera, with a sensitive plate, in front of which was a suitable object to cast a definite shadow—the spring holder of an electric glow lamp. An exposure to the planet's light, to which the camera was pointed for fifteen minutes was sufficient to impress the plate, and the photograph, or rather shadowgraph, is reproduced in a recent number of the "Scientific American." Emboldened with this success, M. Touchet determined to make the still bolder attempt to photograph the shadow cast by one of the fixed stars, the distance of which, from our earth, is so inconceivably greater than that of the planets. He naturally chose for his experiment one of the most brilliant of those wondrous orbs—the blazing dog-star, Sirius. In this case the exposure was extended to a little more than an hour, but the shadow of a small object was secured upon the plate with equally good results. It might be thought that the diffused skylight would have somewhat interfered with this interesting ex-

periment, but, as a matter of fact, it was too feeble to need consideration. Sirius is believed to have a diameter equal to twelve times that of our sun, and to be at such a distance from us that if its light were suddenly quenched we should not become aware of the circumstance for a period of about nine years. That a source of light energy so distant should be able to cast a shadow is a remarkable thing to ponder upon.

* * *

Fees for reproduction. The circular on Copyright Notes, issued by the Photographic Copyright Union, which we reprinted last week, should be read by every professional photographer, and not only read but acted upon with unanimity. One of the very frequent queries we have to reply to through the Answers Column is: What are the usual fees charged to newspapers for the right to reproduce photographs in their pages? A fortnight ago we answered a correspondent who wrote asking what were the usual fees, adding that he had been in the habit of charging, for the cabinet size, five shillings, and other sizes in proportion. Our correspondent enclosed a copy of a letter he had received from a Manchester house, saying that his charges were exorbitant, and that they only paid two shillings for a cabinet picture and the right to reproduce it. Could anything be much more ridiculous than this? In a case like this, when the prices alleged to be charged by some are played off against the photographer, the suggestion made in the circular is very apropos—namely, to write to the one named, and ask if the allegation is correct or not. It will be seen that the minimum scale of fees to be charged by members of the Photographic Copyright Union, and those laid down by the Professional Photographers' Association, are practically identical, and they should be strictly adhered to by photographers generally, whether they be members of either Association or not. The fees are very moderate, and the newspapers are well able to afford them. Although these minimum fees are laid down by both Associations, it is distinctly pointed out that photographers can charge what they like above them, and, in many instances, much higher fees are charged and paid than those named as the minimum. In all cases when permission is granted to reproduce, whatever may be the fee charged, it should be stipulated that it is for the paper named and for no other, and for only one edition. It is no uncommon thing with the proprietors of a number of periodicals to pay the photographer for the right to reproduce a picture in one publication, and then use the block in one or more of the others. This should be guarded against in the way indicated, and further fees obtained, if the blocks are used in other papers, for it stands to reason that the more a picture is reproduced the less demand there will be for the original, more particularly if the reproduction is used for advertising purposes. There is one paragraph in the Photographic Copyright Union Copyright Notes that we would call special attention to just now, namely, that referring to the sale of rights to reproduce photographs for pictorial postcards. Many country photographers who publish local views selling at, say, a shilling, or in album form, who have sold the right of their reproduction as postcards for a small fee, have found to their cost that there is practically no sale at all for the original pictures. The postcards have destroyed the business. In such cases it is something like selling "a birthright for a mess of pottage." The Photographic Copyright Union suggest that the right for postcards should be granted only by way of royalty, the minimum fee being half-a-guinea per thousand for half-tone or collotypes, and a guinea per thousand for bromides

or ordinary photographic processes. We doubt, even at these small fees, if they will compensate the photographer for the loss of sale of his larger pictures. We would once more impress upon our readers the desirability of making every local view they publish copyright directly it is taken. The cost is so small that it is covered by the sale of a couple of prints, and then one has the "whip hand," and can recover substantial damages, penalties, injunction, etc., from anyone who infringes it in any form.

COPYING BY ARTIFICIAL LIGHT.

SOME little while ago there was an amount of discussion about the copying of pictures that might have led to important practical results if more attention had been given to it, and the end would have been of value, for it is evident that more and more of this class of work which might well be done at home is "put out." And the more thought that is given to the matter the more remarkable does this appear. In the old wet-plate days when a plate kept more than ten minutes or so before developing became subject of more or less anxiety as to its freedom from markings when developed, it would have been little wonder if the work were shirked, but as a general rule it was not. At the present time, with a plate ready prepared and which will not produce spots, stains, or comets, though it were exposed in the camera for a day, the work is shirked. Why this should be so is an enigma. The solution is probably a complex one. The photographer of the present day has not had the rigid training that was almost compulsory a generation ago. It is so easy to make photos of a sort, that anyone with a little capital and a little camera is ready to start a business, and, when started, he will find hordes of would-be assistants equally well equipped. Then again the whole tendency of modern life lies in the direction of specialising and going to specialists. Our grandmothers would have held up their hands in horror at the idea of purchasing even dainty dishes at a confectioner's; their degenerate grandchildren will furnish their table mainly with viands from outside. Almost everything is "put out"; so why should not photos follow the rule? The question for the photographer to study is not merely one of economy, though, with business in such a state, as it now unfortunately appears to be, it behoves everyone to be rigid in his requirements in that direction; it might be more justly termed one of expediency. The securing a commission will often depend upon the ability to execute it without delay. It should be a very simple matter to copy a picture "while you wait," and either deliver a print in an hour or two, or let the client take a valued original away, and receive his copy in the ordinary course of business; and it is here where the value of artificial light becomes manifest. Where such work is only occasional there may, even with experienced hands, be some difficulty in hitting at the first attempt the right exposure, with the result of considerable loss of time. When using artificial illumination, once the exposure, with a fast plate, and a uniform light, is found, it can be correctly repeated at any future time however distant, the only factor of doubt lying in the due appraisement of the colour of the picture to be copied, and little experience here would be needed. The main point to remember is that the distance of the picture from the illuminating centre must either be constant or the rule of the power of the light diminishing in the inverse ratio of the square of the distance must be rigidly adhered to. Another great convenience of copying by artificial light is that it can be carried on in any dark corner, spare room, or, best of all, in the darkroom itself

if there be space, and, with skilful management, space requirement can be reduced to very modest dimensions.

The choice of illuminant will virtually lie between gas-light and electric, the latter being preferable on many accounts. If gaslight be chosen, the products of combustion in a small closed room are injurious, even with an incandescent burner, so that its usefulness is more restricted. And, again, with incandescence the light is by no means uniform, the power of the light diminishing daily (or a week or two after a new mantle has been installed), and being liable to fluctuation, according to the condition of the mantle itself, difficulties which practice would readily overcome, but which yet remove the factor of absolute uniformity of conditions, which is the key to despatch. For this reason an ordinary fishtail burner is the most desirable to use, though its actinic power is so much inferior.

Electricity is now so generally laid on in most houses that it is usually available, and it practically forms a typically perfect and constant source of light. When the Cooper-Hewitt lamp gets into familiar use it will probably be generally adopted for copying purposes; but till that time arrives all that is necessary for casual work can be found in the common incandescent lamp, provided it be not worked after the bulb is darkened. The light is equally useful in that state, but the element of constancy is removed, as its intensity, and especially its actinic quality, become gradually impaired.

We have recently made some experiments in this direction, and we found that when copying an ordinary albumenised print to the same size we had no difficulty in obtaining an excellent negative in from ten to fifteen seconds, using F8 diaphragm.

We will now discuss certain points in the practical use of the lamps or other sources of illumination, in order to obtain the greatest success.

Where great economy of plant is paramount, a single lamp will suffice, and, suitably placed, will not bring out the "grain" of the surface in too prominent a manner; but if pictures larger than half-plate are being copied, the illumination will fall off a little on the side furthest from the burner. Two lamps are far better, one on each side of the picture to be copied. The grain of the print then scarcely shows; the duration of exposure is lessened rather more than two-fold; the illumination is even; a 12 by 10 can be copied to the same size without any apparent unevenness of lighting. They should be placed on each side, at an equal distance from the picture, and should be opposite its centre. Of course, more than two could be used so as to make the evenness of illumination almost mathematically perfect; but more than two are not really necessary, except with a very dark print to be much enlarged, or when copying a larger-sized original than 12 by 10. Remembering the rapid diminution of intensity of the light as it is removed from the picture, it should not be taken too far away, or the exposure will be unduly increased. Nine inches from light to picture will be a suitable distance. With F8 and two 32C lamps of ordinary intensity ten seconds will be ample exposure. It should be brought as near to the front of the picture as possible, consistent with avoiding reflections, though this is limited by a hard-and-fast line.

The light must be screened from the lens.

The camera front should be covered with a piece of black velvet or paper to avoid reflections, especially when photographing a glossy-surfaced original.

The further the light is removed from the picture to be copied the greater the distance it must be removed from a line joining centres of lens and picture, and, of course, the converse is true.

If the light is too near that line, there will appear on the negative at the edges of the print either actual reflections of our lamp, or foggy patches forming broken reflections. The method of avoiding this is to observe the image on the focussing-screen, or, more scientifically, to draw a line from one side of the picture to that side of the lens furthest from it (or to stretch a piece of twine), and then to make a second line starting from the edge of the picture and directed outwards, forming a V, this second line to be at the same angle to the surface of the picture as the first. The light must not come within the V.

If these instructions—the outcome of actual work—are well considered and acted upon, the copying on any scale, enlarged or reduced, will be rendered absurdly easy and expeditious, and the work will come to be a pleasure instead of a thing to be shirked.

ROYAL PHOTOGRAPHIC SOCIETY.—Mr. Harry Selby will give a lantern lecture, entitled "Rambles in Yorkshire Dales," illustrated by slides from his own photographs, on Tuesday, March 15th, 1904, at 8 p.m., at 66, Russell Square. (Ladies are specially invited.)

ROYAL INSTITUTION.—A general monthly meeting of the members of the Royal Institution was held on Monday afternoon (the 7th inst.), Sir James Crichton-Browne, treasurer and vice-president, in the chair. Miss L. A. Black, Mr. H. T. Davidge, Mr. H. F. Dickens, K.C., Mr. F. S. Eve, Mr. F. L. M. Forster, Miss C. E. M. Gibbons, Mr. T. G. Hull, Mr. Vivian B. Lewes, Mrs. Gerard Leigh, The Hon. Mary Portman, Mr. H. R. Prendergast, Mr. W. N. Shaw, F.R.S., Mr. J. Sorley, Dr. R. H. Scanes Spicer, The Hon. Sir Joseph Walton, and Mr. E. Wormald were elected members.

THE REPRESSION OF THE BRITISH INVENTOR.—Mr. W. S. Boulton writes to the "Journal of the Society of Arts" suggesting the reconsideration by the Society of Arts of the whole question of British Patent-law, "with a view to urging an alteration so as to make things smoother for the inventor, who, unless a rich or influential man (which almost always he is not), has difficulties and expenses enough in all conscience to contend with in the working out and introduction of his invention in a nation whose ideas of enterprise and honour are summed up in the following couplet, which I have more than once had thrown in my teeth as a reason for not trying something new:—'Be not the first by whom the new is tried, Nor yet the last to lay the old aside.' In other words, show no enterprise yourself, but when your neighbour has sunk money and undergone worry and anxiety in doing the pioneer work, pounce in and rob him of as much of his just reward as you can! A question that has long puzzled me, is: Why is there such an enormous difference in the laws of patentright and copyright? Patentees and authors are both inventors, and in each case the invention may be of great, little, or no value, and be the result of much or little labour and expense. Here, however, the similarity ceases. The author can place his invention on the market at a very moderate further expense; the patentee may be impotent to proceed until he has in some way secured the application of large sums of money. There can be little doubt that on the average it costs very many times as much to put a patented article on the market as to publish a book, and takes far longer. In view of this difference, how does the law help the patentee? It first gives him a good chance of losing protection altogether by 'publication,' before he files his application for a patent, and it then taxes him to the extent of £99—which in the aggregate produces, I think, over £100,000 per annum beyond the expenses of the Patent Office—in return for which it grants him a patent for the maximum term of fourteen years. The author, on the other hand, cannot lose protection by publication—in fact he thereby obtains it—and the fee to empower him to enforce his rights is 5s. Finally, his protection lasts about three times as long as a patent. In other words, the patentee has to pay for protection 1,188 times as much per annum as the author. Can any man say that this is just? Why should the patentee be charged so incomparably more than the author? Why should his protection be for only one-third of the copyright time? And why, in the name of all that is extraordinary, should publication in the one case prevent protection, and in the other be the means of procuring it?"

ELECTRIC SPARK PHOTOGRAPHY.

to those photographers who possess a fairly powerful induction coil or Wimshurst machine the study of the effect of an electric spark on the sensitive film of a dry-plate will afford a very interesting and instructive occupation. The writer gives here the results of some experiments in photographing that form of electric discharge generally known as a "spark." For these experiments an induction coil constructed for X-ray work, and giving a 10 in. spark, was used. An instrument throwing a long spark produces, of course, the most brilliant effects, and larger plates can be used to receive the impressions, but good results can easily be obtained with machines that only give a 3 in. flash. The experiments must be conducted in a dark room, in the day-time; the machine can often be conveyed to the photographer's dark room, but if this is not conveniently arranged for the purpose, operations must be suspended till after dark, when any room can be utilised for exposing the plates. An induction



Fig. 1.—Photograph of Electric Spark from Induction Coil.

coil is most convenient for taking spark photographs, as the operator, with this form of electrical machine, does not require assistance. With a Wimshurst an assistant is necessary to work the machine while the photographer makes the exposure. The best results are obtained in damp weather, as, in a moist atmosphere the spark throws out a greater number of radiations, and gives more varied and picturesque effects. The writer has obtained the best results in the dark room, as photographic manipulations keep the air moist. With regard to the best kind of plate to use, a rapid isochromatic emulsion is the most suitable; the slower brands tend to give excessive hardness to the image, and the finer details of the radiations are not so well defined.

There is no great difficulty in obtaining an impression of the electric discharge on a photographic film. If an induction coil is used, the dry plate can be laid on a box or pile of books immediately beneath the terminals of the machine. When the

current is switched on, the spark will generally be slightly deflected downwards and cross the plate, or portion of the plate, between the terminals. The word "generally" is used advisedly, as the electric spark does not observe any fixed rules,

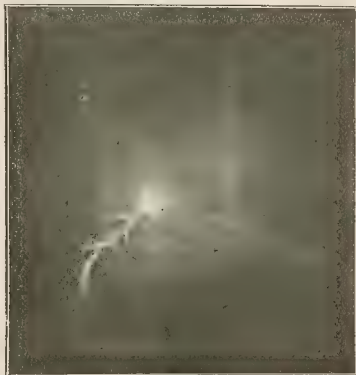


Fig. 2.—Electric Spark. Plate held Perpendicularly to the Terminals.

and is a most uncontrollable factor in the case. If preferred, the plate can be held by one corner in the hand, while the exposure is being made, but the spark gives a rather unpleasant shock when it strikes across to that particular corner. The chief trouble experienced with the induction coil is the difficulty of rapidly switching the current on and off again. This operation should be performed in a small fraction of a second, or a series of flashes will cross the plate in all directions, and render it useless. The operator for the first few attempts is



Fig. 3.—Electric Spark, with Magnet on Plate.

very apt to work the switch too energetically, with the result that after making the contact the handle is brought too far back, and another circuit is made, and in consequence a second display of sparks spoils the plate. The best method of working

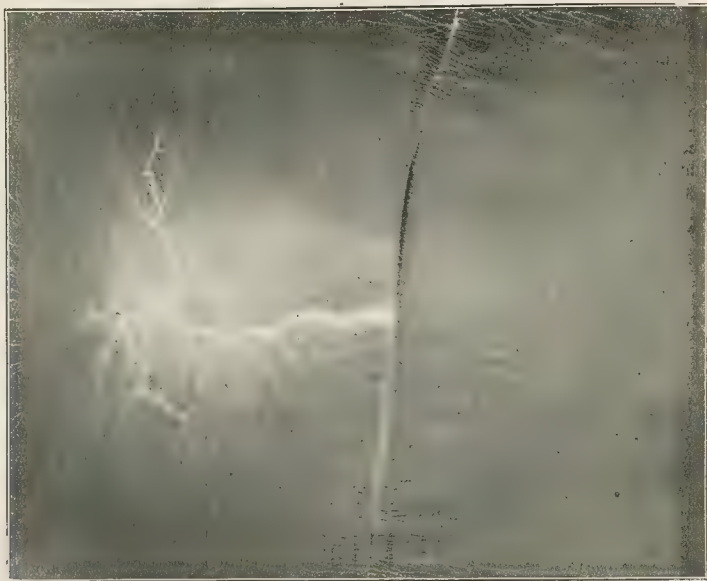


Fig. 4.—Electric Spark. Steel Wire laid across Plate.

the switch-handle is to turn it over towards one of its contacts till the circuit is nearly completed; the circuit can then be very quickly turned on and off again, as the handle has only to be moved about a quarter of an inch. When using a Wims-hurst machine the spark can be sent across the plate by swinging one of the terminals rapidly towards and past the other (which is kept stationary over the plate), a spark will then be sent across the film.

In taking spark photographs, the great object is to obtain an image which reproduces the numerous streamers or radiations proceeding from the track of the chief spark or series of sparks. These minor branches give a very striking appearance to the image, and form into shapes not unlike ferns or palms. An endless variety of picturesque formations is supplied by the electric spark, and every impression taken has its own peculiarities and beauties. The form and style of the sparks are altered to a large extent by the kind of terminals that are used, and the changes can be rung indefinitely on knobs, points, cups, and discs, as they all assist in giving variety to the images produced on the photographic plate.

It is not always an easy matter to get a brilliant spark just as the plate is placed ready for exposure, and several experiments should be made over a spoilt plate before an exposure is made. If an induction coil has been "sparking" for several minutes it is sometimes difficult to get a strong flash; in this case the coil should be "rested" for five minutes, and it will then be found to work more energetically. For developing the image, an energetic developer, such as amidol or metol, should be used, as the less exposed portions of the picture are more easily developed, and the contrasts between the dark and light portions of the image are not so harsh.

The first illustration shows the effect of an electric spark on the photographic film. It will be observed that the principal flash went in the direction of the thumb that was holding the plate; the thumb-mark is plainly visible. A fine number of streamers are sent off from the main line of the spark. In taking this picture the plate was held just below the terminal knobs.

In Fig. II. the plate was held between the terminals; the



Fig. 5.—Electric Spark. Iron Filings on Plate.

sh in this case struck the plate in the centre, giving off several "splashes" round the point where it came in contact with the plate. As a rule, when the plate is held perpendicularly between the terminals, the spark is conducted over the edges of the plate, but in this case the centre of the plate received the discharge.

Fig. III. shows the effect of laying a magnet on the plate. The magnet was placed obliquely between the terminals. The spark struck both ends of the magnet, and a thin white line down each side of the steel shows the path taken by the current. A steel wire was laid across the plate when the impression produced in Fig. IV. was taken. The wire intercepted the spark which ran along to both ends of the wire, branching out on each side.

Fig. V. is a reproduction of a plate on which iron filings

only plate in this series of spark photographs in which reversal occurs.

The writer tried the effect of soaking the plate for a few seconds in a weak solution of sulphuric acid and water, and exposed the plate while still wet to the electric discharge. The image developed as a broad band of irregular form, without branches or radiations of any kind.

The effect of soaking the plate in water and exposing while still wet is to reduce the radiating tendency of the spark, but not to the same extent as when sulphuric acid is added to the water. If a coin or any piece of metal with an embossed surface is placed on the plate and subjected to the electric discharge a crude representation of the design on the metal will appear on the plate when developed.

J. I. Pigg, F.R.M.S.

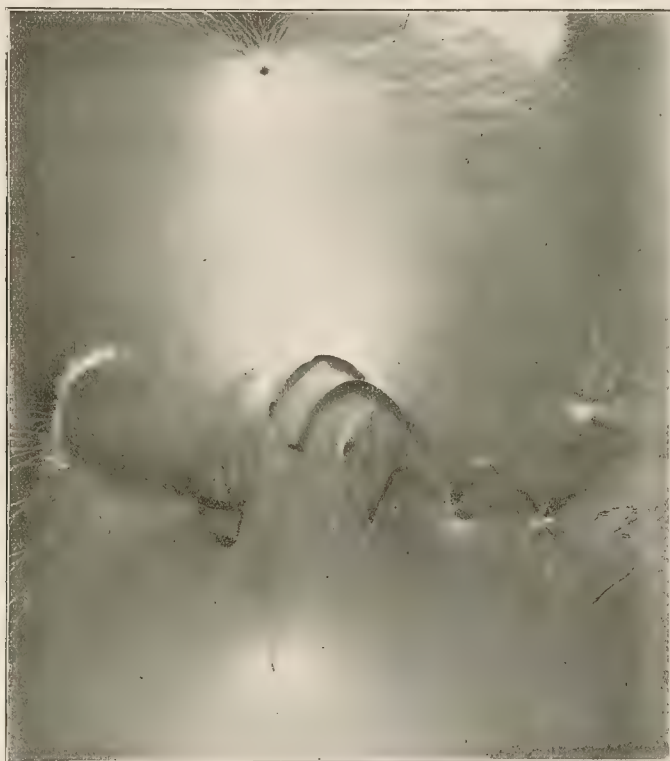


Fig. 6.—Electric Spark. Copper Turnings on Plate. Reversal Spot at Top of Picture.

been scattered; the iron filings give the spark a serrated edge and a thicker line; the radiations or streamers are suppressed by the presence of the iron, though they occur in the corner of the plate where the iron was not placed. When this experiment is made the iron must be carefully brushed off the plate before development, as each particle of iron that remains on the plate during development produces a black spot on the print. An interesting result is produced by placing a few paper shavings on the plate between the terminals. Fig. VI. shows the effect of the copper turnings on the electric spark. The discharge is conducted along the copper and radiates from various points. A curious effect will be noticed in this plate: at the spot where the spark struck the film reversal took place, and a black spot appears on the print. This is the

ARTHUR ALBERT COLLINS, a photographer, about forty years of age, shot himself at Dane's Inn, last week. A five-chambered revolver, with four chambers discharged, was picked up near the body. The man was removed to King's College Hospital, where he was found to have been wounded in the head, while another shot had penetrated the chest just under the heart. He now lies in a critical condition.

PINACHROME.—Dr. König, of the well-known dye manufacturers Meister, Lucius, and Brünig, who introduced orthochrom T., has discovered another cyanine, which is stated to be far superior to any other red sensitiser. It is stated in a German trade organ that the exposures for a trichromatic portrait in the studio with a cloudy sky and lens working at $f/7$ amounted to five seconds in all, whilst under similar conditions orthochrom T-plates required fifteen seconds and ethyl red plates twenty seconds.

LIGHT FILTERS FOR TRICHOCHROMATIC PHOTOGRAPHY.

Dr. E. KÖNIG gives in the current number of the "Photographische Mittheilungen" very precise directions for the preparation of dry colour filters for three-colour photography which have been specially adjusted for plates sensitised with orthochrom T.

Well-polished plate glass of about 1.2 mm. thickness should be cleaned by immersion in diluted hydrochloric acid, well washed, and then carefully polished with alcohol and ammonia. A carefully levelled slab of same size must be provided on which the plate glass when coated must be placed to set.

An 8 per cent. solution of gelatine should also be made, and after the dyes have been added the mixture should be filtered and poured on the plate glass, allowing 7 cm. to every 100 sq. cm. of surface, spreading the same with a bent glass rod if necessary.

Great stress is placed by Dr. König on the necessity of using perfectly pure dyes, such as are supplied by Meister, Lucius, and Brünig.

VIOLET FILTER.

Crystal violet	...	...	...	...	4 g.
Distilled water	...	...	...	...	100 cc.
Glacial acetic acid	...	...	...	...	5-6 drops.

Of this solution 6 cm. should be added to 100 cm. of gelatine solution.

GREEN FILTER.

Tartrazine	...	...	...	...	3 g.
Patent blue	...	...	...	...	6 g.
Distilled water	...	...	...	...	330 cm.

Dissolve by the aid of heat, and add 4.5 cm. to 100 cm. of gelatine solution.

This filter transmits the green, and dampens the yellow and blue, and absorbs orange and red, all except a narrow strip at the extreme edge of the spectrum, which Dr. König states, contrary to several authorities, to be quite innocuous. This narrow strip of red can be absorbed by the use of naphthol green, but at the expense of a prolonged exposure. Such a filter is—

Naphthol green	...	...	...	...	4 g.
Patent blue	...	...	...	...	6 g.
Tartrazine	...	...	...	...	2.5 g.
Distilled water	...	...	...	...	400 cm.

Dissolve by the aid of heat, and add 5 cm. to 100 cm. of gelatine solution.

RED FILTER.

Dianil red	...	...	...	...	5 g.
Distilled water	...	...	...	...	200 cm.

5 cm. of this should be added to 100 cm. of gelatine solution.

For making the light screens for the chromoscope for triple projection the following are used:—

BLUE VIOLET FILTER.

Crystal violet	...	...	...	...	3 g.
Methylene blue (free from zinc chloride)...	...	...	...	...	1 g.
Distilled water	...	...	...	...	100 cc.
Glacial acetic acid	...	...	...	...	5-6 drops.

Dissolve by the aid of heat; 7.8 cm. of this should be added to 100 cm. of gelatine solution.

GREEN FILTER.

Tartrazine	...	...	...	...	6 g.
Patent blue	...	...	...	...	1 g.
Distilled water	...	...	...	...	140 cm.

Dissolve by the aid of heat, and add 7.8 cm. to 100 cm. of gelatine solution.

RED FILTER.

Tartrazine	...	...	...	...	4 g.
Rose bengal	...	...	...	...	3.5 g.
Distilled water	...	...	...	...	150 cm.

and add 7.8 cm. to 100 cm. of gelatine solution.

To make the screens two similarly coloured glasses are always used, and they should be gently warmed and a few drops of purified Canada balsam (Merck, Darmstadt) should be placed on one glass, and then the other gently lowered to it, and the two should be placed on a levelled slab with one or two pieces of paper placed on top under a weight of about $\frac{1}{2}$ kilo, and left in a warm place for several days. E. J. WALL.

New Book.

"Die Photographische Kunst im Jahre 1903." Verlag von Wilhelm Knapp, Halle a/S.

Those who wish to form some idea of the tendency of photographic art in Germany, France, America, Great Britain, etc., would do well to consider the reproduction of a large number of selected photographs brought together in this work. Rather more than one hundred specimens have been reproduced, and they give a satisfactory impression of the work which attracted most attention in the past year. The composition and technique of some are excellent, but others are so crudely conceived and common-place that they are scarcely worthy of the dignity the pages of this work confer upon them. Yet as a mirror of the past, it is perhaps wise to include them. A series of papers, by persons well known in the photographic world, deals with subjects appropriate to the publication. The illustrations and typography are of the high standard to which we have so long been accustomed in the works brought out by this publisher.

ON THE CONSTITUTION OF REDUCING SUBSTANCES CAPABLE OF DEVELOPING WITHOUT THE ADDITION OF ALKALI.

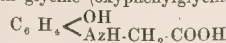
THE property possessed by certain reducing substances of permitting development of the latent image without the use of alkali—simply by the presence of sulphite of soda—has only yet been noted in a small number of cases; while the relation existing between this property and the constitution of the bodies possessing it, has not up to the present, been shown in a sufficiently precise manner.

In a former study¹, published about ten years back, we had originally thought it possible to conclude that the only bodies able to develop without alkali were those containing a double developing faculty. We have since found that certain substances containing this faculty only singly may also possess that property. In the present study we propose to complete our first experiments by seeking on the one hand the substances permitting development by the sole addition of sulphite of soda, and, on the other hand, examining the conditions which furnish in this case the developing faculty.

We first tried those substances which contain only the single developing faculty. We know that this faculty depends on the presence in the same aromatic combination of two oxyhydril groups (two amidogen groups or one oxyhydril and one amidogen group substituted either in para or ortho.²

When the developing faculty contains only oxyhydrils, the reduce appears to be capable of acting only in presence of alkalies. This is the case with hydroquinone and pyrocatechin. It is not so, however, with bodies whose developing faculty contains one or two amidogen groups; for instance, paramidophenol, orthoamidophenol, para phenylene diamine, Orthophenylene diamine, Orthotolylene diamine are capable of developing the latent image when dissolved in water to which sulphite of soda has been added.

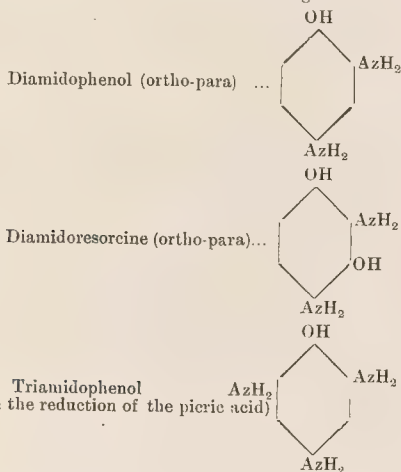
If the amidogen group or groups be substituted by alkaline residues the property appears to remain. Thus, Methylparamidophenol (metol), dimethylparaphenylene diamine can develop without the addition of alkali. On the other hand, however, the developing energy is considerably reduced if the amidogen group is replaced by an acid residue, as in glycine (oxyphenylglycine),



¹ A. and L. Lumière. Bulletin of the Société Française de Photographie, 1893.
² A. Lumière. Bulletin of the Société Française de Photographie, 1893.
Andersen. Photographische Correspondenz, 1892.

When the reducing compound contains the double developing faculty, and this faculty is formed exclusively by phenolic oxyhydrils, we find that these substances develop the latent image without alkali; but the image appears much too slowly for this method of development to be of practical use.

Such is the case with pyrogallol acid and oxhydroquinone. These substances in solution with sulphite of soda have considerably weaker developing power than compounds containing a single developing faculty, but with an amidogen group. If amidogen groups are substituted at the same time as the oxyhydrils in a reducing compound containing the double developing faculty, the developing property appears with notably greater activity than if it has only a single developing faculty. To this class of substances belong



These compounds are utilised in the chlorhydrate state, but immediately they come in contact with sulphite of soda the base is freed, with formation of chloride and bisulphite of soda. It is, therefore, the base which acts, as in the case of developers containing the single developing faculty. Their developing power is sufficient to permit of their practical use in solution in water to which alkaline sulphite is added. The increase in number of amidogen groups in the same combination seems to augment the property of developing without alkali. Thus triamidophenol (arising from the reduction of picric acid) is more energetic than diamidophenol. Its developing properties, however, cannot be utilised practically, owing to the production of oxydization which occurs during development, and which ends to a reaction inverse to that of development.

We have found that not only these substances containing the double developing faculty with amidogen groups, but also other compounds can be used practically to develop the latent image without alkali.

These are combinations of developers having an acid faculty with those of a basic function, of which metoquinone (quinomet) is a representative. We endeavoured to find what conditions fulfil the two terms of the combination in order that it may possess the property of developing without alkali. The various cases which may be presented are the following:—

- (1) Combination of a developer having a phenolic faculty with a basic or developing substance.
- (2) Combination of a developer having an amine faculty with a substance of a non-developing phenolic faculty.
- (3) Combination of a developer having a phenolic faculty with a developer of an amine faculty.

In the first class of substances, we tested the combinations of hydroquinone with different aromatic bases, particularly aniline, fluidine, quinoline, and found that none of these combinations could practically develop without alkali.

If in these combinations hydroquinone is replaced by other phenolic developers, such as pyrocatechin, pyrogallol acid, containing a single double developing faculty, the products obtained do not work in simple solution in sulphite of soda.

In the second class of substances, we examined the action of a

series of combinations between paraphenylene, diamine, and non-developing phenolic compounds such as phenol, resorcin, orcin, combinations whose preparations we have previously indicated.¹

All these substances slowly develop the latent image in the absence of alkali, but this property is incapable of practical utilisation.

Finally, all the combinations of the third class—viz., those of a developer having a phenolic faculty with another of an amine faculty—that we have assayed, act without alkali, and when sufficiently soluble in solutions of alkaline sulphite, they can be used practically.

Amongst these are all the combinations of paraphenylene, diamine, with hydroquinone (hydramine), and with pyrocatechin, but their slight solubility in solutions of alkaline sulphite prevents their practical employment. In fact, only greatly diluted solutions of very weak developing power can be prepared with these substances.

The combination of methylparamidophenol and hydroquinone (metoquinone, or quinomet), more soluble than the foregoing, enables an energetic developer to be prepared by simply dissolving in water to which alkaline sulphite has been added.

The reducing power of these developers is apparently weaker than that of substances containing the double developing faculty, such as diamidophenol. On the other hand, their developing energy may be increased by the addition of carbonate alkalies, even caustic, and this property used practically, which is not the case with developers of a constitution analogous to that of diamidophenol.

CONCLUSIONS.

The preceding study enables us to draw the following conclusions:—

- (1) In order that a substance may be able to develop the latent image without the addition of alkali, in the presence of alkaline sulphite, it needs only to contain a single developing faculty, one of the groups of which may be amidogen. This may be substituted or not, provided the substitution does not destroy the basic character of the amidogen. It is necessary also that the substance should be sufficiently soluble in alkaline sulphite.
- (2) If the substance contains only a single developing faculty, or if it contains this faculty doubly, but without the amidogen group, the property of developing without alkali is too feeble, especially in the latter case, to be practically used.
- (3) The reducing power is found to be considerably augmented in the case where there is the double developing faculty if this contains two amidogen groups. The developer may then be used practically without alkali.
- (4) The reducing power is found also to be augmented, although more feebly than in the preceding case, if the basic faculty or faculties of the developer be salified by the oxyhydrils of a phenolic compound itself possessing developing properties. The developer is then equally useful practically without the addition of alkali.
- (5) The salification of the basic faculty of a developer by the oxyhydrils of a phenolic compound possessing no developing properties, or the salification of the oxyhydrils of a developer having a phenolic faculty by an aromatic amine not containing the developing faculty, does not furnish in a single case compounds capable of developing practically without the addition of alkali.

A. AND L. LUMIERE AND A. SEYEWETZ.

MESSRS. EDMEDS AND Co., of The Photographic Works, Burchell Road, Peckham, S.E., in sending us their new price list of enlarging, printing, etc., ask us to state that they will be pleased to send any of our readers a copy on application.

THE Challenge Cameras.—Mr. J. Lizars, of Glasgow, is making the following offers in connection with his well-known Challenge Stand and Hand Cameras. A "Challenge" $\frac{1}{2}$ -plate camera, with Thornton-Pickard shutter with speed indicator, double dark slide, and three-fold tripod: the whole outfit, camera, lens, etc., for 80s., or the price of the lens only, which is of the symmetrical type, manufactured by Messrs. Ross, Limited. With each Challenge Dayspool sold until further notice there will also be presented a coupon entitling the purchaser to twenty shillings' worth of material, which may be ordered with the camera or, to ensure freshness, from time to time as may be required. Both these offers, which are fully described in the advertisement pages of last week's JOURNAL, are available for a limited period only.

¹ Bulletin of the Société Française de Photographie, 1899 (p. 31).

THE BARNET PHOTOGRAPHIC COMPETITION.

WE have decided, write Messrs. Elliott and Son, in "The Barnett Photographic Record," to hold a competition open to all users of "Barnet" products, amateur and professional, and are offering the sum of £500 in cash as prizes to the winners. The judges will be Messrs. R. Child Bayley, Thomas Bedding, Arthur C. Brookes, and A. Horsley Hinton, editors respectively of "Photography," THE BRITISH JOURNAL OF PHOTOGRAPHY, "Focus," and "The Amateur Photographer." In any case of dispute the decision of the judges will be final. Competitors may enter for any class, or for all except the Junior and Colonial Classes, which are subject to special restrictions, and any number of entries may be submitted, but each entry must be accompanied by a separate coupon, which will be found only in each packet of "Barnet" plates, papers, films, etc. The same print cannot be entered in more than one class, nor can any competitor obtain more than one prize in each class. The prints must be mounted, but not framed, and the coupon must be securely attached to the back. The prints sent in will not be returned unless this is expressly desired, and postage included with them for the purpose. Every care, we need hardly say, will be taken of the competitors' prints, but we cannot hold ourselves responsible for their safety. All the successful prints and their negatives will become our property (except in Class 9, Lantern Slides). In this one we reserve to ourselves the right of purchasing any one negative or more at the rate of 10s. 6d. each negative. The last day for receiving prints will be December 31st, 1904. Entries may be sent in any time prior to that date, but it must be distinctly understood that the competition will definitely close then, and no postponement will be made under any conditions. The results will be published in the "Record" and in the photographic press. Should the quality of work or number of prints submitted in the Classes 4, 16, and 17, Portraiture and Enlargements, be insufficient, in the opinion of the judges to warrant the awarding of the prizes, it will be left to their discretion to apportion the amount set aside to extra awards in other classes.

LIST OF PRIZES.

Class 1.—First prize, £10; second prize, £5; third prize, £3; fourth prize, £1. Class 2.—First prize, £10; second prize, £5; third prize, £3; fourth prize, £1. Class 3.—First prize, £10; second prize, £5; third prize, £3; fourth prize, £1. Class 4.—First prize, £20; second prize, £10; third prize, £5. Class 5.—First prize, £10; second prize, £5; third prize, £3; fourth prize, £1. Class 6.—First prize, £10; second prize, £5; third prize, £3; fourth prize, £1. Class 7.—First prize, £10; second prize, £5; third prize, £3; fourth prize, £1. Class 8.—First prize, £10; second prize, £5; third prize, £3; fourth prize, £1. Class 9.—First prize, £5; second prize, £3; third prize, £2; fourth prize, £1. Class 10.—First prize, £10; second prize, £5; third prize, £3; fourth prize, £1. Class 11.—First prize, £10; second prize, £5; third prize, £3; fourth prize, £1. Class 12.—First prize, £10; second prize, £5; third prize, £3; fourth prize, £1. Class 13.—First prize, £10; second prize, £5; third prize, £3; fourth prize, £1. Class 14.—First prize, £10; second prize, £5; third prize, £3; fourth prize, £1. Class 15.—First prize, £5; second prize, £3; third prize, £2; fourth prize, £1. Class 16.—First prize, £10; second prize, £5; third prize, £3; fourth prize, £1. Class 17.—First prize, £10; second prize, £5; third prize, £3; fourth prize, £1. Class 18.—First prize, £5; second prize, £3; third prize, £2. Class 19.—First prize, £10; second prize, £5; third prize, £3. There are fifteen additional prizes of half-a-guinea each in each class except No. 4. In No. 4 there are seven additional prizes each of £1.

LIST OF CLASSES.—GENERAL CLASSES.

Class 1.—Hand Camera Work: One print on any of the "Barnet" papers, from a negative made on any of the "Barnet" plates or cut films in any hand camera.

Class 2.—Landscapes or Seascapes: One print on any of the "Barnet" papers, from a negative made on any of the "Barnet" plates or cut films of any size.

Class 3.—Instantaneous Work: One print on any of the "Barnet" papers, from a negative made on any of the "Barnet" plates or cut films of any size. The subject must have some indication of motion.

Class 4.—Portraiture and Figure Studies: One print on any of the "Barnet" papers, from a negative made on any of the "Barnet" plates or cut films of any size.

Class 5.—Still Life, Fruit, Flower Studies, etc.: One print on any

of the "Barnet" papers, from a negative made on the "Barnet" orthochromatic plate of any size.

Class 6.—Architecture: One print on any of the "Barnet" papers, from a negative made on any of the "Barnet" plates or cut films of any size.

Class 7.—"Barnet" Roll Films, $3\frac{1}{2}$ by $3\frac{1}{2}$ and under: One print on any of the "Barnet" papers, from a negative made on "Barnet" roll films, size $3\frac{1}{2}$ by $3\frac{1}{2}$ and under.

Class 8.—"Barnet" Roll Films, all sizes over $3\frac{1}{2}$ by $3\frac{1}{2}$: One print on any of the "Barnet" papers, made from a negative on "Barnet" roll films, all sizes over $3\frac{1}{2}$ by $3\frac{1}{2}$.

Class 9.—Lantern Slides: For sets of six lantern slides, made on "Barnet" lantern plates, showing the best range of colours.

Class 10.—"Barnet" Bromide Papers: For sets of three prints on any grade of "Barnet" bromide paper (toned or untoned) of any size or subject, from negatives made on "Barnet" plates or films.

Class 11.—"Barnet" Self-Toning Paper: For sets of three prints, either glossy or matt, of any size or subject made on "Barnet" self-toning paper, from negatives on "Barnet" plates or films.

Class 12.—"Barnet" Gaslight Paper: For sets of three prints, either glossy or matt, of any size or subject made on "Barnet" gaslight paper, from negatives on "Barnet" plates or films.

Class 13.—"Barnet" Carbon Tissue: For sets of three prints in any colour, of any size or subject, on "Barnet" carbon tissue and transfer papers, from negatives made on "Barnet" plates or films.

Class 14.—"Barnet" P.O.P.: For sets of three prints, either glossy or matt, of any size or subject, made on "Barnet" P.O.P., from negatives on "Barnet" plates or films.

Class 15.—"Barnet" Post-Cards: For sets of three prints of any grade or subject, on "Barnet" Postcards, from negatives made on "Barnet" plates or films.

Class 16.—Bromide Enlargements.—For enlargements of any size and any subject, on "Barnet" bromide paper of any grade (toned or untoned), from a negative made on a "Barnet" plate or film.

Class 17.—Carbon Enlargements.—For enlargements of any size and any subject, on "Barnet" carbon tissue and transfer paper of any colour, the original to be made on any "Barnet" plate or film. A print from the original negative should accompany each enlargement. Enlargements must not be worked up; ordinary spotting only is allowed.

SPECIAL CLASSES.

Class 18.—Junior Photographers: Competitors must be under the age of 16. The age must be entered on the coupon. One print of any subject and any size, on any of the "Barnet" papers, from a negative made on any of the "Barnet" plates or films.

Class 19.—Colonial (British): For Colonial (British) photographers only, both amateur and professional. A set of three prints on any of the "Barnet" papers, from negatives made on any of the "Barnet" plates or films, of any subject and any size. Colonials may enter for other classes, in addition to special classes.

THE AFFILIATION PRINT COMPETITION, 1904.

THE Executive Committee are pleased to report that 285 prints, by 124 members of 28 societies, were entered for the Print Competition. The Committee regret that not more than nine societies competed for the three certificates of distinction by inducing a minimum of six of their members to enter the competition, as set forth in the prospectus. The entries of these societies reached, however, a total of 178 prints by 82 members. The decision to reduce the maximum number of prints per competitor from six to three has been amply justified. It threw upon the competitors themselves and their societies, instead of upon the judges, the duty of eliminating the less promising work, the judges being spared much unnecessary trouble and loss of time. The judges have made the following awards:—

PLAQUES.

"A Village Belle," Mrs. G. A. Barton (Birmingham Photographic Society); "Evening," G. H. Capper (Hackney Photographic Society); "The Foreman," T. Fitzgibbon Forde (Sunderland Photographic Association); "In Arcady," E. T. Holding (West London Photographic Society); "At the Smithy," Edgar G. Lee (Newcastle-on-Tyne Photographic Association); "A Wind Sea," F. J. Mortimer (Southsea Photographic Society).

CERTIFICATES OF DISTINCTION.

(1) Hackney Photographic Society; (2) West Surrey Photographic Society; (3) Sheffield Photographic Society.

Some fifty prints are being retained for exhibition at 66, Russell-square, on the recommendation of the judges, and a selection of these will be framed and circulated amongst the affiliated societies. It is impossible to state how long the prints will be wanted by the committee for purposes of circulation, but it is probable that they will be in considerable demand for some two years. It is intended to give in the printed catalogue the prices, where obtainable, at which unframed replicas can be obtained. The committee expect to be in a position to circulate the prints as from September 1st, 1904.

LIST OF PRINTS RETAINED FOR EXHIBITION AT 66, RUSSELL-SQUARE.

A selection from these prints will be framed and circulated amongst the societies.

Birmingham Photographic Society.—"Ave Maria," Mrs. G. A. Arton; "Evening," P. Bale Rider.

Cambridge and District Photographic Society.—"Norman Work—Contrast," Rev. H. R. Campion; "A Fruit Study," H. W. Chapman; "In an Elizabethan House," Rev. H. R. Campion.

Coventry Photographic Club.—"Pond Lilies," W. H. McLauchlan.

Hackney Photographic Society.—"An Autumn Day," G. H. Capper; "Across the Nave, Winchester," S. C. Stean; "Refuse Carts," Walter Life; "Ambulatory, Gloucester Cathedral," A. W. Cook; "Towing a Barge," W. A. I. Hensler; "Marguerites," William Rawlings; "The Edge of the Wood," S. C. Stean; "The Mill by the Creek," J. Westcott; "Whitby Harbour, Winter," W. Rawlings; "Coal Pit," Oliver G. Pike; "The Blind News-vendor," Frank E. Roope; "A Stormy Sunset," W. A. I. Hensler; "Alas! Alas! for the Winter Snows," W. Rawlings; "Harvesting," S. C. Stean; "Clapton Pavement," G. H. Capper.

North Middlesex Photographic Society.—"A Deserted Mill," S. E. Hall; "A Figure Study," A. G. Lawson.

Nottingham Mechanics' Institution Camera Club.—"From Darkness to Dawn," A. Marshall; "My Little Dutch," Arthur Marshall; "A Pillar of the Church," Arthur Marshall.

Plymouth Photographic Society.—"A Gleam of Light," W. Clayden.

Preston Scientific Society.—"Design for a Frieze," Miss Alice Arden; "On the Moselle," W. Phillips; "The Torrent," James Shyby.

Redhill and District Camera Club.—"Toil and Moil," T. Percival Edwick.

Sheffield Photographic Society.—"The noon of autumn's flow, When soft and purple mist, like a vap'rous amethyst, fills the overlaiden sky," Thomas U. Simonson; "The Solemn Stillness of the Wood," Thomas U. Simonson; "Wild Flowers of the Meadow," Hugh G. Person.

Southsea Photographic Society.—"In the Height of the Storm," J. Mortimer.

Sunderland Photographic Association.—"A Portrait Study," T. Higginson Forde.

West London Photographic Society.—"A River Scene," Leslie B. Holding; "Portrait Study," M. W. Cockerell; "When the Wind Blows," Bert E. Cockerell; "Fisher Boys, Dieppe," E. Walker; "Brian," T. Holding; "Recollections," E. T. Holding.

West Surrey Photographic Society.—"A Wet Day," F. G. Tryhorn; "Leaving the Jetty," W. T. Marriott; "Autumn Sunbeams," F. G. Tryhorn; "In the Old Church," F. G. Tryhorn.

MR. WILLIAM E. GRAY, F.R.P.S., of 92, Queen's Road, Bayswater, writes:—I have just received from the Lord Chamberlain a Warrant appointing me "Fine Art Photographer to his Majesty King."

THAMPTON Camera Club.—On the 7th inst., Messrs. Geo. R. and A. C. Berry gave an illustrated lecture entitled "A Photographic Tour Round the Isle of Wight." The lecture was conducted largely to the least frequented portions of the coast between Freshwater Bay and St. Catherine's Point. The Chines at Chilton, and Atherfield were described as appearing in their natural beauty, being as yet practically untouched by the hand of man. A good tribute was also paid to the beautiful lighthouse at St. Catherine's Point.

THE PHOTOGRAPHIC ASSOCIATION.

THE Official Receiver in Companies Winding-up has now issued particulars under this liquidation, from which it appears that the statement of affairs as regard creditors shows gross liabilities amounting to £7,224 13s. 5d., of which £5,274 13s. 5d. is expected to rank against the estate for dividend. The assets are returned at £1,950, but these are all claimed by the debenture holders, so that the nett assets are nil, and the deficiency £5,274 13s. 5d. As regards contributions, the total deficiency is £18,626 13s. 5d. The following is an extract from the report and observations of the Official Receiver:—

OBSERVATIONS.

The winding-up order was made on December 1st on a petition presented on November 19th, 1903, by John Done and Company, creditors for £83 17s. for goods. The Company, which was promoted by William John Le Couteur, was registered on February 16th, 1899, with a nominal capital of £25,000 in shares of £1 each. It was formed to carry into effect a provisional agreement, dated February 1st, 1899, between Le Couteur, as vendor, and T. E. Peet, as trustee, for the intended Company, which was to carry on a photographic club and deal in photographic requisites. The business was originally started by Le Couteur in February, 1896, at 14, 16, and 18, Brook-street, Hanover-square. At the time of the formation of the Company Captain Henry Connop had a considerable interest in this business, having advanced £4,500. Captain Ralph P. Cobbold had also advanced £1,250. The property to be acquired by the Company consisted of the business, goodwill, copyright in films, benefit in agencies and contracts, interest in the leasehold premises at Brook-street, and freehold and leasehold premises at Hendon, the consideration for the whole being £20,000, payable as to £5,000 in cash and £15,000 in fully-paid shares. By a subsequent agreement, dated March 29th, 1899, the agreement of February 1st was adopted by the Company with the following modifications:—The property at Hendon was excluded, and payment of the £20,000 (which was not reduced) was to be satisfied by the allotment of 20,000 fully-paid up shares. The vendor was, however, to have the right to surrender 4,750 shares, and to call upon the Company to issue to him in lieu thereof 1,250 first "debenture shares" of £1 each, and 3,500 second "debenture shares" of £1 each. No prospectus was issued by the Company in relation to the issue of the ordinary share capital. By the books, which, as stated, have been imperfectly kept, it appears that the 20,000 fully-paid shares were allotted on or about April 29, 1899, to Le Couteur and his nominees as follows:—

Connop	...	...	...	...	...	...	10,000
Cobbold	...	...	...	...	...	...	5,000
Le Couteur	...	...	...	...	...	...	4,400
William Beatty	...	...	...	...	...	...	100
J. S. Harvey	...	...	...	...	...	...	500
							20,000

According to the Company's register of members, allotments of 1,852 shares for cash have been made, making a total issue of 21,852 shares. On June 17th, 1899, the Board, in pursuance of a written notice from Le Couteur that he elected to surrender 4,750 shares in accordance with the agreement of March 29th, 1899, issued a debenture to Cobbold for £1,250 as Le Couteur's nominee. It is stated that a second debenture for £3,500 to Connop was issued at the same time, but no reference is made to it in the minutes. The register of members does not record that any of the 20,000 shares which were issued as fully paid have, in fact, been surrendered, but entries have been made in the private ledger purporting to show that £8,500 shares have been surrendered, and the statement of affairs consequently returns the number of shares outstanding as only 13,352. The debenture for £1,250 was repaid by instalments extending from February, 1900, until March 27th, 1901, out of advances obtained from Barclay and Company, bankers, and on May 1st, 1901, a debenture for £1,250 was given to them which on October 17th, 1902, they assigned to John Crow Richardson (since deceased) on his paying off their loan. On September 29th, 1902, at a directors' meeting at which Connop, E. E. Richardson, and Wilson Burgess were present, resolutions were passed for the issue of (a) £3,000 first mortgage debentures, out of the proceeds of which the existing debenture for £1,250 and interest was to be paid off and cancelled, and (b) £3,000

second debentures. Debenture bonds for £1,250 were given to Richardson apparently in exchange for the debenture which he had acquired from Barclay and Co., which, however, he did not surrender. On July 31st, 1903, Mr. Edwin Hayes, of 28, Basinghall-street was appointed Receiver of the Company's business and property by the Court, on behalf of the debenture holders, and on November 23rd, 1903, an order was made for him to sell the whole of the Company's assets, exclusive of book debts, for a sum of £450. The sale has been carried out, and the purchaser is in possession. The only balance-sheet issued was as at January 31st, 1902. An approximate balance-sheet which was subsequently prepared, as at June, 1903, but was never issued, showed that there had been a total loss of £2,966 1s. 8d. since the formation of the Company.

Exhibitions.

BRECHIN PHOTOGRAPHIC EXHIBITION.

On Saturday the Brechin Photographic Association opened an exhibition in the Corona Hall, Brechin. The walls are draped with canvas, surmounted by a frieze, which displays at intervals names of photographic historical interest, amongst these we noticed that of Traill Taylor, the predecessor of the present occupant of the B.J. editorial chair. The wall is divided into panels by strips of wood stained green, and each class is indicated by an artistic plaque modelled by Mr. David Waterston, A.R.E., Brechin, who has been the guiding spirit in the scheme of decoration.

The committee, with Messrs. J. Kirk and Wm. Lamont, exhibition secretaries, and Mr. J. C. Robertson, convener of the hanging committee, have spared no work to make their exhibition a success, and the complimentary criticisms bestowed on it at the opening ceremony must have gone far to alleviate the fatigue of their labours.

The judges were Messrs. J. Craig Annan, Glasgow; Wm. Crooke, Edinburgh, and David Waterston, A.R.E., Brechin. The awards are all of one value, viz., bronze plaques specially designed by Mr. Waterston. These were left to the discretion of the judges, and it is evident that the quality of the exhibition met their approval as they awarded in all twenty-one plaques. Four gentlemen were awarded two each, to wit, James Patrick, Edinburgh; Arthur Marshall, Nottingham; J. C. Robertson, and J. Kirk, Brechin.

At the opening ceremony Mr. R. W. Duke, vice-president, presided, and introduced Mr. Wm. Shaw Adamson, president, who briefly declared the exhibition open. There was a large attendance of the notables of the district.

The exhibition will remain open for a week, and a complete series of evening entertainments has been arranged.

The entries forward number 432, including invitation exhibits from Mr. J. Craig Annan, Glasgow; Mr. Wm. Crooke, Edinburgh; Mr. Alex. Keighley, Keighley; and four prints, the work of D. O. Hill, kindly lent by Mr. J. Craig Annan. Mr. Waterston has also sent a representative exhibit of his etchings and mezzotints.

Trade exhibits are displayed by Kodak Ltd., London; W. Watson and Sons, London; A. H. Baird, Edinburgh; Geo. Houghton and Sons, London; Wm. Middlemiss, Bradford; Elliott and Sons, Barnet; Wellington and Ward, Elstree; Burroughs, Wellcome, and Co., London; John J. Griffin and Sons, London; J. Lizars, Glasgow; W. Lamont, Norman Anderson, Steele, and A. C. Milne, Brechin.

The exhibition as a whole contains much good work, and the committee have been successful in securing exhibits from many leading workers on both sides of the Border. The judges have evidently considered the open portraiture and open lantern slides classes the strongest (the portraiture received most support it having 101 entries); as to each of these classes they have awarded four plaques, but the open landscape is undoubtedly a strong class, and includes, over and above the two pictures awarded plaques, splendid work, much of it previously medalled. The Federation Associates' class filled well and was a worthy exhibit, which is satisfactory considering that it was the first of its kind held in the country.

The members are to be congratulated on the work exhibited in the members' class that much of it was quite fit to rank in open competition is shown by the fact that Mr. J. C. Robertson took two plaques in the other sections.

The full list of awards is as follows:—

Class I.—Landscape, Seascape, and River Scenery (Open).—"Shepherd's Care" (218), James Patrick, Edinburgh; "The Birch Tree" (264), E. W. Prevost, Ross, Herefordshire.

Class II.—Portraiture, Genre, and Figure Studies (Open).—"The Evening of Life" (73), James Patrick, Edinburgh; "In Pensive Mood" (77), John Spark, Perth; "My Little Dutch" (79), Arthur Marshall, Nottingham; "Head of Old Lady" (85), John Terras Markinc.

Class III.—Animal Studies (Open).—"Springtime" (280), J. C. Robertson, Brechin.

Class IV.—Any subject, not included in preceding classes (open).—"The Chapel. Haddon" (172), Arthur Marshall, Nottingham; "Begonias" (190), D. W. Kyle, Edinburgh.

Class V.—Lantern Slides, Sets of Four (Open).—(384), Godfrey Bingley, Leeds; (389), F. G. Tryhorn, London; (390), Geo. Booth, Preston; (405), Lake Falconer, junr., Blairgowrie.

Class VI.—Confined to Associates of the Scottish Photographic Federation.—"Spring Sunshine" (113), J. C. Robertson, Brechin; "The Clouds Lay Cradled Near the Setting Sun" (116), A. W. Hill, Lochboisdale.

Class VII.—Landscape, Seascape, and River Scenery (Members).—"Closing Hours" (341), R. C. Dalgity.

Class VIII.—Portraiture, Genre and Figure Studies (Members).—"Practising" (358), J. D. Ross; "Declining Fires" (366), J. Kirk; "Modesty" (373), James Silver.

Class IX.—Any subject not included in Classes VII. and VIII. (members).—No award.

Class X.—Lantern Slides, Sets of Three (Members). (409), J. Kirk.

Class XI.—Best collective exhibit from any society included in the Scottish Photographic Federation. (Rule—secretaries of societies may enter any number of pictures, not less than five from Classes I, II, III, IV, and VI, but this must not include more than two pictures from one exhibitor. In awarding this prize the judges will be requested to take into consideration the strength of the competing societies). Blairgowrie and District Photographic Association.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

The fifteenth annual exhibition of the Society was opened to the public on the evening of Saturday, the 5th inst., when Sir Henry Trueman Wood, M.A., delivered the opening address. It will remain open until Saturday evening the 12th inst., when the Mayor of Camberwell will present the prizes to the successful competitors. The exhibition is held as on previous occasions at the Public Bath, Camberwell Green, S.E.

We were glad to find that a successful effort had been made to give the hall an aspect more in accord with an exhibition of work of art, and less the appearance of a fair, than it has presented on former occasions. The huge structure which constituted the stage for the lantern has been abolished, very much to the advantage of the scene, and except for the disturbing influence of the phonograph with its characteristic timbre, reminiscent of the steam-organ of the roundabout, and the primitive decorative efforts of some of the stall holders, the arrangements were as well calculated to make the show attractive as the architecture of a public swimming bath would allow. It certainly adds to the comfort of visitors, particularly those who are more interested in the pictures than the lantern exhibition, and whose only opportunity of viewing them is in the evening, to hold the lantern show in a separate hall, thus avoiding turning down the lights in the exhibition itself. A word of praise is due to those responsible for the hanging and arrangement of the pictures. A new covering had been provided for the screens, of appropriate tint and a neat moulding in place of coloured drapery, with the result that the pictures themselves were better displayed. Greater care than usual seemed to have been taken in arranging the pictures on the screens, and, altogether, the Society appears to have recognised that to keep the place it has won for its exhibition, it must best itself.

In portraiture, etc., the work of the members does not seem to improve as it should. Most of it is of the casual kind that has characterised this and other Society exhibitions in the past, and few of the exhibitors have attempted the constructive in the treatment of their subjects. The picture by Harold Moore, which

ceived the first award, although a pleasing portrait, hardly rises beyond the level of the average studio work of a good professional photographer, and is on the accepted orthodox lines. The head of a girl, by G. J. T. Walford, which the judges also distinguished, is better in its intention, but fails to be quite satisfactory, first, from the technical defect that the higher tones of the carbon print have washed up, leaving patches of white where delicate gradation is essential to harmony, and secondly, from the ill-chosen position of the figure in the picture. Better in many ways is the figure of the market woman, by the same author, but here a good subject is spoiled by the palpably artificial surroundings. In architecture a great deal of the work is commendable. A. Bedding's "Undercroft, Wells," is admirable, and in suggesting that the composition and balance of the picture would have been improved by the light from the windows stretching further across the picture, we are not suggesting that the photographer has failed in anything that came within his control. As it is, the picture will satisfy even keen critics of this class of work. C. H. Oakden's "Cathedral Interior," which receives the second award, is a commendable work. In striving after a subdued effect, however, the author has produced a degradation of tones which may be described as muddiness. Among many works which deserve praise are "The Open Door, St. Maclou," by F. W. Gregg; "The Eastern Crypt, Canterbury," by E. R. Bull, and "Llanthony Church," by J. T. French.

The landscape class contains not many works of distinction, but we made a mark against "Autumn," by W. H. Rogers; "Night's Prelude and Rolling Mists," by G. J. T. Walford; "A Sunny Day," by E. R. Bull; "Weary They Wend Their Way," by E. W. Taylor; "The Close of Day," by W. F. Slater; "By the Roadside," by W. E. Nicholls; "Across the Dens," by T. Moyser; "The Birchwoods," by E. P. Rogers; and "Bare are the Trees and Lingerin Lights," by W. Page.

It was with disappointment we viewed the small class for pictures, by members, which have been medalled during the year. "The Mowers," by E. W. Taylor is a sorry representative of the Society's triumphs.

The lantern slides, both in the members' and open classes, constitutes one of the strongest points of the exhibition in comparison with current work in photography. The entries are numerous, and a large proportion of the slides are of a very high standard of excellence. The Edwards Memorial Competition, instituted in memory of the late F. W. Edwards, President of the Society, for the best reproduction of a picture in colours, resulted in an easy victory for A. Bedding. It is an interesting competition, and it shows what differences of opinion there must be with regard to the tone value of colours. The judge of this competition was Mr. E. J. Wall. Another competition, which we think is a new feature in an exhibition, is one instituted for the best collective exhibit from a technical school. There were two entries, the Goldsmith's Institute and the Woolwich Polytechnic. In neither case do we think that the organisations concerned are to be complimented upon their efforts to demonstrate the results of the teaching. In both exhibits there are photographs which prudence would have withheld from public view, although we must also say these are examples of special applications of photography which are not without merit.

The open classes are fairly representative of the current work of the day, although the clashing of several exhibitions of importance has probably robbed the exhibition of some of the best photography that is going the rounds.

The judges were Messrs. H. W. Bennett, J. C. S. Mummery, and B. Wellington. In most of the awards the prize takes the form of a plaque in silver and bronze, specially designed. An illustration of the design appears in the catalogue. It appears to represent a male, scantily clothed, suffering unutterable agonies from some reason not apparent. Artistically, we hope it is not to be taken as standard of art knowledge of photographers generally.

THE AWARDS.

MEMBERS' CLASSES.—Portraiture: Silver plaque, Harold Moore; bronze plaque, G. J. T. Walford.

Architecture: Silver plaque, A. Bedding; bronze plaque, C. H. Oakden.

Landscape: Silver plaque, G. J. T. Walford; bronze plaque, W. Page.

Excursion Pictures: Bronze plaque, E. W. Taylor.
Lantern Slides: Silver plaque, E. R. Bull; bronze plaque, W. E. Nicholls.

Pictures Medalled between February 16th, 1903, and February 15th, 1904: Gold medal, E. W. Taylor.

OPEN CLASSES.—Portraiture: Silver plaque, Arthur Marshall; bronze plaque, F. W. Hicks; bronze plaque, F. J. Mortimer.

Architecture: Silver plaque, W. A. Clark; bronze plaque, P. W. Crane.

Landscape: Silver plaque, F. J. Mortimer; bronze plaque, C. E. Wanless; bronze plaque, D. M. Filshill.

Lantern Slides: Silver plaque, A. Bedding.

Stereoscopic Slides: Silver plaque, F. G. Tryhorn; bronze plaque, H. Wormleighton.

BEST PICTURE IN THE EXHIBITION.—Gold medal, F. J. Mortimer.

BEST COLLECTIVE EXHIBIT, TECHNICAL SCHOOLS.—Bronze plaque, Woolwich Polytechnic.

NOVELTY CLASS.—Bronze plaque, withheld.

BEST STALL.—Silver plaque, J. Lizars, Glasgow and London.

EDWARDS' MEMORIAL COMPETITION.—Bronze medal, A. Bedding.

FORTHCOMING EXHIBITIONS.

March 15-17.—Brentford Photographic Society.

March 15-19.—Arts and Crafts Exhibition (Shrewsbury).

March 22 to April 5.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.

March 25 to April 9.—Northern Photographic Exhibition. Hon. Exhibition Secretary, Chas. F. Inston, F.R.P.S., 25, South John Street, Liverpool.

April 6-13.—Croydon Camera Club. Hon. Exhibition Secretary, C. U. King, Hurst Bank, Selsdon Road, Sanderstead.

May 11-18.—Plymouth Photographic Society. Hon. Secretary, Wilfred Grist, 105, Old Town Street, Plymouth.

May 24-28.—Devonport Camera Club. Hon. Secretary, A. J. Catford, 78, Charlotte Street, Devonport.

THE ROTOX COMPETITIONS.

The following is a list of the prize winners in these competitions, for which over 3,000 prints were submitted. The judges were Messrs. Thomas Bedding, F.R.P.S. (Editor of *THE BRITISH JOURNAL OF PHOTOGRAPHY*); A. Horsley Hinton (Editor of "The Amateur Photographer"), and H. Snowden Ward (Editor of "The Photogram").

Class I. (Size 2½ by 3½).—Grade I.—First prize: Mr. Fred Fry. Second prize: Mr. Henry Hodge. Extra prizes: Mr. S. T. Vernon, Mr. Arthur Wood, Mr. Charles J. Desbottes, Mr. J. F. Gunn, Mr. H. Kerr.

Class I. (Size 3½ by 2½).—Grade III.—First prize: Mr. W. Gundry. Second prize: Mr. T. Harold Reade. Extra prizes: Mr. James A. Hall, Mr. Edgar James Richmond, Mr. P. R. Smith, Miss Ethel Ramonde, Mr. D. Steeves.

Class II. (Size 4-plate).—Grade II.—First prize: Mr. Edgar R. Bull. Second prize: Mr. M. P. Durn. Third prize: Mr. James Coster. Miss Ettie Collier, Mr. William Findlay, Mr. A. W. M. Dickins, Mr. H. Warren Hutchinson, Mr. James H. Saunders, Mr. James M. Browning, Mr. W. S. Fothergill, Mr. Edwin J. Philips, Mr. J. R. Batey, Mr. A. W. Cooper.

Class II. (4-plate).—Grade III.—First prize: Mr. A. W. Cooper. Second prize: Mr. L. Havenhand. Third prize: Mr. A. M. Walters. Miss Alice Armstrong, Mr. Robert Telfer, Mr. Samuel Swinden, Miss Ettie Collier, Mr. Edwin Carratt, Mr. Herbert Mills, Mr. Alfred Cracknall, Miss Sybil Aird, Mr. S. Elwin Neame, Mr. W. E. Walker. Special prize (10s. 6d.): Mr. Arthur Ashe.

Class II. (4-plate).—Grade VI.—First prize: Mr. Harry W. Witcombe. Second prize: Mr. J. Peat Millar. Third prize: Mr. D. G. Urquhart, Mr. D. M. Seven, Mr. A. W. Cooper, Miss Sybil Aird, Mr. W. James Coster, Mr. William Baker, Mr. W. Parkinson Curtis, Mr. W. Scott Elliott, Junr., Mr. H. Burley Mess, Mr. Paul Williams, Miss Isabel Purdon.

Class III. (Size 5 by 4).—Grade I.—First, second and third prizes. No prizes awarded. Mr. Harry J. Horton, Miss Ettie Collier, Mr. Walter Wilson, Mrs. Turnbull, Mr. John W. Pharez.

Class III. (Size 5 by 4).—Grade III.—First prize: Mr. James Shaw. Second prize: Mr. James Dunlop. Third prize: Mr. William Baldwin, Mr. W. G. Hill, Mr. John Vandle, Mr. Fred Judge, Mr. L. Havenhand, Mr. A. H. Almond.

Class III. (Size 5 by 4).—Grade V.—First prize: Mr. Herbert Bairstow. Second prize: Mr. Charles J. Reade. Third prize: Miss Sybil Aird, Mrs. J. Turnbull, Mr. Frank W. Gregg, Mr. Albert E. Burchett, Mr. Sam Swinden, Mr. G. A. Fowkes.

Class IV. (½ plate size).—Grade II.—First prize: Mr. Arthur Smith. Second prize: Mrs. K. R. Image. Third prize: Mr. V. C. Baird, Mr. Walter C. Gurney, Mr. A. W. Cooper, Mr. Robert Low, Mr. W. H. Mack, Mr. R. S. Park, Mr. Sam Swinden, Mr. Fred Blenkinsopp, Mr. F. W. Harrop, Mr. Fred Hartley, Mr. L. Havenhand.

Class IV. (½ plate size).—Grade III.—First prize: Mr. Stuart Elwin Neame. Second prize: Mr. Alfred Grumwood. Third prize: Mr. Robert Low. Extra £1 ls.: Mr. Arthur Smith, Mr. Herbert C. Hughes, Mr. John Smith, Mr. John J. Hartley, Miss Adys Curran, Miss Mordaunt, Mr. James V. Banks, Mrs. G. Barton, Mr. Herbert Smith, Mr. Leonard E. Hopkin, Mr. Herbert Bairstow. Extra 10s. 6d.: Mr. A. W. Cooper. Second extra 10s. 6d.: Mr. Thomas E. Evans. Third extra 10s. 6d.: Mr. V. C. Baird.

Class IV. (½ plate size).—Grade VI.—First prize: Mr. J. Peat Millar. Second prize: Mr. T. W. Lambert. Third prize: Miss Sybil Aird, Mr. Stuart Elwin Neame, Mr. Dan Dunlop, Mr. James H. Saunders, Mr. Handal H. Rutter, Mr. James Ingham, Mr. Herbert C. Hughes, Mr. H. E. Doughly, Mr. Clarence Penting, Miss Kate Smith, Mr. Albert Haynes.

Class V* (Whole plate).—Grade II.—No awards.

Class V. (Whole plate).—Grade IV.—First prize: Mrs. P. A. Barton Hartopp. Second prize: Mr. H. Nouvelle Rudge. Third prize: Mr. Frank Wilkey, Mr. Charles J. Read, Mr. W. Foster Brigham, Mr. Victor Stouffis, Mr. John Archer, Mr. H. W. Strong.

Class V. (Whole plate).—Grade V.—First prize: Mr. Victor Stouffis. Second prize: Mr. James Shaw. Third prize: Mr. Herbert Bairstow, Miss Agnes Tomlinson, Mr. T. Moysey, Mr. William Baldwin, Mr. Fred W. Lovatt, Miss H. R. Image.

New Apparatus, &c.

The Barnet (yellow sensitive) Orthochromatic Plates. Manufactured and sold by Elliott and Sons, Ltd., Barnet, Herts.

It is with much satisfaction that we learn Messrs. Elliott and Sons have added to their list a series of orthochromatic plates. The introduction of the first orthochromatic plates is still vividly impressed upon our memory, and likewise how, after a short period of interest in the question, photographers neglected it for a number of years. But at the present time there appears to be a genuine desire on the part of our best photographers to give a more truthful monochromatic rendering of colour, and we feel sure that Messrs. Elliott and Sons' endeavours to satisfy their friends in this respect will meet with due recognition. The principal characteristic of the new plate is improved sensitiveness to the yellow or visual region of the spectrum. In this respect the ordinary plate is very weak, and photography on that account has been very severely criticised by artists. Our trials of the plate were made with a rather deep yellow screen, and we found not only great relative sensitiveness for yellow, but that orange, bright and deep red also were given in fairly correct gradation. Blue, on the other hand, was considerably subdued, deep ultramarine being rendered about equal to deep red, and green brighter than either. It will thus be seen that there is a fairly correct representation of the leading colours. Such being the case, the plate, when used with a suitable screen, should give a very satisfactory rendering of colour values. We find the plate is of fair rapidity, and what is perhaps of greater importance, that there is a full range of gradation, with ample density in the high lights. It is a pleasure also to observe that the characteristic of the Barnet emulsion asserts itself in this orthochromatic series. We refer to the complete absence of any trace of fog and the fineness of the grain. We submitted the plate to a severe test by shortening the exposure and forcing the development, but it bravely resisted the attack and yielded a very satisfactory negative.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

March	Name of Society.	Subject.
11.....	Watford Photographic Union	<i>Negative Making.</i> Mr. Chapman Jones.
11.....	West London Photo. Society...	<i>Lant rn Slide Making.</i> Mr. M. W. Cockerell.
12.....	Aberdeen Photographic Assoc...	Print Competition.
12.....	Croydon Nat. His. and Sc. Soc.	Excursion to the Bourne with Geologists' Association. Conductor, Mr. W. Whitaker, F.R.S.
14.....	Glasgow Southern Photo. Assoc.	Last date for sending in Pictures for Exhibition.
14.....	Ulster Amateur Photo. Soc. ...	<i>Som's Recollection of Twenty-four Years of Amateur Photography</i> Mr. Cecil E. Shaw, M.A., M.D.; also, <i>Early History of Photography in England, 1840-43.</i> Mr. J. Blackburne.
14.....	Ilford and District Photo. Soc.	<i>Pictorial Composition.</i> Mr. Arthur R. Read.
14.....	Oxford Camera Club	<i>A Visit to Gibraltar.</i> Illustrated. Miss Acland.
14.....	Southampton Camera Club.....	<i>Photography Prize Slides</i>
15.....	Ashton-under-Lyne Photo. Soc.	The Last Day for Nomination of Officers and Committee.
15.....	Devonport Camera Club	<i>Daylight Development with Cazin.</i> Mr. Wm. F. Slater.
15.....	Rotherham Photo. Society	<i>Amateur Photographer Prize Slides, 1903.</i>
15.....	Glasgow Southern Photo. Assoc.	<i>Gum Bichromate.</i> Mr. Geo. L. Blair.
15.....	Croydon Nat. His. and Sc. Soc.	<i>A Chat About Surrey Churches.</i> Illustrated. Mr. J. M. Holson, M.D. B.Sc.
15.....	Birmingham Photo. Society....	<i>Some Picture Spots in the Old and New World.</i> Mr. E. Howard Jaques.
16.....	Photographic Club	<i>Orthochromatic Photography.</i> Mr. Arthur Payne, F.C.S.
16.....	Cricklewood Photo. Society.....	<i>Use of Tabloids.</i> Demonstrated. Messrs. Burroughes Welcome.
16.....	Nottingham Camera Club.....	<i>Photographic News Prize Slides.</i> Selection of Slides by Mr. Thomas Wright.
17.....	Hall Photographic Society.....	<i>Amateur Photographer Prize Slides.</i>
17.....	Richmond Camera Club	<i>Development and Toning by Tabloids.</i> Messrs. Burroughs & Wellcome.
17.....	Liverpool Amateur Photo. Asso.	Lecture Evening.
17.....	Watford Camera Club	<i>M manipulation of Rollable Films.</i> Mr. W. J. James.
17.....	London & Prov. Photo. Asso. ..	<i>Intensification without Metallic Salts.</i> Mr. J. S. Teape.
17.....	Bath Y.M.C.A. Camera Club. ...	<i>Carbon Process.</i> Demonstration. Mr. A. Taylor.
17.....	Southport Photo. Society	<i>Enlarging Negatives for Carbon Printing.</i> Mr. James E. Latham.
17.....	Ashton-under-Lyne Photo. Soc.	Annual Meeting of Members.
17 to 19	Ashton-under-Lyne Photo. Soc.	Dukinfield Photographic Society's Exhibition.

CAMERA CLUB.

THE lectures at the Camera Club of late have had but a very remote connection with the camera, except that they have been illustrated by means of that indispensable aid to the platform speaker. But beyond this their photographic interest has been almost nil, and we have therefore abstained from detailed notice or criticism. As a matter of record of the club's proceedings, we may note briefly what has taken place since our last notice appeared in these columns. On Monday, the 22nd ult., Professor Henry Louis gave an interesting account of the world's most northerly railway, which is a line which crosses Scandinavia, having a total length of 200 miles, a large portion of which is within the Arctic circle. The main purpose of the line was to open up the huge iron deposits of Norway and Sweden. The lecture was well illustrated with photographs of the wild scenery through which the railway passes, and of the up-to-date loading machinery employed for dealing with the ore when it reaches the port of departure. On the following Thursday Mr. Percy Wright and Mr. E. H. Carpenter described "One Square Mile of Holland," the particular mile referred to being comprised in the village of Volendam, which is situated on the Zuyder Zee. This is a village which has been for years well known to a few artists, and other visitors find it hard to get accommodation there, for the inhabitants do not lay themselves out for the entertainment of strangers, and unless the visitor brings with him some kind of introduction from one who has been there and knows the people, he has not much chance of finding his wants provided for. In this case, a friendly letter from the late lamented Phil May to the proprietor of the establishment where he himself had found a lodging was the open sesame to the village, and thereafter the two friends found themselves made welcome everywhere. They made good use of their time, and in little more than a week took a couple of hundred photographs, which illustrated Volendam and its simple and quaintly garbed people in a very thorough and picturesque manner. Some

persons would have found little to photograph in what they would probably describe as a flat and uninteresting country, but the lecturer, Mr. Wright, and his friend were happily of a different opinion, and were able to make a number of photographic notes full of meaning and information.

A well-known artist, in the person of Mr. Percy Macquoid, lectured on Thursday, the 29th, on the "Evolution of Form in English Silver Plate." He dealt with domestic plate from Tudor times forwards, and showed a number of most excellent photographs of beautiful examples of silver-ware which are treasured in some of the colleges of Oxford and Cambridge, and in the hands of the City Companies. "The Great Dominion," a lecture on Canada, was given by Mr. Edgar Wallace on the 3rd instant.

In the subject of Mr. Maunder's recent lecture, Mr. J. H. Knight writes to the Club Journal:—"Alluding to difficulty in photographing the planets owing to rotation, the following occurred to me. If the photographic films which show faint traces of the image superimposed, a far better result is obtained than by viewing one only. I do not know how long an exposure might be made on films without showing traces of movement, but I presume at least ten minutes to half-an-hour. I would suggest taking several photographs of the planet on successive evenings, and at the same Martian hour, and superimposing these. By this means a total exposure might be made equal to several hours. The long exposure would permit of the use of coloured screens. It would probably be useless to try this in our latitude, but if tried in a favourable locality I have it would very likely throw light on some of the doubtful questions. Possibly the so-called canals than run N. and S. would be photographed, owing to rotation, but those running E. and W. might possibly be detected.

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

APRIL 4TH.—Mr. R. P. Drage in the chair. The Convention slides, presented to the Association by Mr. Welford, were shown. Samples of dried bromide prints by various methods were shown, and the difficulty in obtaining uniformity of result pointed out; the prints in black and white were all of an even depth, but when toned the differences were very marked, showing that the ultimate colour of dried bromide cannot be controlled, as it is entirely dependent on the exposure, and amount of silver deposited by the developer. Hon. Recorder read a short description of Dallmeyer's "Adon" and exhibited a camera fitted with a stigmatic lens f. 5.3, a telephoto lens and an Adon, and the Adon alone, all at the same extension which enabled the members to judge of the capabilities of the instrument, together with a number of specimens of work done with the Adon, comprising portraits, and landscape, and architecture.

THE ADON.

It is a curious fact, but a fact it is, that a telephoto lens has been used by a large number of photographers as a fearsome instrument, that does not at all come into the category of ordinary lenses, it requires an extraordinary amount of skill in its use, and that its capabilities are principally limited to taking photographs of Mont St. I wish this evening to disabuse the minds of any who may be present of these ideas, and to show them that a telephotographic instrument in no way differs from an ordinary lens in its application and use.

To put the case very briefly, a telephoto lens is a lens of an exceedingly great focal length in relation to the camera extension which is used. The little lens about which I am speaking—Dallmeyer's Adon—is probably the smallest and simplest telephoto lens that has ever been made, and its applications are so numerous that they are pointed out, I fancy few photographers will care to doubt one. In appearance, and in less degree in construction, it resembles the simple telephoto lens which was first invented by Dallmeyer in 1891; but it has one important characteristic which distinguishes it not only from that lens, but from all other telephoto lenses, that while a complete optical instrument in itself, it is designed to be used in front of an ordinary lens, and that when used under these circumstances it can be used at the "infinity focus" of the original lens, and a mark made on the tube, so that after once setting this operation need not be repeated when distant objects are to be dealt with. The Adon consists of two lenses, the

front one being a single achromatic lens of very large aperture, and as well corrected as possible for spherical aberration, the back lens being an achromatic negative lens of smaller diameter, and having a negative focal length half that of the positive lens. These are mounted in an aluminium tube, in which, by means of a rack and pinion, and also a loose lengthening piece, there is a considerable range of extension allowing the lens to be separated, so that it may be used with a camera extension of two or three inches, or approached so closely that even the point at which parallel rays are transmitted is past, so that an infinite length of bellows could be used. The mount is fitted with an Iris diaphragm, and this is graduated with a series of marks, each of which represents an aperture half the area of the preceding one. When these marks are read in conjunction with a table which is issued in the Adon booklet exposures can be readily calculated by the ordinary methods of view meter, actinograph, or exposure table, whether the camera extension in use be four or forty inches. Although, in the first place, the Adon was designed as its name implies, to be added on or used in front of an ordinary lens, it is equally well adapted to be used alone, and this becomes a very handy tool to the landscape photographer, as the specimens show, while at the same time it is to be by no means despised for portraiture.

To come to its practical applications, we will suppose that one has a hand camera with an ordinary rapid rectilinear lens, or better still, one of the rapid anastigmats. All that has to be done is to set the lens to its "infinity focus," and after having screwed the Adon on the front in the manner shown on this model, to focus the image on the screen by means of the rack and pinion. It is quite practicable to engrave a scale on the tube of the Adon, so that objects at varying focal lengths will be brought into sharp focus without altering the camera extension. When used in this way it will be found that although the Adon produces an image at about twice the scale of the rectilinear with little reduction of intensity that the whole of the plate is not covered. This may to a certain extent be remedied by racking out the camera an inch or so more, and lessening the separation of the components of the Adon. The result at these two extensions is shown in these two prints. When it is possible to remove the lens from the camera altogether the Adon takes a wider view of things. At a camera extension of 5 in. it will be found that there is a magnification of nearly three diameters while a quarter-plate is covered to the corners. With an extension of 8 in. a half-plate is covered, and so on, a 15 x 12 being quite within practical limits. In order to secure a greater range of separation the black tube immediately behind the front lens is removable, so that when used alone for extensions of over 10 in., or when used in front of an ordinary lens, the positive and negative lenses may be brought nearer to each other. The specimens which I am now showing will serve to illustrate the wide range of subjects to which the Adon is applicable. The portraits shown received from 14 to 30 seconds' exposure, while the views had hardly more than a second or two, except when a yellow screen was used in conjunction with a slow plate, when about 30 seconds was the limit.

PHOTOGRAPHIC CLUB.

FEBRUARY 24TH.—Mr. Barton Kent, F.R.G.S., took a large meeting of members and friends, by means of lantern slides from his own negatives, a tour through "Southern Spain." Starting at Gibraltar, and passing through Algeiras, he went to Granada, showing many magnificent slides, detailing some of the beauties of the Alhambra and the surrounding scenery, finishing with the wonderful Cathedral and scenery of Seville. Everywhere can be seen traces of the Moorish conquerors. On the 2nd inst. Mr. Wm. Gamble, on behalf of Messrs. Penrose and Co., gave a history and demonstration of the "Sinop" process. This is a simplified colotype process, the improvement being that the plates can be prepared and supplied in the insensitive condition commercially. In that state they will keep good for any length of time. After sensitising in a 2 per cent. bath of bichromate, they are dried in an ordinary room. Exposure varies from two to ten minutes to daylight, and after well washing and soaking in a glycerine bath they can be printed from in an ordinary letter-copying press. As many as 6,000 copies have been taken from one plate, and it was still in good condition.

DEVONPORT CAMERA CLUB.

At the last meeting Mr. W. H. Mayne delivered a lecture on the ozotype process. Ozotype he described as a modification of the carbon process, and produces permanent pictures in various monochromes of high artistic quality. Its advantage is there is a distinctly visible print-out image upon its surface which is to form the support of the picture. The initial print and subsequent picture are correctly rendered in regard to right and left; therefore, no transfer is required, no safe edge is necessary. No blisters are formed, however hot the developing water. The simplification of the process has now reached such a point that amateurs have no difficulty in producing a perfectly sharp and beautiful picture within an hour after printing. Nearly all the former pitfalls and chances of error have been removed, and ozotype may now be regarded as one of the simplest photographic printing methods. Specimen prints by the Ozotype Company and the lecturer were shown.

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION,
LIVERPOOL BRANCH.

A MEETING of the Liverpool branch of the Professional Photographers' Association was held on Friday, February 26th, at headquarters, Dale Street. Present: G. Watmough Webster, president, in chair; A. Priestly; O. Looser; E. Vanderbilt; R. Waite; A. F. Mowl; W. Warrington, hon. secretary. The hon. secretary read letters from secretary, parent association, and it was arranged that one of the members should call on a prospective member. The question of granting certificates of proficiency to assistants, arising from the action of the parent association in the matter, gave rise to an interesting and animated discussion. Most of the members had had unpleasant experiences through engaging incompetent assistants, and been put to inconvenience and loss. It was generally felt that something could be done, and members were asked to bring their ideas on the subject to next meeting, with a view to devising a plan for ridding the profession of people who, as one member put it, "ought to be breaking stones," which would be greatly to the benefit of photographers, and of bona-fide assistants.

CROYDON CAMERA CLUB.

MARCH 2ND.—At a special meeting convened for this date, Mr. S. H. Wratten was unanimously, and with much enthusiasm, elected president of the club in place of Mr. Hector Maclean (resigned). Mr. Wratten, in returning thanks, alluded in most appreciative terms to his predecessor, and the energy he had displayed on the club's behalf, an expression of feeling which was subsequently emphasised by a cordial vote of thanks being accorded Mr. Maclean without a dissentient note. Mr. Lionel Kough then showed the Nernst lamp in operation, which he regarded as highly satisfactory for enlarging, possessing, as it did, a comparatively small illuminating area, coupled with a highly actinic light. On the previous Wednesday a lecture on Morocco, illustrated by nearly 200 capital slides, was given by Mr. John H. Avery, who holds the somewhat unique position of photographic instructor to the Sultan. In a chatty and humorous manner Mr. Avery narrated his experiences, and graphically described his somewhat onerous journey from Larasche to Fez, and life in the capital, palace, and provinces. Mulay Abdul Aziz, to give the Sultan his full name, Mr. Avery said, was not only a powerful monarch, with absolute sway over the country he ruled, but, judged by Western ideas, a gentleman in every sense of the term. He had also shown great firmness and moral courage in dealing with disorder, and not the least interesting part of the lecture, described a large expedition led by the Sultan to subjugate hostile tribes, in which expedition Mr. Avery was the only European. It was also interesting to know that the Sultan did not believe in "You press the button, and we do the rest" system, and was soon an adept in carbon, platinotype, and bromide, as well as a first-rate operator. The studio formed a miniature palace, and included dark and enlarging rooms. It was taken out in pieces, and erected by a small army of workmen, under the direction of Mr. Avery. A vote of thanks was tendered the lecturer, and deservedly; but perhaps the best compliment of all was furnished by the state of the club rooms, which were crowded to their utmost capacity.

CATFORD AND FOREST HILL PHOTOGRAPHIC SOCIETY.

On a recent open evening Mr. W. R. Frederick Avery delivered a lecture on Java, Borneo, and Siam to the members and friends of this Society. Mr. Avery, who was introduced by Mr. H. J. Pearce, has but recently returned from a stay of nearly five years in South Borneo, and his lecture was brimful of exciting incidents. About 100 excellent photographic lantern slides, taken by Mr. Avery, many of them in country never before explored by a white man, and under the greatest difficulty, were shown. The lecturer's humorous, racy, and wholly extempore delivery was highly appreciated by the large audience. His reference to the mineral wealth, and his explanation of his construction of miniature man-of-war out of old tins, etc., the battles to keep the water from flooding the diamond mines, and his criticism of the Dutch administration were listened to with the keenest interest. During the evening some mineral specimens and a Dyak sword were handed round for examination. Mr. Avery explained that he was writing a book of his experiences in Borneo, and we would suggest his illustrating it with some of the excellent photographs that were shown to the Society. He also promised to present a copy to the Society's library as a souvenir of his visit; it should prove a valuable and most interesting work. Dr. Arnold spoke as to a visit he made to Java some years ago, and in proposing a vote of thanks to Mr. Avery fully endorsed his remarks as to the possibilities of the countries, not only from a mineral, but also from a photographic point of view.

Patent News.

The following applications for patents were made between February 22nd and February 27th, 1904:—

- Colour Photography.—No. 4,668. "Improved process for producing photographs in colours." Alfred Cleaver and Henry Marcusson.
- Print Cutters.—No. 4,679. "Improvements in or relating to photographic print cutters." Leonard Helliwell.
- Printing Frames.—No. 4,686. "Improvements in or applicable to photographic printing frames." Otto Sichel.
- Cameras.—No. 4,831. "Improvements in photographic cameras." Robert Ballantine and Matthew Ballantine.
- Dark Rooms.—No. 4,872. "Improvements in and relating to dark rooms for photographic purposes." Complete specification. Ernest Molt.

News and Notes.

THE "Homœopathic World" states that Professor William Harvey King, of New York, and Mr. Hammer found that if a tube containing radium is immersed in water for a time, the water becomes radioactive and is capable of affecting a photographic plate. Professor King said to be testing the therapeutic value of water that has thus been subjected to the action of radium.

THE City's Art Collection.—A goodly number of people, including possibly many of our readers, do not seem to be aware that the Corporation of the City of London possess a very fine collection of pictures by the best masters, and that it is open daily free to the public. The already fine collection is being continually added to, and has just received an addition by gift of some more valuable pictures, which are now on view. One of these is "An October Morning," by the late Mr. W. Osborne, which has been presented to the Corporation by the community of artists as a memorial of the esteem and regard in which the late artist was held by them. Another addition is "The Slave Market at Cairo," by W. J. Müller, also a presentation. It may be mentioned that the Corporation has loaned three of its notable pictures to the St. Louis Exhibition, and they are now on their way. Some may imagine that Art receives no attention in the City, and that business is the only thought there, but let them pay a visit to the Guildhall Art Gallery, or the Royal Exchange, and see the fine fresco

dy there by our leading modern artists, and that idea will at be dispelled. From time to time the Corporation have loan itions at which pictures from private collections are shown that are be seen by the public at other times, but the permanent collection be seen at any time and free of charge, for the City does not stoop ate money," nor does it expect one to buy a catalogue.

WHEN I announced a week or two ago that Mr. J. W. Zaehnsdorf lecture at the Piscatorial Society on "Colour Photography," and assed that the audience would have a treat that evening, I I was on safe ground, and the event proved that I was. Mr. dsdorf gave a simple and easily understood explanation of the iples involved, the use of the three-colour filters for the making e three negatives, the printing and mounting of the positives, he other operations involved in the preparation of the finished e, and what was more or less of a mystery to many became an book by the aid of the excellent way in which this somewhat use matter was treated by the lecturer. The illustrations—n slides projected on the Society's screen—were beautiful indeed. flowers, landscapes, interiors, and subjects of every sort, all ng with the colours of Nature—colours produced, moreover, by graphic methods, and not by the hand of man—provided an e treat that few who were present will readily forget. It was ghtful exhibition, and when I say that the slides were pro- by Mr. Zaehnsdorf's famous lantern, and that under the manage- of Mr. Ernest Zachnsdorf, I have, I am sure, said enough to my readers that in the showing of the slides "perfection could ther go." That the heartiest thanks of the audience were to the Messrs. Zaehnsdorf, *père et fils*, goes without saying, any of us also gave an inward vote of thanks to that splendid for the extremely able manner in which it had done its duty ister to our pleasure and instruction.—"Dragnet," in "The y Gazette."

UGHTON'S MONTHLY.—Published by Messrs. George Houghton n, Ltd., of 88 and 89, High Holborn, W.C., the purpose of w journalistic venture is stated in a foreword to be as follows: e never yet was a journal published that did not have some- o say about its aims and intentions in the first number, and in e have no desire to be singular. "Houghton's Monthly" is come of a desire to aid and assist our customers in every e way. Instead of, as formerly, sending out new articles with catalogue description, we shall endeavour to give actual, al working instructions and details that can but be of the t possible assistance to the photographic dealer and the s of his staff. Until a piece of apparatus, appliance, or line ographic material has become well known—and even the most articles were unknown once—the dealer is bound to be ded with questions about it. If he has only a bare trade ion to rely upon, he is awkwardly placed, and customers, or e we had better say possible customers, will go away dis- ; whereas, if the enquirer finds that his questions are d immediately, he is interested and becomes a purchaser. not going to supply a verbose and prosy description of our s, but just terse, intelligent, and, above all, practical infor- that will be at once easy to assimilate and interesting to t. At different seasons we shall describe the most saleable and lines, and all our dealer friends may rest assured that we e everything in our power to improve their trade. All our customers will receive a copy of "Houghton's Monthly" on ng day; and we shall be pleased to mail a copy every month photographic dealer's salesman if he will make application and tell us the name of the firm by whom he is employed. re the co-operation of the photographic trade for our mutual and we are quite convinced that we shall succeed in interest- We are the largest wholesale photographic dealers in the Kingdom, if not in the world, and we can supply our cus- with a variety of apparatus and material that is absolutely d. Our regular customers already know this; but perhaps y be a few readers of this issue who are not aware of the facilities we can offer, and we invite them to send for our l, and compare our trade discounts with those of the firm dealing with at present. That's all we ask. We have no to what the result will be. We know!

Correspondence.

- * * * Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.
- * * * We do not undertake responsibility for the opinions expressed by our correspondents.

PROFESSIONAL GRIEVANCES.

To the Editors.

Gentlemen,—The grievances of the average photographer are great. First one and then another branch of his legitimate trade is being snatched away and exploited by unscrupulous firms. Following the extract of beef maker's happy notion is a firm doing enlargements for the public at a price that the photographer has to pay for them. They are systematically canvassing all England and doing an immense amount of harm. It seems a pity that there are no means of stopping this cut-throat business.—I am, yours faithfully,

F. B. PEARSON.

76, Church Street, Stoke Newington,
London, March 4th, 1904.

[It is a pity that our correspondent and many more similar complainers do not strengthen their own and their confrères' hands in resisting unfair competition by joining the Professional Photographers Association, whose third annual dinner is being celebrated this very evening.—Eds. B.J.P.]

INTERNAL REFLECTION IN CAMERAS.

To the Editors.

Gentlemen,—In your issue of to-day's date I note that Mr. C. Welborne Piper suggests the use of orange paper as a lining for cameras. Unfortunately, however, he has overlooked the fact that bromide paper with which his tests were made is of inferior rapidity to plates, and also that while orange light has absolutely no effect on the former it does slightly affect very rapid plates, and still more so those that are orthochromatic. Orange paper is, however, an admirable material for lining cameras which are intended for use with slow non-chromatic plates. It has the special virtues of a non-reflecting surface, and a satisfactory absorption of all but the orange rays of the spectrum.

I cannot agree with Mr. Welborne Piper that a circular hood over the lens is not so efficacious in cutting off superfluous rays of light as a square one. As a matter of fact the advantage lies, if anything, with the former. A short cylindrical metal tube well blacked inside, and fitting on the front of the lens can hardly be improved on for getting rid of the surplus light caused by employing a lens intended to cover a larger plate than the one in use. It is far more convenient to fit than a square one, and can be made without difficulty to take the ordinary cap or shutter of the lens.—I am, gentlemen, yours very truly,

A. LOCKETT.

88, Brook Street, Kennington, S.E.,
March 4th, 1904.

THE METRIC AND DECIMAL SYSTEMS.

To the Editors.

Gentlemen,—It is evident from Mr. Gotz's letter that he is not well enough acquainted with English methods of measurement and calculation to be a competent judge of the relative merits of the English and metric systems. It is somewhat rash to praise one system as the best when you don't clearly understand the others. The duodecimal system of working feet and inches (in feet, primes, seconds, thirds, etc.) is not a new one, as Mr. Gotz seems to think, but a very old one, fairly well known to every English schoolboy, and very familiar to a large number of practical men who use it constantly. This not being the place to give lessons in elementary arithmetic I must refer Mr. Gotz to the arithmetic book for fuller information, and if he gets hold of a good book he will also find the equally general algebraical equations used to facilitate multiplication, without which equations a pure decimalist cannot get on any better than the most vulgar fractionist. If he goes into the matter carefully he will probably find that the "accepted rule" of the text book is no better adapted to its purpose than is the "accepted rule" for multiplying $6\frac{1}{2}$ by $4\frac{3}{4}$, or that for doing long division. If he goes

into the matter carefully he may discover that cross multiplication meets the case best, and, further, that that rule is equally suitable for yards and feet, and also for mixed fractions in many cases, though seldom of any use at all with decimal quantities. If next he cares to measure up say, all the brickwork in his own house, first in feet and inches, and then in metric measures, and finally squares and cubes the one lot of dimensions by duodecimals and the other by decimals he will find that the first method requires fewer figures and less time; most of the duodecimal "squares" requiring no working figures at all, while very few of the decimal measurements can be worked without. Such an experience as this will probably prove to him that the much despised English measures have certain advantages when you know how to make use of them.

With regard to the working of fractions it is hardly necessary to point out that a man who cannot multiply simple mixed fractions like $6\frac{1}{2}$ by $4\frac{1}{2}$ "in his head" is not worth a salary in many modern business offices where much more difficult problems have to be dealt with mentally in the shortest possible time. Working out on paper is an operation not to be thought of nowadays, excepting in special cases, and (this was just the point I tried to make in my former letter) many sums expressed in decimals cannot be quickly solved mentally without turning the decimals into fractions. This applies to pretty well all decimals that represent simple fractions, and it applies with considerable force to decimals representing 1-3, 1-6, 1-7, and 1-9. Some of the sums given in my letter on page 198 are alarming in decimals, but turn them into fractions and the answers are apparent without the use of a single working figure in any case. Frequently decimals and vulgar fractions have to be used together, either alternately or mixed, and when reciprocals occur decimals are an abomination.

Decimals are invaluable, but if we use them alone we cannot reach a high state of efficiency, hence any monetary or metrical system that acknowledges decimals only is essentially defective.

A good example of the inefficiency of decimals is afforded by calculations relating to insurance premiums. If you keep to English money and bar decimals excepting only when they are most convenient, it will be difficult to suggest any rate of insurance that the expert cannot solve within a minute without the use of working figures. Possibly five per cent. of the rates will require working out, but only a few of the five per cent. will require more than a dozen figures. Try the same thing with decimals alone, and only a few sums at rates accommodating themselves to decimals can be worked mentally, and the majority will require figuring. A very ardent decimalist made himself extremely ridiculous not long ago by publishing a series of sums of different types worked in duplicate by decimals and by ordinary English methods. He proved his contention that decimals saved time by working every English sum incorrectly, and capped all by declaring that space would not admit the working of a particularly easy sum that an insurance clerk could have solved in a minute with hardly any figures at all. It is a pity that nearly every decimal advocate should suffer from the same want of practical knowledge of arithmetic.

"Duodecimal" in his very interesting article states that "we must learn to think in tenths below a half or quarter," but this is just what we cannot afford to do. By thinking in thirds, sixths, eighths, sixteenths, sevenths, etc., we can get through the work in much less time, and this is all important to the man whose income varies directly with the speed at which he calculates. The slow laborious methods of the German clerk who can think only in tenths are of no use when speed is essential.

It is somewhat difficult to understand all Mr. Gotz said in his paper with regard to the metric system, and in some parts the only thing clear is the fact that he is wrong. First, the litre is not equal to 1000cc., and, second, the litre of water used for making solutions does not weigh 1000gms., but the very awkward quantity of 997.8066grms.; hence with the metric system you cannot very well measure the water for a solution that is to be used by weight, though you can adopt this generally most convenient course with English measures. The metric system as sketched by Mr. Gotz is very pretty on paper, but we can hardly say that in practice it really exists. The occasional tangle that one gets into over a litre that weighs 997.8066grms. and equals 1000.16cc. beats any sort of complication that exists with the English systems. The metric system is very useful on certain occasions, but on others there are better systems available.

Here is a metrical problem for Mr. Gotz. I should much like to know how a confirmed metrical enthusiast solves it.

Appliances for weighing large quantities of liquid, not being available, how would he make up at a normal temperature of 62° F. about two litres of an exactly accurate ten per cent. by weight solution, which is to be used in small weighed metric quantities. The accuracy is to be real, not approximate, and the salt used may be assumed to be anhydrous and perfectly soluble at 62° deg. F.

I note that Mr. Gotz considers our present crown to be worth 96 halfpennies, at which rate of exchange I shall be very pleased to take all the silver crowns he can lay hands upon.—Yours, etc.,
March 5th, 1904. C. WELBORNE PIPER.

ON SOME ADVICE TENDERED TO PROFESSIONAL PHOTOGRAPHERS.

To the Editors.

Gentlemen,—The professional photographer ought to consider himself a fortunate person, as he is always receiving good advice, or rather what his self-constituted instructors think good advice, from people who appear to know much better how to conduct his business than he does himself.

But I am afraid he is not so grateful as he should be. He is constantly accused of being conservative and unprogressive, and probably he is. But his well-meaning critics and monitors seem to forget some important matters. They forget that the professional is often compelled to stick to well-known processes, because his customers will have them, and will not take to new things for a long time; and in fact, they think the new process has become fashionable, and is the proper thing; although in their hearts they prefer the old one.

They do not want artistic photographs, they want them what they call "clear." They say they do not want to see themselves through the kind of mist. So, after all, the photographer is compelled to produce the "usual thing," because his customers want it. One man built up a very large and successful business by, as he expressed, supplying what people wanted, and not what he thought they ought to want. This is one reason for being conservative. Another is that his assistants are accustomed, and his plant is arranged, to carry out certain processes, and he cannot change all these directly a new process is introduced. He must wait to see if this new thing has come to stay, and whether it is going to pay, if it does stay. After the success of a new process is assured he has to train his staff for the new method and alter his work-rooms as well; and all these things means expense and waste, and probably delay.

There is no doubt the professional has his faults (he would not be human if he had none), and among them may be noted his remissness in allowing the local chemist to capture the dealer's trade, and also apathy in the matter of combination for mutual protection. But this last-mentioned matter, thanks to the exertions of yourself, Editor, and some prominent photographers, things are improving slowly, and we may hope surely. And some day we may hope to have photographers strong enough and united enough to put a stop to undervalued treatment by trusts and such like.

These thoughts have been suggested by the advice tendered in last week's BRITISH JOURNAL on the subject of artificial light, etc., and speedy finishing of orders. Much of that advice is excellent, and I speak from experience, for, for some years, I have never done daylight printing if I could avoid it. I get so heartily sick of the length of time it takes to complete an order that wherever possible I do bromide printing. But it took years of pushing to get customers to have it, and now the only silver prints I ever do are for publication, and the London agents will not take anything else.

The advice referred to however, shows almost complete ignorance of the business of the professional. We are told we should have studio lighted by some artificial means so that photographs can be taken in any weather, at any time, but sitters will not come in if the weather is bad, and as soon as the plate is exposed, the operator has to take it to the developer, the developer to the retoucher, the retoucher to the printer, the printer in an hour passes the prints to the mounter, the order is completed and sent away within twenty-four hours. How lovely all this sounds; should not we like to do business like this? much, oh no! But alas the professional knows all this is but a beautiful dream.

Those of us who have tried artificial light know something of the expense, and if we used it always would not there be a nice little bit

end of each quarter? Then we also know that it is much more difficult to use, and very few assistants can use it well. Some one may say that there was a successful photographer in London who used nothing else. "True, O King!" and he produced the best portraiture ever seen; but, in the words of Hans Breitmann, "Where is doty now?" I believe many photographers would say, that now that they have some years' experience of artificial light, that if they had not the expense and trouble it entails, and the small amount of work it produces, they would never have tried it.

All this eloquent description of a clockwork-like business does not take into account the fact that sitters do not come with this beautiful regularity, but that one day (at rare intervals), they almost tumble over another in their haste to be photographed, but the next day not perhaps, appears. What then becomes of the operator, the developer, the printer, the retoucher, and the mounter, if the first day's work is all done? Are they to sit down and wait for the next day? Then just think of the methylated spirit that would be used in drying the negatives and prints, and it does not improve either one or the other. Of course we get the water out of the spirit by using a pump, but do not let the Excise find it out or there will be ructions; we use potassium carbonate, or, still better, an old lime from the kiln, but it is very unsatisfactory, and the spirit does not do its work properly.

At a most important point has been omitted, and that is, where the proof come in? Oh! if we could only go on straight with the work how happy we should be. Every professional knows the trouble of proofs. It is seldom less than a week, and often longer, sometimes months, before we hear anything about it; and then something has to be altered and a fresh proof sent, and then another interval of waiting. Perhaps, prints of all the negatives must be seen, and, after perhaps, a re-sitting, because the dress does not fit, and so on, and so on, *ad nauseam*. Some one will suggest sending proofs from the sitters, but I tried it once, but never again. Every sitter, without exception, demanded a fresh sitting. Many people receive the prints and take no notice until a bill is sent, then they want to sit

and do not quite see how this beautiful business-like arrangement, as it is called, is going to work. I am afraid there is too much human nature in the sitters for that. It seems to me, too, the customers get harder and harder every day.

But I am quite convinced that most professionals would do well to try the quicker methods of printing to a greater extent. When the weather is good daylight printing goes quickly, and the average man can get on very well, and he does not feel the need for the other methods, but when Christmas is at hand he finds he cannot get the work done, and he has perforce to try bromide. But his assistants are apt to get at it, and perhaps his negatives are not quite suitable, the prints are not good, and his customers will not have them. It is not the fault of the process. Bromide paper of one brand or another is capable of producing good prints from almost any kind of negative. There is only one negative so bad that it will not give a passable print in the end. And what an advantage that is, for we all, "even the best, are not infallible," and we all get poor negatives at times.

They give a few instances of the advantage of quick printing. Only one week a gentleman, leaving England in a few days, sat on Wednesday and saw the proofs on Thursday, and received his prints on Friday morning. A year or so ago I had to copy and supply five hundred prints of a sketch, within a week, and they had to be brown.

They were all done and mounted on invitation cards, within a week. An expert on seeing one of the prints pronounced it a good carbon. This disposes of another difficulty, that of colour. Some people object to the cold black of ordinary bromide prints; there is no reason why they should be black. The numerous toning methods published give an extraordinary range of browns and sepias. Of course it would be dishonest to sell such prints as carbons.

As a whole, then, if photographers are not as wise as they should be, they are not quite such fools as some people imagine.—I am, etc.,

B. H.

18th, 1904.

A veteran wood-engraver, Mr. James Davis Cooper, died on Friday, February 27th, at the age of eighty-one. He was educated at the City of London School, and thence passed into the studio of Mr. Cooper, where he speedily developed the remarkable talent which

made him one of the most successful wood-engravers of the last period of the art, before photographic processes succeeded in extinguishing it. One of the earliest works by which he made his name (says "The Times") was the edition of Mrs. Barbauld's "Hymns in Prose," 1863; but this was only one of many, and Cooper took a large share in that development of book-illustration which made "the sixties" memorable in the history of British art. Later he worked with Randolph Caldecott in the well-known illustrations for the Macmillan edition of Washington Irving's "Old Christmas" and "Bracebridge Hall." He also engraved the illustrations for the works of many famous Victorian authors, beginning with the Queen herself. His hand is to be seen in many of the books of Darwin, Huxley, Owen, Livingstone, and a large number of others. For some years before his death Mr. Cooper had ceased to engrave.

In the course of the debate in the House of Lords last week on the Metric Weights and Measures Bill, Lord Kelvin gave an amusing illustration of the confusion arising from the use of different systems of weights, says "Nature," for in some experiments with a rifle he had put in a charge which might have caused a disastrous accident if the mistake had not been found out in time. The Marquess of Lansdowne also gave an instance of the confusion arising from the use of different weights in this country and on the Continent. A friend of his travelling abroad sent an English prescription to a local practitioner and received a box of pills of the size of small marbles, which, however, he did not take. The chemist came and said that his assistant did not know the difference between a grain and a drachm, and had put 30 grains of calomel into each pill. The illustrations given by Lord Kelvin and the Marquess of Lansdowne of the misadventures that may arise from the simultaneous use of two different systems of weights and measures show the advisability of there being only one international system.

Some years ago the late Grant Allen wrote a series of entomological papers for the "Strand Magazine," which were beautifully illustrated by Mr. Frederick Enoch, who has consented to visit us a second time and give a lecture upon the subject. The fact that he has recently been taking photographs of living insects by means of the Sanger Shepherd three-colour process will make this evening specially attractive.—A very ingenious and interesting method has been devised by Signor Carlo Baese for producing photo-reliefs. He employs the ordinary swelled gelatine method, the novelty of his invention consisting first in the method of lighting, and secondly in the method of producing the required negative. The results are very good, and are stated to be produced with ease and certainty.—A subject which is of great interest and has always had a certain halo of mystery surrounding it—the effects of lightning, and protection therefrom—will be brought before the members of the club by Mr. Alfred Hands, F.R.Met.S., during the month, when we may expect from his authority some extremely interesting data and information which will doubtless encourage useful discussion, and it is hoped that among the audience some will have apposite experiences to relate.—After Easter a small one-man show of some of the work of Mr. Tom Reveley, of Wantage, will, we hope, appear on our club walls. Mr. Reveley is a professional photographer who is not only an excellent portraitist, but has a speciality in the photography of pedigree animals. Surrounded as he is in the counties adjoining his residence by many training quarters and breeders and exhibitors of Shire horses, high-class cattle and dogs, the work at which he is continually occupied will, no doubt, be of considerable interest to many of our members who breed or exhibit.—"Camera Club Journal."

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Answers to Correspondents.

- **All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.*
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PHOTOGRAPHS REGISTERED:—

- J. A. Horsburgh, 4, West Maitland Street, Edinburgh. *Photograph of the late Rev. W. W. Smith.*
- A. Hubbard, 7A, Exchange Walk, Nottingham. *Photograph of the Rev. J. Given.*
- F. Whaley, Weston Villa, Cheltenham. *Photograph of Four Dogs of the King and Queen.*
- H. Leake, Arcade Studio, Kirkgate, Wakefield. *Photograph of the Wakefield Trinity Football Team.*

W. J. BENNETTS.—The address is Manchester.

REGISTRATION OF DESIGN.—"CONSTANT READER" writes: "Would you kindly inform us if there is any way of effecting registration design of a portrait frame, preventing others from manufacturing the same design?" In reply: "The design can be registered at the Patent Office, and it will then become your property. If you write to the office, Southampton Buildings, W.C., enclosing a stamp, you can obtain the necessary forms which will give every information."

DEFECTIVE NEGATIVES.—"SPOTTED NEGATIVE" says: "The two negatives enclosed were treated in the usual way: Fresh developer, pyro-soda, Ilford's formulæ. We developed quarter, half, and whole plates. Cadott's and Ilford's special and Monarch all with same result—spotted. Kindly say the reason of it. It never happened before?" In reply: "The cause of the defects is obvious. The plates were not dusted before they were put in the slides."

RESIDUES.—PADDY says: "I am thinking of saving my hypo fixing baths (plates) for residues; will you, please, say (1) What strength to use liver of sulphur? (2) What quantity in each gallon of hypo bath? (3) How long does it take to deposit, and how is one to tell when it is so? (4) Is there an objectionable smell arising from the operation?" In reply: (1) The strength of the solution is immaterial; (2) Add the solution so long as it produces turbidity, then stir up well; (3) A day or two; (4) Yes; a very objectionable smell.

TONING—COLOURING.—KISMET asks: "(1) Will you kindly inform me what causes the red brick tones in toning prints and how to avoid same? (2) I should also be glad if you will tell me what are the pigments used for working up bromides and platino-types?" In reply: (1) You do not say the kind of paper you employ, but whatever it may be the red tones are probably due to the toning bath being deficient in gold, or the prints are left too short a time in it. (2) Ordinary water colours mixed to the tint of the pictures.

SPOTTY PRINT.—"SPOTS" says: "I am herewith sending you a print on matt C.C. paper, and shall feel obliged by your giving me your opinion as to the cause of the white spots. These appear in about a week or ten days! They are toned with sulphocyanide, and are worked with a glossy C.C. paper, which I have used successfully for years, and with unvarying success. I cannot understand the cause, and shall be pleased if you can explain it?" In reply: "The spots appear to be due to minute particles of some injurious matter, as dust, settling on the prints whilst they are in a moist state—probably while they are drying. Spots are

frequently caused in that way. The print has been returned desired.

ASCERTAINING COPYRIGHT.—A. LEWIS says: "Having recently obtained possession of an old photograph, which does not bear any marks or name by which it can be identified, I would esteem it a great favour if you will answer the following questions: (1) Where can I find out if a photo has been copyrighted? (2) Where do you copyright a photo? (3) What do you copyright the negative or the print?" In reply: (1) Only by searching the register at Stationers' Hall. If you do not know the name of the one who took it, or the title of the picture, it will be somewhat difficult task. (2) At Stationers' Hall, Ludgate Hill, E.C. If you send us two prints and one shilling and sevenpence we will effect the registration for you. (3) The picture which includes the negative.

BORAX AND BORACIC ACIDS.—"A. C." writes: "Can you give me any information as to borax, boric acid, and boracic acid, its chemical use in photography; also, could you refer me to any medical work indicating the difference of use in the above three named so far as medical treatment is concerned? Then, again, there is a powder and a crystal also described as borax or boracic acid, are these the same substance under two names?" In reply: Borax and boracic acid are two different things. Boracic acid and boric acid are one and the same. Borax is sometimes used with gold as a toning agent, called the "borax bath." We may refer you to one or other of the medical journals for the uses of these substances in medicine. It is a query in no way connected with photography.

LANTERN SLIDES.—"PROFESSIONAL" asks: "Will you kindly tell me what is the cause of slides melting when in the lantern? I have made some hundreds of slides, both in business and for my brother, who lectures a great deal. I am also what you might call a professional lanternist, and never, until using a straw lantern here, have I spoilt a slide before, and I have shown to some of the best lecturers of the day. My brother has just finished a lecturing tour, and all went well until at Croydon where the lanternist spoilt some twenty slides for him? (1) Is it caused by defective plates, or by a badly ventilated lantern? (2) Would varnishing protect the film and be more likely to prevent the slides melting?" In reply: (1) The melting was brought about by the films containing moisture when the slides were bound up. If there were no moisture there would be no melting. (2) There would be no harm in varnishing the slides though it is not necessary if they are made thoroughly dry before they are bound up.

STUDIO QUERIES.—W. J. MARTYN says: "I have just taken over a studio which I find will want repainting, rearranging, etc. Would you be good enough to give me the following information?—(1) What colour do you advise for painting studio? (2) Studio is well lit; east and west. Side windows from floor to ceiling, and north top-light; all unobstructed. At present it is all clear glass. Do you recommend the whole of the glass to be whitened, or frosted over, and what is the best mixture to do this with, on the inside? (3) Of course, one of the side windows will have to be blocked up, or curtained off. What is the best opaque material to get for the purpose? (4) I purpose using two sets of thin curtains, running on wires, to diffuse the light when necessary. What colours do you advise? I wish to get a good soft diffused light; would you advise enough curtains to cover the whole of the lights?" In reply: (1) Any light, unobstructed colour that will accord with the surroundings. A pale green or French grey, for example. (2) The roof may be obscured, in the summer months, by stippling it over with flour paste mixed with whiting; or light, sliding wooden frames, covered with tracing-linen may be used. (3) A very good cheap material for the purpose is the thick blue stuff used for butchers' smocks. One set may be thin muslin and the other the material just named; that is, if you have two sets. It will be well to have two means of covering all the lights.

THE Rotary Photographic Company, Ltd., state that a new roll of celluloid film of their manufacture will appear on the market almost immediately. The name of the new film is "Roto."

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* The Editor can only be seen by appointment.
* We do not undertake to answer letters by post.

EX CATHEDRA.

Coming Exhibition. We may remind our readers, many of whom may wish to show specimens of their work, that, as a sequel to the exhibition of engravings and etchings held last summer at the Victoria and Albert Museum, there is to be this year a display of pictures produced by mechanical means, photogravure, half-tone, etc. The colour section should be especially interesting, for we seem to know just now how we stand in the matter of chromatic printing. There have long been rumours of efficient power machines, which will turn out vast quantities of such prints, and we are all looking forward to the possibility of a journal with coloured pictures. The attempts already made in this direction have not been very successful. It is not difficult to turn out a few such pictures; it is when a long run is attempted that the work comes very "ordinary." We venture to suggest that exhibitors of such products should be invited to send in books containing several hundred "pulls" of the same nature, so that it can be judged whether the bulk is as good as a sample. The exhibition is to be held under the auspices of the Education Department and the Society of Arts, and Sir William Abney is Chairman of the Committee appointed to advise the Board. Any of our readers who may wish for further information concerning it should apply to the Secretary, Exhibition of Mechanical Engravings, at the Board of Education, South Kensington, S.W.

Fraudulent Photographs. At the present time there is no question that a glaring fraud on the public is being committed by many unscrupulous photographers for a little additional profit. We allude to the palming off of silver prints of the Velox type, or "platinomatt," as platinotypes. In most price-lists special prices are quoted for platinotypes, usually double, or more, than those charged for silver prints, and silver prints of the kind just referred to supplied in their place. This is a fraud that a stop should be put to in the interest of honest photographers and the public alike. Those unscrupulous photographers who are committing this fraud, systematically, may possibly not be aware that they bring themselves within the Merchandise Marks Act, and are incurring heavy penalties. Also that any of their customers so defrauded can proceed against them for the fraud. We are sorry to say that this system is not entirely confined to the cheaper class of photographers. Silver prints of the Velox type, if of good quality, are not easily distinguished from veritable platinotypes, and we have seen many that we would not, in the witness-box, swear were not without applying a chemical test. There is now more than one firm making platinotype papers. Could they not combine and prosecute those who are supplying silver prints for platinotypes? They would, by taking action, alike be protecting their own interests and those of the public. Platinotypes are undoubtedly permanent; silver prints are not, and if they fade, discredit is brought on the former process, as those who have paid for platinum pictures imagine they have got them, notwithstanding their fading. Not so very long ago the British Bacon Curers' Association prosecuted a number of cheesemongers for selling, as English, American and Canadian hams, and they were mulcted in very substantial penalties and costs. It seems a pity that the makers of platinotype papers do not institute similar proceedings against those unscrupulous photographers who are supplying silver pictures as platinotypes.

* * *

Three-Colour Photography.

The interest being taken by experimentalists in tri-chromatic photography is undoubtedly on the increase. Scarcely a week passes but we have something new to chronicle on the subject. Last week a new sensitiser for the red rays was announced, for which greater sensitiveness is claimed than is possessed by the recently-introduced "Orthochrom T." It has been named "Pinachrom," and has been brought out by the firm of Meister Lucius and Bruning, of Höchst a/M. If this new sensitiser for the red fulfils the claims made for it, it is an acquisition, for hitherto the exposure for the reds have been unduly long to get presentable results. It would seem that greater interest

is being taken on the Continent in tri-chromatic photography than in this country, for all recent advances seem to come to us from abroad. Three-colour photography should specially interest professional portraitists now that coloured photographs are once more coming to the fore; but, so far as we are aware, they are taking little or no note of it, at least in England. It must, however, be confessed that up to the present better effects can be obtained by hand-colouring, by a skilled painter, than by the three-colour method; but will that always be so? Many years ago—thirty or forty—Ducos du Hauron proposed the use of the carbon process for the production of the three-coloured pictures, and fairly good results have been obtained with it. One of the difficulties with it, however, is that the tissue, when wetted, expands, the paper as well as the gelatinous coating, and contracts again when it dries, but not to its original dimensions. Hence with pictures, except of small size, there is a difficulty in securing accurate registration when the three images are superimposed, the one on the other. A patent has been taken out in this country, and also in Germany, for a carbon tissue that should obviate this difficulty. Instead of the pigmented gelatine being spread on paper, it is coated on a very thin film of celluloid, which has previously received a coating of indiarubber. The image is printed through the film of celluloid, and then developed upon it, and afterwards transferred to paper, which the rubber substratum permits of easily being done. As the celluloid film is quite unaffected by water, there is no expansion in the image as there is when the gelatine is coated on a paper support. A carbon tissue of this character should be of great service in tri-chromatic photography, as it would obviate some of the troubles now met with. This tissue, we are given to understand, is already on the market in Germany, but, so far as we are aware, it has not yet been introduced commercially in this country.

* * *

Photographers' Assistants. At the last meeting of the Liverpool Branch of the Professional Photographers' Association the question of the granting of certificates of proficiency to assistants, originated by the parent Association, came under consideration. This is an important matter with professional photographers, and many know to their cost the inconvenience they have been put to through engaging incompetent operators, etc. If one turns to the advertisement columns of the JOURNAL for the past few weeks and compare the numbers of "Situations Wanted" with the "Situations Vacant," he will see that the supply greatly exceeds the demand—that is, so far as quantity is concerned; but does it apply to quality? We sometimes hear high-class photographers complain of the difficulty they have in getting really good operators—gentlemen who have ability in posing and lighting the sitters, and are gentlemanly in manners—even when very liberal salaries are paid. At the present time, when plates are bought ready for exposure in the camera, and paper ready for the printing-frame, there is very little to be learnt before presentable results—indeed, technically good ones—can be produced; but all that does not constitute a first-class photographer, who can take charge of a good-class studio. Here a man of some culture, and with artistic ability and considerable tact is required, and such men are not so easily met with. At the present time the majority of "office boys" possess a camera of some sort, who, with dry plates and P.O.P.s, after a time consider themselves proficient photographers, and in glowing colours advertise themselves as such at wages really below those that unskilled labourers of the "navy" type are allowed by their Trades Union to accept, considering the hours they will have to work. Again, employers frequently

advertise for first-class operators and retouchers, sometimes to take management of a branch, and offer a salary for which it is ridiculous to expect a really competent man to accept, and, as a result, he sometimes finds that he has engaged a man of the type just referred to. Could he expect much other? A great deal of the photographic work nowadays is done by apprentices, male and female. The apprentice is either taken with a premium, or at nominal wage, or both, for a term, by people who are themselves quite incompetent to really teach the apprentice his or her trade, their object being really to get their work done for nothing, or for a quite nominal wage. What is the outlook for such apprentices? Whether the professional Photographers' Association will be able to remedy this state of things remains to be seen. We believe that in Germany people, including photographers, are now obliged to undergo some sort of examination as to competency before they are allowed to take apprentices. This on the face of it, seems of some protection to the apprentice. If such a law were in force here, we opine there would be fewer apprentices to photography than there are at present.

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Free Portraits.

It is a matter of intense wonderment that this swindle which has been exposed and torn to rags and tatters in our own columns, in those of our photographic contemporaries, and, it may be said, by the entire Press, provincial and Metropolitan, should still continue to flourish. As to Tanqueray, he seems to thrive upon the free advertisement given him by universal denunciation, as well as he does upon the remittances of his dupes, and while he keeps out of difficulties with our police by residence in France, he has many imitators in this country, who, encouraged by his success, follow as closely in his footsteps as they dare to go. But the marvellous part of the business is that people will not be warned, and we must either believe that they like being swindled, or that they never read a newspaper. It is a terrible thing to think that we have among us quite a large section of the human family which is so sluggish of intellect, and generally dull and inactive, that it takes little heed of what goes on around its uneventful boundaries. It is this type of person who has never heard of Tanqueray. The same uninteresting person has also never heard of the confidence trick; he is a staunch opponent of vaccination, and he always seeks a gas escape with a lighted match. In the latter case it may be said that he fulfils his destiny in going in "where angels fear to tread." This person is a constant source of danger to the community, and the question will some day be raised in Parliament as to a possible extension of the use of the lethal chamber in his favour. But until the public becomes educated up to viewing the subject of idiotic irresponsibility in this sensible manner, we must do our best to protect those who are likely to fall an easy prey to the sharper and the free-portrait monger. We do not suppose that this JOURNAL is read by anyone who is likely to be attacked by Tanqueraymania, and therefore it is almost waste of precious space to advise the victims of that malady, to let those who have infected them with it, and ask to be paid for doing so, seek their remedy in court of law. County-court judges have had so many cases of the kind before them that they are beginning to understand all about the methods adopted by those who undertake to make portraits and enlargements free of cost. A batch of cases came up the other day before the sheriff at the Aberdeen Small Debt Court, when the plaintiff, who traded, of course, as a "company," had some pertinent questions to answer, which were put to him by his Honour. "Were the enlargements done for nothing in order that a frame might be sold? Did the plaintiff go in for this kind of business through amiability?" and

forth. We were glad to see that the plaintiff was non-suit in every case, but not on the score of swindling, as we should have hoped, but for quite another reason. It seems that the canvasser for these "free" portraits had, in every case, transacted his business with the wives of those who were ultimately sued for payment. One witness said that she told the canvasser to call and see her husband with regard to the matter, but she was informed that they preferred not to deal with men. He might possibly have given expression to the thought, which was probably in his mind, that men sometimes have hard tips to their boots; but however this may be, the predilection for female custom led to the discomfiture of the plaintiff. It was held that as a photograph was not a necessary, the husband was not liable for what his wife had ordered. For the present, therefore, there is a slump in free portraits up North, but, for the reasons already adduced, we fear it will not be for long.

the Chromo- scope.

We can procure most things nowadays through the medium of the penny-in-the-slot system—chocolate, butterscotch, cigar lights, postage stamps, postcards, etc., by the minor machines, and on the Thames Embankment there is a more imposing arrangement by which refreshments of various kinds are procurable by coin-freed apparatus. But we were not aware that a feast of colour was attainable by such means until the other day we saw in one of the London railway stations a contrivance which held out this hope. The word "chromo-scope" was familiar enough in connection with Mr. Ives's autiful apparatus, the most perfect ever devised for showing photographs both in relief and colour. This word was subsequently shortened to Kromskop; but even under its Americanised title the apparatus did not attract the attention of the British public as it was reasonably expected to do, and it is unfortunately seldom seen now. Was the railway-station chromoscope identical with Ives's instrument? Had the latter fallen so low as to be placed on the same footing as chocolates and peppermint drops? Such were the questions which occurred to us as we approached the new apparatus. But our doubts upon the point were quickly settled, for we saw that the new thing did only one lens, and, of course, the Kromskop must have two in order to give the stereoscopic relief. Perhaps after all it was only a *réchauffé* of the antiquated chromo-scope, which used to delight and distress the eyes of folk at lantern shows, and were regarded as quite an indispensable part of the entertainment. No, it could hardly be this, for when we came to read the label on the machine we found that the promised reward for the slotted penny was the view of "a series of beautifully-coloured designs in liquid formation" (observe the neat way in which the mention of those who are not teetotallers is attracted by the use of the word "liquid"). These designs, which, we were told, "baffle description," are thrown on a screen by an electric light, and we are also told that the entertainment is "amusing, instructive, and interesting to young and old alike," and that it is an "education in colour signing." Then follow instructions how to drop a penny in the slot, how to look through the lens while at the same time a handle at the side of the instrument was to be turned. We are often told by writers who profess to have had great experience that the pleasures of anticipation are more intense than the fulfilment of the coveted desire, and we lingered long over the anticipation of enjoying this feast of colour. We were about to bathe in a rainbow, and all the gorgeous tints of the solar spectrum were to come around our entranced sense. It was but five minutes to the time at which our train was to move from the platform, but still we lingered on. At last we decided

to spend the hard-earned coin, but fate was against us; we had no penny. A rush to the adjacent refreshment-room, and the purchase of an antique bun which we did not want, secured the necessary change for sixpence; and, with breathless anxiety, we dropped the fateful coin within the yawning slot, gazed through the lens, and diligently turned the handle. Awful to relate, nothing happened; the machine was out of order, and we lost both our penny and our train. We regret that we are, therefore, unable to solve the mystery of this latest apparatus for showing pictures in colour.

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Concerning Inventors.

This is not a political journal, and we therefore do not concern ourselves with the merits or demerits of the fiscal system, over which just now there is such terrible ink-shed. But no one can deny that the stir that is being made, and the attention which is being directed to our methods as an industrial people, must work for good, and lead to such reforms as may be necessary. And we hope when the day of reckoning comes that there will arise some one in authority who will thoroughly overhaul our patent system. This is a question which must touch the interests of very many of our readers, for the patent specifications relating to photography are legion, and it would be an interesting thing if a profit and loss account of these documents could be compiled. One result would be certain, whatever the loss might be; a large profit would be found to accrue to the Patent Office. We are quite aware that certain reforms have been recently introduced, but the whole system requires re-organisation, for under present conditions invention, instead of being encouraged in every way by a paternal and far-seeing Government, is discouraged by the imposition of onerous taxes. The fees exacted for protection of a patent for the full term of fourteen years amount to one hundred pounds, which the inventor has to pay, in addition to the costs of employing an agent to carry through the work. In America the patent fees are seven pounds only. In a recent article in "Chambers's Journal" on "American Methods," the author, Sir Edmund Verney, speaks most strongly against our patent system. He writes:—"The English Patent Office actually wrings from the brains of wretched inventors a surplus income of £121,582 a year; and, naturally enough, there are not half as many applications for patents as in America, where there are about one thousand applications a week. American patents have given employment to enormous numbers of workpeople, and led to the adoption of much labour-saving and productive machinery. Our Patent Office ought to be at once re-modelled." We are most of us aware of the revolution in the manufacture of the photographic camera, which has been brought about by the introduction of American models, and it is a matter of constant remark that American machinery, beautifully designed for carrying out the most intricate work, is pushing its way into every other industry. A well-known tool manufacturer said to us not long ago that he no longer regarded himself as a maker of tools, but merely as an agent for the sale of those of Transatlantic origin. Surely we may say that this state of things must be due in great measure to the wise encouragement given to inventors by American legislation. But that is not all. Again quoting from Sir Edmund Verney, he writes:—"Foremen or managers in this country (Britain) generally resent suggestions from even their most practical workmen; but in America prizes of perhaps £120 a year are given for the best suggestion. The introduction of a labour-saving device or an improvement by a workman means to him a great personal advancement." It is somewhat humiliating for us to see that we

have much to learn from the wise methods adopted in such a comparatively new country as America, but the sooner we work on similar lines, and especially in the encouragement of inventive genius, the better it will be for our industries, which at present are being threatened on all sides by powerful competitors. There is a well-known story of a certain short-sighted person who killed a goose which had the very commendable faculty of laying golden eggs. Manufacturing devices and processes are the golden eggs upon which depends an industrial people's welfare, and we are killing the producers of those treasures when we tax the poor inventor. The goose story is a fable, the story of strangled invention is unfortunately true.

SOME ADVANTAGES OF RAPID EXPOSURES.

THERE has been much argument and discussion as to the comparative merits of slow or rapid exposures, in cases where it is equally feasible to adopt either. For a long time the pictorial photographer at least was wont to pin his faith to a generous exposure and a rather dilute developer, claiming that they afforded negatives of greater softness and delicacy. Of late, however, there has been evident a decided tendency to recede from this position, and a growing fondness for rapid exposures. The fact is that the photographer is becoming more and more aware of the admirable qualities of modern fast plates and films, and of certain advantages accruing from their use with large diaphragms and quick-acting shutters. The old question of hand versus stand camera does not come in here. The question under review is the advantage or disadvantage of a short exposure, without any reference to the kind of apparatus employed. What is often felt to be a strong argument in favour of the rapid exposure may be stated as follows. A finished photograph conveys a fixed and definite impression which does not alter as we look at it. Unlike poetry or music, which possess the power of calling variety and change to their aid, a picture or photograph has to make its appeal, once and for all, at the first moment the eye gazes on it. Our after sensations are purely mental processes, following slowly but surely after that first rapid glance. Now, it may certainly be argued, with considerable reason, that an impression which is to be instantaneously received, will be best if portrayed with equal quickness. To explain our meaning. When we gaze admiringly at a landscape, we do not see it in perfect rest; however still the air or constant the light, there is bound to be a swift succession of hardly perceptible changes which prevent our eyes from tiring of the scene. We cannot show this in a photograph, nor can the artist in a painting. We can only watch carefully for one suitable instant when everything satisfies our eyes, and try as best we can to preserve this happy moment on our sensitive film, so that the beholder who sees our picture may enjoy a portion at least of our own pleasure in the original. It follows, logically enough, that as we can only portray the landscape as it appears for a fraction of time, and as also the photograph so produced must make its destined effect on the mind of the beholder in much the same brief interval, that the long exposure is, in theory at least, undesirable, because instead of giving the simple impression that is wanted, it attempts to show the eye, in one short instant, more than it would naturally see in that period of time.

Among the indirect advantages of the quick exposure must be cited the fact that it generally involves the use of a large aperture and a rapid plate. These are both highly desirable from an artistic point of view, owing to the greater softness and better rendering of tone values thereby

ensured. The old-style photographer who stopped every thing down to F64 and preferred a slow emulsion, is now seldom met with. It may be stated, with a fair amount of justice, that much of the delicacy and charm of modern photographic work is due to the great advance in the manufacture of plates and films of high rapidity. It goes without saying that while, in the majority of cases, the photographer can exercise his choice between a rapid or a slow exposure, there are many instances where the former is imperative. In such a class must be placed the portraiture of children, rapidly-moving objects, animals, etc. Now, how often it is demonstrated that the operator who habitually gives rather slow exposures will secure his best and most telling pictures from just these very subjects, where his usual plan cannot be followed. He is compelled to do, for once, what he would be wise to do always, and his work is instantaneously better. It is not difficult to call to mind many examples of second- and third-rate photographers, whose ordinary productions are, although technically passable, distinctly stiff, but whose portraits of children, for instance, leave little to be desired. They would tell you the latter were prettier and more effective subjects, less difficult to pose, and so on. Of course, this would be true to some extent, but still, behind everything else, the thoughtful examiner into the reason of things would be able to see, unmistakably, that the enforced rapid exposure had really the most to do with the result.

Not that quickness of exposure cannot be overdone, so becoming a curse instead of a blessing. This latter effect is most likely to happen in the case of quickly-moving objects, and seems more or less unavoidable. It is surprising what a clumsy and unattractive picture may be obtained photographically from such a subject as a galloping or jumping horse, which no doubt will appear to the eye the ideal of grace and flexibility. In the instantaneous photograph, however, the rounded curves become straight and angular, the flowing muscles appear taut and strained; even the very effect of motion seems either lost or caricatured. It is easy enough to understand how this happens. The camera presentment is truthful and exact, but it is not what the eye sees. Owing to the phenomenon of persistence of vision, for which humanity ought certainly to feel grateful, we are unable to distinguish closely between a series of rapidly-succeeding movements, but perceive them blended together and softened to a great extent. In consequence, that crudeness and stiffness which are rendered in the camera's version of rapid motion are rarely present to our actual sight. From this, it may be deduced, as a general rule, that in the case of moving objects it is always advisable to give the longest exposure possible without showing movement. A reasonably good light is imperative if a quick exposure is to be given. This opens out another direction in which the rapid exposure seems to score. It is obvious that wherever the light is capable of modification by the operator he will naturally try to obtain as effective an illumination of the subject as possible. This leads to more consideration being given to securing a suitably even, soft, and diffused light, and, in consequence, to better pictures. The man who habitually uses slow plates and gives a longer exposure can afford to be less particular. It is not suggested that he necessarily will be, but the balance of probability points that way. Then again, wherever there is the opportunity of choosing time and place, the photographer who pins his faith to the rapid exposure will most likely determine on that period of the day, and that situation, which he knows will afford him the most satisfactory lighting; whereas one who adopts the contrary system of exposure is under no such obligation, and will take things more easily—a practice which does not tend to the finest results. It

ould certainly seem that the adoption of a rapid exposure, the standard for ordinary work, tends to the development many photographic virtues. There is yet another. It is hardly to be denied that, whatever additional effects it may have on the average worker, it will certainly promote the exercise of a faculty for instant decision. Few qualities could be of greater value in the pursuit of the camera art. The man who fumbles and hesitates is immensely handicapped. It will take him, perhaps, half a day and many failures to secure the same result that his quicker and more decisive colleague will obtain in a few minutes. This has been strikingly exemplified of late years in high-class portraiture. The methods of working of most of our best operators, as compared with the slow, experimental mode of the past, afford a striking and instructive contrast.

An old dictum, and one not even yet quite dead, is that prolonged exposure in portraiture a better and more characteristic effect is produced, through the imperceptible blending of different expressions. This is hardly a theory which finds much favour among the modern school of operators. It is perfectly true that, in the old days, the practice often had the useful effect of banishing from the sitter's face that unhappy fixity of feature produced by the use of the head-rest, and treatment which tended to promote self-consciousness. In that respect the long exposure did undeniably tend towards greater naturalness. Nowadays, however, the sitter is handled in such a different and more sympathetic manner, that it becomes simply a question of catching the rapidly fleeting smile, or the glance of interested intelligence, before they have had time to evaporate. And here, again, the rapid exposure prevails. Another direction in which the rapid exposure has beneficial consequences is to be found in those subjects where a danger of halation is present. This defect is, in all cases, less likely to occur, and very often is greatly diminished, by giving a short exposure in preference to a long one. A quick exposure does not necessarily mean under-exposure. The latter should be avoided at all hazards. It is the one great bane and curse of the photographer's existence. It ought in the majority of cases to be quite possible by wise choice of time or place, adaptation of lighting, and employment of rapid plates and lenses of large aperture, to give a minimum exposure. It need not be an instantaneous one; it is only attempted to suggest that it should be the shortest possible under the circumstances. But no matter what these may be, it must be a full and sufficient exposure, calculated to give a negative satisfactory and truthful gradation.

Mr. F. K. HURMAN, of Newcastle-on-Tyne, writes:—I have great pleasure in advising you that Mr. Tom Young, who has served us so faithfully and well since the house of Hurman opened its doors, has been appointed to manage and take charge of our Newcastle house. The many calls I have at our other branches render this development necessary.

We have received the latest edition of "Fallowfield's Photographic Manual"—a comprehensive catalogue of photographic materials, chemicals, and apparatus. It is, as usual, a most noteworthy compilation of monster proportions. Its 1,040 pages are crammed with good things, and nearly 2,000 well printed illustrations will greatly help to the vision the wavering choice of the prospective buyer, if not inveigle him into obtaining many useful things he had not heard of previously. Particulars of goods made by nearly every reliable firm in England are included, while no pains seem to have been spared to make it as thoroughly reliable in every particular. We understand that applications for more than 4,000 copies have already arrived. The price, 6d. per copy, from Jonathan Fallowfield, 146, Charing Cross Road, includes postage or carriage to any address.

THE DERBY CONVENTION.

PRELIMINARY announcements of the Nineteenth Annual Convention are now to hand, and the Derby Meeting (July 11 to 16, 1904) should prove as successful in every way as any of its predecessors. The following notice has been issued to all members:—

Dear Sir (or Madam),—Enclosed I have pleasure of handing you particulars of the Nineteenth Annual Convention Meeting, to be held in Derby, July 11 to 16 inclusive.

Derby was the scene of the first Convention (1886), when only 46 attended, and the meeting lasted but three days. Last year the membership numbered 346, and it is anticipated that the forthcoming meeting will show a still further increase.

A very attractive programme has been prepared for the week, and the excursions include some of the most interesting and beautiful scenery in Derbyshire.

An Exhibition of Members' Unframed Prints will be held during Convention week. The subjects may have been taken at any time, may be of any size, and printed by any process. A special section will be set apart for photographs taken at the Perth Meeting (1903). Should you desire to contribute any pictures to this exhibition, please let me know as soon as possible, as screens will only be provided for the exhibits of those members who have previously announced their intention of sending pictures.

I shall be pleased to forward any further particulars you may require, and hope to receive an early intimation of your intention to be present.—Yours truly,

F. A. BRIDGE, Hon. Sec. and Treas.

East Lodge, Dalston Lane, N.E.

The following is the programme of arrangements:—

Monday, July 11.—Morning and afternoon—Conducted parties to places and objects of interest in the town and immediate neighbourhood. Evening at 7.30—Official reception by his Worship the Mayor, Councillor Cornelius Boam, the members of the Corporation, and other public bodies. At 8 o'clock the President will deliver his inaugural address, after which the Exhibition of Photographic Apparatus, Pictures, etc., will be on view. Musical promenade, refreshments, etc.

Tuesday, July 12.—Excursion to Dovedale, one of the most lovely spots in Derbyshire. There will be no meeting in the evening.

Wednesday, July 13.—Morning at 10—Annual General Meeting. At 11—Meeting of the new council. At 12—The official Convention Group will be taken. Afternoon—The President, Alderman G. Herbert Strutt, J.P., and Mrs. Strutt, will give a Garden Party and Reception. Evening at 7—Annual Dinner and Smoking Concert in the Athenæum Rooms, Royal Hotel.

Thursday, July 14.—Excursion to Hardwick, one of the seats of the Cavendish family; beautifully situated between Chesterfield and Mansfield. Evening at 8.30—A Paper or Demonstration, followed by an Exhibition of Lantern Slides, by members of the Derby Photographic Society, under the direction of Dr. Collier Green.

Friday, July 15.—Excursion to Chatsworth and Haddon Hall.—The former one of the most magnificent private mansions in England, and the latter, probably the most perfect typical Baronial Castle in existence. Evening at 8.30—Papers or Demonstrations.

Saturday, July 16.—Short Excursions to Matlock, Wirksworth, Cromford, etc., etc., as may be desired.

GENERAL ARRANGEMENTS.

Place of Meeting.—The entire ground floor suite of the Mechanics' Institute has been secured for the meeting. This comprises the Albert Hall (capable of accommodating

500 persons) where the Reception, Conversazione, and Exhibition of Apparatus, Pictures, etc., will be held. The Lecture Hall, where the ordinary Evening Meetings will take place, Ante-rooms, Secretaries' Office, Ladies' Cloak Rooms, Buffet, Smoking Room, etc., etc.

Exhibition of Members' Work.—During the week, there will be an Exhibition of Unframed Prints, the work of members of Convention. The photographs may be of any size, may have been taken at any time, and may be printed by any process. A special section will be reserved for pictures taken at the Perth Meeting (1903).

Accommodation, etc.—For further particulars, hotels, private apartments, dark rooms, dealers, etc., etc., see the Official Illustrated Programme, which will be issued to members as soon as possible.

PHOTOGRAPHIC STUDIES IN THE BIOLOGY OF FLOWERS.

[A Paper read before the Royal Photographic Society.]

I PRESENT to you this evening an aspect of the art of photography which, perhaps, has not received as much notice by photographers as it deserves. Photographers, like most other people, are accustomed to treat flowers from an emotional rather than from a more prosaic and scientific standpoint. I have taken up the work for teaching purposes, and it has occurred to me that it would be more interesting to display certain facts regarding the biology of flowers by means of photographs taken directly from nature, rather than by means of the ordinary stereotyped diagrams. The series of photographs which I am about to show is rather incomplete at present. It consists partly of representations of still life pictures of flowers. About this class of photographic work I have very little to say, except that to do it satisfactorily one has to pay rather more attention to detail than is usual nowadays, when the tendency is so often to suppress detail. The scientific side, of course, has in the first place to be considered, while the artistic side of the work comes second. The other photographs in the series are mainly of sections of flowers, intended to show the structure of the flowers and their mechanisms. Lastly, I will show some instantaneous photographs explaining how insects become the agents in the pollination of flowers. The taking of these photographs is rather difficult, because in such work one has generally to use a hand camera, and yet get good focus. We cannot, of course, guess at the focus, and we have to use some sort of reflex arrangement in dealing with which we require to be more accurate than in ordinary classes of work. The only method that has been satisfactory in my work has been that depending on the use of a reflex camera; especially a reflex camera of the "Naturalist" pattern, in which the reflected image is formed in a telescope eye-piece, and can be much more accurately focussed than with the unaided eye. One, of course, has to give a shorter exposure than usual in hand camera work, when photographing living insects in active motion, and on account of the relatively large size of the image it is very liable to show traces of movement with quite rapid exposures. The size of the image further tends to give under-exposed results, hence it is advisable to use a portrait or other lens of large aperture. In the case of a portrait lens it is often advantageous to introduce slight spherical aberration to diffuse the focus. I will not say more about the difficulties connected with the subject, but pass on to diagrams showing the essential parts of flowers.

(A representation was then projected upon the screen, showing the essential parts of a flower, and particularly the pollen tubes and pistil in the centre containing the ovules.) The object of the flowers is to secure the fertilisation of the ovules, so as to produce seeds for the reproduction of the species. This is done by the transference of pollen, a yellow powdery dust from the

anthers of the stamens to the stigmas. I want you to understand that pollination is not fertilisation: the object of the flower is to secure pollination. Fertilisation, which follows pollination in flowering plants, occurs in other plants in which there is no process of pollination or production of flowers.

The pollination has to be effected by some external agency either by the wind or by some insects, and it is generally effected by the latter flying from one flower to another. Self-pollination also is possible; but cross pollination is more general. It appears that the primitive flowers of past ages were pollinated by means of the wind; but the wind is rather erratic, and this form of pollination may be looked upon as a primitive method which still survives in trees like the pine and the hazel. (A branch of hazel tree was then shown with the hanging catkins of staminate flowers, which are shaken at the slightest breath of wind.) These catkins are produced in spring, when wind is prevalent, and before the unfolding of the leaves, which would hinder the dispersal of the pollen. In the case of such plants an enormous quantity of pollen is generally produced, because a large proportion of it necessarily fails to reach its destination, so it is purely by an accident that the pollen ever gets to the stigmas. (The next slide showed two pistillate catkins of the same plant, each being a large collection of small flowers, with stigmas standing out a considerable distance, so that they might be more likely to catch the pollen floating about in the air.)

Another type I wish to speak of is that of the primitive plants pollinated by the agency of insects. Here is a specimen of the wild arum, or, as it is sometimes called, "lords and ladies." To show what can be done when the air is very still, I may mention that the plate from which this slide was printed was exposed for about ten minutes. The necessity for another method of pollination possibly arose first in the case of plants which, like the arum, dwelt in spots sheltered from the wind. Insect pollination is, of course, much more certain than wind pollination.

Another photograph showing more distinctly the inflorescence axis of the plant is now before you. Sometimes the insects are attracted by the bright colours of the flowers; but in other cases where there are no such colours, by the smell of the plant. The next picture illustrates the inflorescence cut open, showing the arrangement inside. The principal feature is a ring of projecting hairs, having passed which, the insect is shut in so that it may deposit the pollen, conveyed from other flowers, upon the stigmas below. A further slide shows the interior of an old inflorescence, the stamens having shed their pollen, and the imprisoning hairs withered, allowing the insects to fly away. The next slide shows how the willow, a plant originally intended for wind pollination, attempted to adapt itself for insect pollination. Then follow two interesting instantaneous photographs of bees visiting willow catkins. These photographs gave me a good deal of difficulty, for they were taken in March, when, of course, it was windy and the light poor; in one case the proboscis is just seen as the insect is in the act of sucking the honey. In these instances the exposure was one-hundredth of a second, and the lens set to about $f/3$. About twenty plates were exposed, only two, however, those from which the slides were taken, being presentable.

I now pass to flowers which are pollinated exclusively by insect agency. Firstly, there is a wood anemone, taken amid natural surroundings. Next we have a smaller group on a large scale, showing the essential parts of each flower. These flowers are brightly coloured, but with no honey, and attract insects by colour and by their plentiful pollen. A group of water lilies which follows has a large number of stamens, for they are essentially pollen flowers rather than honey flowers. In another group of water lilies to be seen in the next slide, the flowers stand out of the water, instead of floating upon the surface, as in the previous group. I also show a photograph of a lotus lily, such as grows so largely in China and Japan; and the same flower taken with a telephotographic lens, and, of course, much

enlarged. As they become more highly modified peculiar changes are to be found in flowers. (An example of a class of flowers which attracts insects by their large quantity of honey was then shown, followed by a representation of the dog-rose and specimen of the black thorn, showing the stamens getting lower and fewer as honey got more abundant. The next flower shown, the abutilon, was not adapted for insects, but for birds, such as the humming bird.)

The tendency of the stamens in this class of flower is to project in a long column so that the stamens may touch the wings of the birds as they hover over the flowers.

We will now pass on to flowers to which insects are attracted entirely by the honey, and in which the stamens are so few as to be only sufficient for purposes of pollination. In the group of hyacinths before us much of the beauty is lost through the absence of the natural colours. Plants of this kind, also, are very difficult to photograph satisfactorily, because the long, fragile stalks, even when there is only the faintest breath of wind, are scarcely ever perfectly still. The plate from which this slide was printed was exposed on one of the stillest days one could hope for; the flowers hang over and downwards, so that the honey may not be washed away by the rain. The next slide shows how an insect obtains the honey from one of these flowers. There was no need in this particular case to take an instantaneous photograph, because I was fortunate enough to catch the insect fast asleep after it had had a heavy meal.

We now come to flowers having long, narrow, tubular corolla adapted for pollination by insects with long tongues. The instantaneous photograph upon the screen shows an insect with its proboscis down the corolla of a flower, gathering the honey. Coming then to the primrose, I would point out the little marks on the petals, termed the "honey guides." Whenever an insect sees these little guides it at once knows where the honey is to be found. Particular attention should be paid to the two forms of the primrose flower, found on different plants, and to the fact that Darwin has shown such difference of form is to secure the cross pollination of the flowers. In the violet, a flower of rather different shape, the honey is in a little "spur," into which the small "honey guides" point. In the pea flower the pollen is "dusted" on to the underside of a bee when the insect alights on the flower to gather honey. The slide which follows shows how this arrangement is not quite perfect, for a butterfly seen visiting the flower and pushing its proboscis through and sucking out the honey without effecting pollination. (The fox-glove, adapted for pollination by the humble bee, followed by representations of two fox-glove flowers, cut open at different stages of growth, was then shown.) In the younger of the two flowers we see the stamens beginning to burst and shed their pollen. The tubular flower is the same size as the body of a humble bee; hence by the mere act of entering the flower the insect's back is sure to touch the stamens, and the pollen will be carried off. In the older flower the style is seen hanging down and the stigmas open, acting as little scoops to scoop the pollen from the back of the bee. The drawback to the arrangement is that any small insect can crawl into the flower without touching the anther or stigmas, and thus steal honey without effecting pollination. Hive bees have been seen to crawl into the flower, along the stamens and style, and thus effect pollination by their ventral surface, and not, like the humble bees, by their dorsal surface. Further observations are required to show how far this is usual.

Another example, the snapdragon, has a device to exclude those insects which are useless for purposes of pollination. The next slide shows such a flower with a long tubular body and a small mouth, to open which some little force is necessary; and a snapshot which I was able to get is seen a humble bee just entering a flower. Small flies, and apparently hive bees, are unable to effect an entrance, and the hive bee often steals the

honey by biting a hole in the bottom of the flower, thus stealing the honey without effecting pollination.

A German botanist has described a flower which keeps off creatures attempting to steal honey in this fashion. In this case the flower has a little receptacle of water around the base of its corolla, and when a bird, for instance, pecks a hole in the outer portion of the flower, a jet of water is squirted into the bird's face, and so frightens it away. The next slide shows the honeysuckle, with very long honey tube, and stamens standing out a considerable distance. Although a certain popular song associates the honeysuckle with the bee, the bee, as a matter of fact, has very little to do with the flower, for it is pollinated chiefly by long-tongued hawk moths. Even though the moth be hovering some distance away from the flowers the stamens are so long that the wings of the insect catch the pollen and so effect the pollination. The honey tube in this flower is fairly full in the evening, but generally almost empty in the earlier hours of the day; so that the bee going home at a respectable time misses the honey, while the moth is able to obtain it in abundance at late hours.

(A photograph of a caterpillar of one of the moths in question was then shown, and the little horn at the end of the insect's tail and the stripes on its back—supposed to keep off its enemies—were pointed out. The next slide showed the chrysalis of the same caterpillar, with the skin which had been cast beside it; and then the moth which afterwards emerged from the chrysalis. The slide which followed showed very distinctly the insect when dead, with its proboscis stretched out to show its great length.)

The most extreme specialisation is attained among the orchids, which often have complicated arrangements, but can only be pollinated by one species of insect. Such excessive specialisation, however, proves disastrous if the particular insect required becomes exterminated or even reduced in numbers. Another set of flowers has been evolved, adapted for the visits of any kind of insect. Such flowers are generally small, and collected into groups or inflorescences. The chief advantage of such an arrangement is that cross pollination is much more certain and rapid than if the flowers are large and some distance apart. (The points in question were illustrated by the elder, the guelder-rose with the outer flowers of the inflorescence conspicuous but sterile, their use being to attract insects to the inconspicuous central fertile flowers; and the most perfect arrangement of all in the daisy and its allies. A slide was shown of seven ages of the sunflower, dissected out from an inflorescence, showing how cross pollination was effected with rapidity and certainty by any kind of insect.)

To illustrate the variety of insect visitors, I show a specimen of a peacock butterfly visiting a sunflower. The great difficulty in photographing such objects is that a large aperture has to be used, for only a very short exposure can be given, and one is obliged, in a second or two, to get the axis of the lens as nearly as possible perpendicular to the insect. In such work I find it necessary to make as sure as possible of the parts of the object which require most attention, and trust to the other parts coming out satisfactorily. Another slide shows a cockchafer eating the outer flowers of a daisy inflorescence, and, by the act of walking about, pollinating the inner flowers; and the next photograph illustrates humble bees visiting a similar plant, the exposure in this instance having been only 1/100 of a second. (The very efficient arrangement found in such flowers for distributing their fruit was then described; and the fruit of a goat's beard shown, with its little "parachutes," by means of which the fruit was carried off by the wind. The last slide showed a butter-tree plant, bearing an extensive crop of such downy fruits.)

In conclusion, I would point out that such flowers as are adapted to the visits of all insects, and also have efficient means of seed dispersal, are by far the most numerous; that

while the struggle for existence in civilisation ends in a victory of the specialist, in the world of nature, or at any rate the flower world, the victory is, so to speak, with "the all-round man."

B. H. BENTLEY, M.A., F.L.S.

SOME SPECTROSCOPIC NOTES ON TRICHROMATIC PHOTOGRAPHY.

I.

THE following digest is considerably abbreviated, but as—so far as I am aware—no notice has yet appeared in any English journal, and the subject is one which is attracting, and deservedly, some considerable attention at the present moment, it may be agreeable to those who are interested in the process; and the high reputation of the author, Dr. Josef Maria Eder, is sufficient to invest it with some authority. The original was a paper read before the Imperial Academy of Sciences of Vienna in 1902, and is published as a special reprint under the title of "Spectralanalytische Studien über Photographischen Dreifarbendruck," and a very good colour chart and some excellent photogravure spectrograms are included. These, however, cannot, of course, be reproduced.

E. J. WALL.

The most important process of colour reproduction by photography is the subtractive method, by the superposition of yellow, red, and blue printing inks, either by colotype or typography. The usual printing inks are chrome yellow, krapp lake or alizarine red lake, and Berlin blue, generally known as Milori blue.

The solar spectrum is generally divided by the aid of filters into three zones, which approximately correspond to the physiological primary colour sensations. The blocks from the negatives thus produced are printed in inks complementary to the colour filters through which the negatives were produced.

If the filters recommended by theorists are spectroscopically examined, it will be found that they may be divided into three main classes:—

(a) From the red to D, from D to about F for the green, and thence to the blue violet.

(b) Or the spectrum is divided into similar zones but with overlap on both sides.

(c) Or the opposite method is adopted and the three zones are so much narrowed that there are vacancies in the yellow and blue green regions.

As the theorist has rarely supported his statements by sufficient practical typographic or collographic tests and the practical worker has kept his methods of working a close secret, the author has for years made a study of the subject, and his spectroscopic results (theoretical) have been substantiated by empirical tests (practical) in the printing department of the K.-K. Lehr- u. Versuchsanstalt at Vienna, and as excellent results were obtained the author gives his researches for publication.

If an ideal panchromatic plate were obtainable, that is, one which was equally sensitive to all the spectrum rays, the problem would be considerably simplified, as suitable filters would merely have to be found; but, unfortunately, all existing panchromatic plates are unsatisfactory, as they show drops in colour sensitiveness, and, when spectroscopically tested, irregular maxima and minima.

If separate plates are used for the green and blue violet sensations, exactly similar conditions occur, and as, for example, the yellow-green plate should be equally sensitive to yellow-green, green, and blue-green, it frequently happens that the yellow sensitiveness is so predominant that a "dampening" filter is essential.

A quartz spectroscope and a metallic concave grating were rejected, and a direct-vision spectroscope composed of three prisms, by Steinheil, was used, and the comparison curves of a

single prism and the three-prism spectroscope are very similar if not identical.

For orientation of the wave-lengths, the lines of sodium and thallium, the magnesium-spark spectrum, the lithium flame and lithium spark were used, and for the ultra-violet the author's alloy of equal parts of cadmium, lead, and zinc, and also some iron lines were used.

Spectroscopic tests must, for three-colour work, be backed up by tests on pigments.

The ratio between the visual luminosities of the solar spectrum and the light reflected from pigments has been frequently estimated by various experimenters, and the yellow of the D line estimated as from 9–31 times brighter than the spectrum blue, at F₂G, and from 21–87 times brighter than the dark spectrum blue at G, whilst pigmentary yellow is from 6–14 times brighter than the blue; spectrum yellow of the D line is from 19–40 times brighter than the red, between A and C, whilst with pigments it is only 3–7 times brighter.

Further, as the prismatic and diffraction spectra differ in the ratio of luminosity in the yellow and blue the above results cannot give comparable figures for photographic work.

A knowledge of the qualitatively estimated absorption spectra of light filters is not sufficient to recognise their action in polychromatic photography, for the extent of the colour zones which photographically act is dependent on the length of exposure or the intensity of the light. With short exposure only the brighter portion of the spectrum rays transmitted by the filter will exert a photographic action, corresponding to a narrow spectrum band; with long exposure the colour zones which are much dampened will also exert a photographic action. Thus with prolonged exposure, or greater intensity of light, a broader colour zone will act than with a short exposure.

This uncertainty of the action of colour filters induced the author to determine the quantitative absorption of various filters.

In the reproduction of oil paintings or of other objects behind colour-filters it is always necessary to expose sufficiently long to give details in the shadows. The limit of over-exposure (or the limit of the maximum exposure permissible) begins when the highest lights of the negative cannot be differentiated. Exposure and development must not be carried beyond a point that will, according to the reproduction process, give a density above 2–3, approximately 2.5.*

The brightest colour zone of a filter will therefore act in a normal negative so as to produce a photographic density of 2.5, and it will then be seen how far under these conditions the half-dampened colour zones photographically act. This method did not lead to absolute certainty of results, as there is always a certain latitude of exposure and development that influences the gradation of the densities; but it gave a better insight into the action of light filters than any previous method.

Repeated experiments by the author satisfied him that with very short exposures the light filters cut off photographic action where the transmitted light was reduced from 30–40 per cent. With mean exposures other zones of the spectrum came into action, and these where the remaining light intensity amounted to 10–20 per cent. Wherever a filter showed a brilliancy of about 10 per cent. must be set, practically, the photographic limit of the same. With very long exposures, bordering on the region of over-exposure, then the photographic action must be limited in any colour region to a light intensity of 5 per cent., and in this case the "density" is from 0.4 to 0.5 when the greatest density in the negative equals 2.5.

As regards the foregoing remarks, it must be assumed that the photographic plates have good sensitiveness in the desired

* The term "density" is here used in practically the same sense as used in the H and D system, that is to say, as the logarithm of the opacity. Dr. Eder uses Scheiner's sensimeter, which is very similar to the H and D, and a Hartmann microphotometer.—E. J. W.

tions, and that the zones and filter damping do not correspond with the minima of the plate sensitiveness.

It may be usually assumed in reproduction work that with sufficient exposure the vigorous image begins where the transmitted light equals 20 per cent. of that which is transmitted by the greatest maximum transparency of the filter; with a light equal to 10 per cent. behind a filter there is always given a half tone; whilst with a light equal to 5 per cent. only a very pale half tone is given which for trichromatic reproduction is not of any moment.

LENSES FOR TRICHROMATIC WORK.

The following notes on the above subject conclude Dr. Eder's paper on three-colour work, and as it is not an unimportant part, they may be of interest.

The achromatism of an ordinary objective is not sufficient for three-colour work, and it is easy to determine how a lens could be corrected from the spectroscopic examination of the spectra and filters. With the orange filter the lens should be corrected in the red for the characteristic lithium line λ 610, the hydrogen line $H\alpha$ λ 656, the Fraunhofer line C.

For blue-violet the achromatism may be somewhat wide. The particular sensitiveness of gelatino-bromide of silver extends from λ 400-425, with a glass apparatus and generous exposure it extends from λ 490-HK in the ultra-violet, so that the optician can choose from λ 450 to λ 440, or from $F\lambda$ 486 to $KH\lambda$ λ 393; for instance, the Fraunhofer line $G'\lambda$ 434* or $h\lambda$ 410. The latter corresponds to the requirements of a wet collodion of silver collodion, the maximum action on which begins at λ 437 and includes λ 423 and λ 410, and which is specially suitable for half-tone and line-work on account of its good definition and sharpness of the lines.

For ordinarily achromatised lenses, which are almost always made with gelatino-bromide plates, it is practically immaterial whether the focus of the D line λ 589 coincides with the blue hydrogen line $G' = H\gamma$ λ 434, or with the violet calcium line $g\lambda$ 423 or $h\lambda$ 410. For reproduction photography with wet collodion the correction for mean violet ray $g\lambda$ 423 is the best.

All opticians do not correct for the same rays, as is obvious from the accompanying table, the details of which have been supplied by the firms in question:—

T lenses are corrected for			
Ordinary lens, Steinheil	D λ 589	...	g (Ca) λ 423
Trichromatic lens, Steinheil	C λ 656	...	F λ 486
Photographic lens, Steinheil	$g\lambda$ 423	...	λ 389
Ordinary lens, Voigtlander-Harting	D λ 589	...	G' (Hy) λ 434
Ordinary lens, Zeiss	D λ 589	...	G' (Hy) λ 434
Correct for chemical rays only it should be according to Voigtlander	F λ 486	...	λ 434 & $h\lambda$ 410
Trichromatic, Voigtlander-Harting	C λ 656	...	F λ 486
Refracting double anastigmat, Series III.	D λ 589	...	G λ 434
Refracting apochromat, Series IV. †	D λ 589	...	G' λ 434

For the green filter the principal action is represented by the magnesium line $b_1\lambda$ 517, and the apochromates should be corrected for this ray. The opticians do not specially correct this green ray, but for orange and blue, and assume that correction for the green will be sufficient. For blue-violet rays, or when using photographic plates which are only sensitive to these rays, the following considerations are worth taking account: If collodion plates without a light filter are used, excellent negatives of the blue-violet region may be

obtained with the Steinheil achromatism for λ 423, which corresponds with the middle of the principal action of the ordinary violet filter, with which the printing plate for yellow is prepared.

The apochromat for three-colour work should be corrected for

Orange at the Fraunhofer line	C λ 656
Orange at the lithium line	λ 610
For green at the Fraunhofer line	$b_1\lambda$ 517
For violet at the Fraunhofer line	g Calcium λ 423

Unfortunately the region from λ 656- λ 423, which is of importance in tri-chromatic photography, is too great to be altogether corrected, even if glasses are used, which diminish the secondary spectrum; therefore the narrow correction of the region from the orange line to the blue line λ 434. This should extend from λ 610- λ 434. A better correction would be from λ 656- λ 423, but practically if it extends to λ 486 it is sufficient.

Two excellent process lenses were tested, by focussing for each colour midway between the axis and the margin and the aberration from the focus of the D-line estimated. Both gave the same amount of aberration, but one was much worse than in the violet, the other equally as bad in the violet as the other was in the red. Practical experiments with three-colour prints showed that the latter objective, which was better in the red than the violet, gave undoubtedly more precise three-colour prints than that which was worse in the red than in the violet, which gave a marked fuzziness of the prints.

This result will not be a matter of surprise to the expert in colour-printing, for the yellow printing plate, produced by the blue-violet rays, is printed first and is more generally a coloration film; whilst the blue printing plate, produced by the orange-red rays, which is printed last, gives, according to the colour printer, not only the contour, but the drawing of the picture. Therefore it is of less moment if the yellow printing plate is less sharp if only the red-and-blue plates are sharp and superimpose well.

MESSRS. GEORGE HOUGHTON AND SON, LTD., of 88 and 89, High Holborn, London, W.C., write:—We have much pleasure in informing you that we have incorporated the business carried on by us as George Houghton and Son, Ltd., in succession to George Houghton and Son (established in 1854), with those of Messrs. Joseph Levi and Co., 97, Hatton Garden, E.C., wholesale opticians and photographic dealers; Messrs. Spratt Bros., Tudor Works, Tudor Road, Hackney, manufacturers of photographic and scientific apparatus and instruments; Messrs. Holmes Bros. (Sanderson Camera Works), Park Street, Islington, N., photographic apparatus manufacturers; Mr. A. C. Jackson, Hex Camera Works, Northwold Road, Stoke Newington, N.E., photographic apparatus manufacturer. The style of the new company will be "Houghtons, Limited." The combination of manufacturing and distributing interests of which the new company will consist will place us in the position of being the largest manufacturers of photographic cameras and apparatus, as well as the largest distributors of photographic goods generally in Great Britain, and, we trust, will enable us to meet the ever-increasing demand for British-made cameras and apparatus of all kinds. Mr. George Houghton will be the chairman of the new company, and Mr. M. L. Isaacs (J. Levi and Co.) the vice-chairman. The active management of the amalgamated businesses will remain in the hands of the members of the several firms who have for so many years past conducted them so successfully, our Mr. E. W. Houghton and Mr. C. E. Houghton taking an active part in the general management. For the present the various businesses will be carried on exactly as heretofore. As soon as practicable, however, arrangements will be made to simplify the distribution to the mutual advantage of our customers and ourselves, and in the meantime we shall, of course, be glad to enclose with our goods orders for goods of any of the amalgamated businesses.

The hydrogen line G' must not be confounded with the Fraunhofer line $G\lambda$ 4307 which is an iron line.
This lens is corrected for D and G' , but the glasses are so chosen that C, F, and G' are practically corrected.

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

THE third annual dinner was held in the Victoria Hall of the Criterion Restaurant on Friday, the 11th inst. Mr. Alfred Ellis (President) occupied the chair, and amongst the company present were Mr. Thomas Bedding, F.R.P.S. (past President), Mr. Wm. Grove (past President), hon. secretary and treasurer, Mr. T. C. Turner, of Hull (Vice-President), Mr. P. E. Marshall (hon. solicitor), Mr. and Mrs. F. A. Bridge, Mr. S. H. Fry, Mr. H. Edmonds (Hull); Mr. Louis Langfier, Mr. H. S. Mendelssohn, Mr. E. Scamell, Mr. Lang Sims, Mr. W. Downey, Mr. and Mrs. H. Snowden Ward, Mr. and Mrs. Alec. Corbett, Mr. and Mrs. H. A. Chapman (Swansea), Mr. and Mrs. Daniel Prodger, Mr. and Mrs. Edward Cherry (St. Albans), Mr. Warwick Brookes (Manchester), Mr. T. Birtles (Warrington), Mr. H. Pumelle (Leeds), Mr. Frank Turner, Mr. E. J. Walker, etc.

An excellent menu was done ample justice to, after which the customary loyal toasts were given and duly honoured.

The President, who was received with cheers, said he had the honour and pleasing duty to propose the toast of the evening, that of "The Professional Photographers' Association," or, in other words, their good selves. This was the occasion of their third anniversary, as in March, 1901, their Association was founded. Although not progressing by leaps and bounds, he was pleased to be in a position to inform them that it was going on steadily and successfully, and it was seldom a week passed without bringing applications for membership from some portion of the country, and in time, therefore, they might reasonably hope to be the proper representative association of professional photographers in Great Britain and Ireland. This was the first occasion that ladies had been introduced to their meetings of this nature—(hear, hear)—and although he regretted the number was not greater, he could assure those ladies present that he was very pleased to see them, as he knew that in photography ladies were a great help to their husbands, and it was therefore only fair that they should share with them the pleasures of a meeting of this description. During the past week many letters of apology and regret had reached him from members who were unable to attend, and he had just received a telegram from one of their vice-presidents, Mr. W. Crooke, of Edinburgh, heartily congratulating them, and regretting his inability to be present. Another telegram had also been received from their old friend and fellow-committeeman, Mr. Martin Jacolette, who unfortunately, through illness, was prevented from attending, but who sent his best wishes for a pleasant evening, while regretting he could not be with them.

The two principal items which the Association had undertaken for the current year were an exhibition of professional work and a scheme for an examination for photographers' assistants. The exhibition of professional work would be held at Derby in June, during the Photographic Convention. The Corporation of Derby had kindly placed their picture galleries at the disposal of the Association for a month, and the committee were very anxious that their exhibition of pictures should be the very best that professional photographers could produce, and he therefore trusted that the members would strive to make the exhibition a great success. The suggested examination of photographers' assistants was a very important matter, and one which would require a considerable amount of care and thought. A number of meetings of the sub-committee appointed would therefore be necessary before the scheme could be perfected and launched, but he was sure that they would eventually carry it through successfully, and that it would rank as one of the best things done by the Association.

Passing from this subject, the President said he would like to address a few words to the members with regard to the duties of the officers of the Association. They had a very good committee, and they had worked excellently during the past three years. It could not reasonably be expected that they could continue doing this work, and therefore he appealed not only to those members present that evening, but to all those who would read an account of this meeting in the *BRITISH JOURNAL OF PHOTOGRAPHY*, to give their greatest attention to the voting for the new committee at the annual general meeting, and he hoped they would, at any rate, interest themselves in the work the present committee have initiated. If the members do not interest themselves in his direction, the Association would not go forward in the way they wished. He also trusted that every endeavour would be made to increase the membership. At

present their finances would not permit of it, but he should like to see a permanent office of the Association, at which any member could call and consult the assistant secretary, or whoever was appointed to represent the Association there, upon any matter which might crop up. At the present time it was somewhat awkward, and people thought he could see them at all times of the day or answer their inquiries by telephone. It was obviously impossible for him to do this, and he hoped that with increased membership it would be possible to obtain what was desired, and thus have a permanent address. It was also essential that they should increase their membership on other grounds. Their present membership of 600 was but a small one, seeing that there are approximately 6,000 photographers in the United Kingdom, and if at any time it became necessary to approach Parliament on any question, it would not be very effective unless the Association was in every way a representative one.

He would ask them to drink to the success and prosperity of the Professional Photographers' Association, coupled with the name of their esteemed hon. secretary and treasurer, Mr. Wm. Grove.

Mr. Grove said he had much pleasure in responding to the toast. He could truly say the Association was prospering—(hear, hear)—and deservedly so, considering the amount of energy put into the work by both the London and Provincial committees, and as a result the Association was proving its usefulness both to its members and the profession generally. The fact that some ninety new members had been made since June last was tolerably good evidence of the vitality of the Association; but he thought they must not rest content with they had at least a membership of over 1,000. The work of the committee during the past year had been made familiar to them through the medium of the *BRITISH JOURNAL OF PHOTOGRAPHY*, and in regard to this they were under a deep obligation to Mr. Bedding, their past president, for his kindness in placing his journal at their disposal. (Hear, hear.) He did not think he could do better than read a memorandum contained in their invaluable handbook regarding the work of the Association, viz.: "Many hundreds of letters have been replied to asking advice or information upon such subjects as Right of Copyright, Infringed Copyrights, Trade Terms, Discommodities, Right to Negative, Charges for Special Work, Studio Construction, Price Cutting, etc. In many cases the advice given has resulted in preventing fruitless litigation, and in others it has undoubtedly assisted in obtaining satisfaction, with or without going into court. The expert evidence that is available to a member is often invaluable."

With regard to this, he felt it right to say that he would like to have received greater acknowledgment from the members to whom such advice had been tendered.

There was another matter to which he might be allowed to draw their attention with advantage to themselves, and that was the liberal terms afforded the Association by the Fine Art Insurance Company, which conceded to members a 20 per cent. reduction on premiums hitherto paid. The cheap methods of enlargement schemes had engaged the serious attention of the committee with good and wholesome results. He was pleased, in his position as hon. treasurer, to inform them that there had been a steady increase in the Association's bank balance, and they might consequently congratulate themselves upon the position arrived at.

The President had referred to the importance of members attending the annual general meeting. He quite endorsed all that had been said in that direction, and he found that there were about 110 members whose residence afforded them easy access of attending that meeting, and also the members' meetings. If they would do so, it would be a graceful recognition of the committee's labours, as some of that body came long distances, such as from Hull, Colchester, Tunbridge Wells, Brighton, etc.

Mr. Lang Sims, who apologised for "chipping in," said the committee had entrusted him with a very pleasing duty, i.e., to present to their past and present presidents solid gold badges suitably inscribed. These gentlemen had done, and were still doing, extraordinary good work for the Association. He would explain the term extraordinary. The first president, Mr. Bedding, started the institution and made it an extraordinary success; Mr. Grove, who followed as second president, was treasurer 1901-2, president and treasurer 1902-3, and treasurer and hon. secretary 1903-4; Mr. Alfred Ellis was hon. secretary 1901-2-3, and president 1903-4. The London committee thought that they would like to make them a little present. When

is mooted the country members said, "No, you don't, unless we are allowed to chip in too," and he must tell them that so popular was the idea that the whole of the committee had joined hands. There had been some fun over it, and considerable discussion as to who was to make the presentation, but eventually it was decided that the best-looking man was to do it. But even then jealousy was rife, and it was difficult to decide who possessed this qualification, as the best one had little hair but good features, and another a tolerable amount of hair but no features, and they saw in him the compromise. (Laughter.) He had, therefore, much pleasure in making the presentation, and he would ask the gentlemen concerned to accept the medals as a small token of goodwill from the committee, and he felt sure that the members of the P.P.A. would like to be included in their good wishes. (Cheers.) His injunction had been that he was to make a presentation gracefully, and he trusted he had succeeded.

In suitable words Messrs. Bedding, Grove, and Ellis returned thanks for the handsome mementos of office.

In a happy and breezy speech, with occasional poetic flights, Mr. A. Bridge proposed the toast of "The Ladies," to which, on their behalf, Mr. H. A. Chapman, J.P., responded.

Mr. S. Herbert Fry, in proposing the toast of "The Local Branches," said that in view of the fact that there were approximately 6,000 photographers in the country as against 600 in London, the country members must be considered the very rock bottom foundation of the Association's success. As they were aware, there were a certain number of local branches already established, and it was the ambition of the committee to see sooner or later the formation of a branch of the parent body in every town of the country, and thus promote good fellowship among photographers as a body; and they felt that unless they could bring about unity and strength amongst photographers their work would be very slow. The committee was, therefore, particularly anxious not only that the present organisation of the Association should continue, but that it should be increased in efficiency, and that its branches should spread everywhere. There was always the tendency of the country members to think that the London members have matters all their own way respecting what is done on the Council. If one really came to examine the question, the town members are very much less in need of the Association than are the country members, and that was why in proposing the health of the local branches they felt that it was in a sense necessary to urge upon their country members the necessity for exertion among themselves. Everything could not be done from London, and country branches were therefore essential. Mr. Turner, whose name was coupled with this toast, had set a fine example of what could be done by a local branch if it really put its back into it. They knew the Hull branch had been very keen and long on this matter, and had shown the London Committee a very good lead as to what could be done by energy and enterprise with a certain tendency towards retaliation, notably in connection with the Oxo Free Portrait scheme. He had much pleasure in asking the country to drink to the continued prosperity of the local branches, coupled with the name of that energetic organiser, Mr. T. C. Turner.

Mr. Turner, who was received with cheers, expressed his thanks on behalf of the local branches. Mr. Fry had said more than they deserved—certainly more than he deserved—and he felt that these branches were capable of doing very much more good work in the future. All the towns in England had unfortunately not realised the good which might be done in the direction of the formation of local branches, which were the means of getting photographers together and persuading them that they had certain specific duties to do, and interests to safeguard. The photographer's voice in Hull counted for something, and they did not intend to allow aspersions on their profession to pass unchallenged. When one considered the many photographic studios throughout the country, representing an enormous amount of capital, it did not seem to mention the clever business energy displayed by some of the best photographers in the kingdom, it was not likely that they were going to sit down quietly and allow such reprehensible practices as were recently foisted upon them, as, for instance, the Oxo Free Portrait enlargement, etc. It was no use for members to simply contribute a subscription to the Association and then cry out, "What is the good of the Association?" They wanted something more than the subscription of 5s.; they wanted the more cordial professional feeling, and when this was obtained the Association would become a great force for good. He hoped that before long the spirit shown in London would be copied in a dozen centres in the country.

Mr. Fellowes Wilson proposed the toast of "The Officers and Committee," and Mr. Louis Langier responded.

Mr. W. Downey proposed "The Health of the Visitors," coupled with the name of Mr. E. J. Walker, the designer of the beautiful menu card.

Mr. Walker briefly responded on behalf of the visitors, and thanked Mr. Downey for his kind remarks.

In proposing the toast of "The President," Mr. Bedding said he was inclined to quarrel with their toast list, as he was of opinion that the present toast should have been included with the third toast of the evening, viz., "The Professional Photographers' Association." He was sorry that on this occasion Mrs. Ellis should have been unfortunately prevented from being with them, and he was sure that Mr. Ellis felt her enforced absence very keenly. He had the honour and pleasure to propose the health of Mr. Ellis, their President, and in doing so he would couple the name of Mrs. Ellis. Mr. Ellis was the third occupant of the presidential chair, and his sincere hope was that he would continue to retain it for many years to come.

Mr. Alfred Ellis, who on rising was received with acclamation, said he thanked Mr. Bedding very much for the kind way in which he had proposed his health, and the members for the hearty manner in which they had responded. If he had one regret that evening it was that his wife was not beside him, owing, he was sorry to say, to the serious illness of one of his children. She had looked forward to this meeting for months past, and her inability to be present was a great disappointment to her and also to himself, as he would have liked her to hear all the kind words said of him. He felt he could not take all those kind words to himself, because he had someone who assisted him day after day in the work of the Association. He alluded to the Assistant-Secretary, Mr. Mackie, who was also unfortunately prevented from being with them owing to a family bereavement. Without Mr. Mackie he felt sure the work of the Association could not be carried on in the prompt and ready manner in which it is performed. Mr. Bedding had said he was a busy man, but he was able, with Mr. Mackie's assistance, to take up any matter which reached him by letter the first post in the morning, and during the day to send, if necessary, some sort of answer or advice to the member seeking assistance if it was a matter of any considerable moment. They did what they could at the time, or if unable to themselves, would call together a few members of the committee residing near and consult with them if found necessary before the whole of the committee met. The business is, therefore, attended to promptly. While, therefore, he thanked the company for the hearty manner in which they had drunk the toast, he would ask them to drink Mr. Mackie's health and success. This was done with cheers for Mr. Mackie.

The pleasant evening terminated by the company singing "Auld Lang Syne."

During the evening an excellent entertainment was provided by Messrs. Walter Churcher, Otley Cranston, Edgar Coyle, J. M. Campbell, and Herbert Townsend (accompanist).

We have received a copy of the new 1904 illustrated catalogue of the Altrincham Rubber Company, in which will be found a complete list of photographic specialties, comprising shutters, lenses, cameras, shutter accessories, rubber goods of all kinds, carrying cases, back-grounds, bromide printing machines. A copy will be sent free of charge from the head office, Mossburn Buildings, Altrincham, to anyone interested.

The programme of a photographic excursion to Bruges is to hand from Mr. W. F. Slater, F.R.P.S. The excursion will extend from March 31st to April 5th, 1904, and Ostend, Ypres, and Ghent will also be visited. Mr. Slater will personally conduct the trip, which is a sufficient guarantee for its complete success. As on previous occasions, the excursion is under the auspices of the South London Photographic Society, whose successful exhibition was brought to a close on Saturday last. An excursion will also be arranged during the Whitsun holidays to Zealand, and one, two, or three weeks' excursions will be provided for during the summer to Holland, Germany, and Switzerland. Those intending to take advantage of these photographic outings on the Continent should write for full particulars to Mr. W. F. Slater, 68, Longhurst Road, Hither Green, S.E.

NATIONAL PHOTOGRAPHIC RECORD ASSOCIATION.

THE annual general meeting of the National Photographic Record Association was held on Wednesday, 9th inst. At the invitation of Sir J. Benjamin Stone, M.P., President of the Association, the meeting was held at the Midland Grand Hotel, St. Pancras, and tea was served to a large assembly of members and persons interested in the work of the association, among whom we noticed Sir J. Benjamin Stone, Sir C. Purdon Clarke, C.I.E.; Sir Alfred Haslam, M.P.; Major-General Waterhouse, C.I.E.; Major C. C. Bard, Mr. and Mrs. Snowden Ward, Messrs. George Scamell, Hon. Secretary of the Association, L. Fletcher, F.R.S.; and C. E. Fagan, of the British Museum; H. B. Wheatley, F.S.A.; A. Graham, F.S.A.; G. A. T. Middleton; A.R.I.B.A.; Alfred Ellis, President P.P.A.; J. W. Marchant, Alexander Mackie, Horsley Hinton, F. R. Armytage, J. W. Tapley, H. W. Fincham, E. Goodman, W. T. White, Rev. J. O. Bervan, George F. Parkes, Dr. R. H. Mill, etc.

The annual report showed that satisfactory progress had been made during the year, 683 prints having been received, making a total of 3,142 valuable records deposited for reference in the British Museum since the foundation of the association. During the year Sir J. B. Stone has again been a liberal contributor, having presented a complete series of the Coronation ceremonies, including portraits of many of the celebrated visitors and Colonial troops. Also records of various festivals, such as the Eisteddfod held at Bangor, 1902; Clipping the Church at Painswick, Gloucestershire; May-Day Ceremonies and Crowning the May Queen at Knutsford, Cheshire; the Pole Fair, Corby, Northamptonshire; Collecting the Commoner Penny at Hock Tide, Hungerford, Berks; the old mansions of Littlecote, Wiltshire; Holkham Hall, Norfolk; and a selection of photographs of Christ's Hospital and Newgate Prison. Mr. Bingley has contributed a fine series of views of Stonehenge, and of the colleges of Oxford and Cambridge, and some of the old houses of St. Albans, Lavenham, Suffolk, and Huntingdon, including the old school where Cromwell was educated. Mr. Fincham has contributed a set of Castle Acre Priory, Norfolk; the Round Church, Little Maplestead, Essex; and remains of the old Roman Wall and foundations of the New Gate at Newgate; Mr. J. W. Marchant, a set of Bury Hall, Lower Edmonton, the residence of Bradshaw, the regicide; and Salisbury House, also at Lower Edmonton, residence of Judge Jefferies; from the Rev. J. K. Dixon has been received a particularly interesting collection of some of the old London signs, including the Crown and Three Sugar Loaves, A.D., 1660, Fenchurch Street; and the Dog Head in Pot, A.D., 1509, Blackfriars Road; from Mr. E. Godman, views of Caerphilly Castle, Glamorganshire, and of Castle Heddingham, Essex; from Mr. A. V. Haslam, a series of 15 of Haddon Hall; from Mr. J. G. Mortimer, views of Star Castle, etc., Scilly Isles, being the first photographs received from this district; Mr. Woodfall has forwarded a set of the Old Post or Windmills of Essex; Mr. Davison has presented a set of Malmesbury Abbey, and of the Manor House, Upper Upham, Wilts; Captain Cosens, Memorial Crosses, etc., from Llanbadarn-Faur Aberystwyth; Miss Lucy E. Beedham, views in Cambridge, including the Round Church; Mrs. F. H. Gandy has contributed views of Thrumpton Hall, Notts, Kedleston Church and Hall, Derbyshire, and other views; Miss J. Niblett, some interesting details of Stretton Sugwas and other Churches, Herefordshire; and miscellaneous views have been sent by Messrs. J. E. Longbottom, J. H. D. James, A. Cheese, F. Hayward, J. Murdock, C. E. Knowles, H. T. Malby, C. Upton, J. W. Andrews, S. J. Beckett, H. B. Dutton, E. Scamell, and a series of Churches in Hertfordshire and Middlesex by the Hon. Sec., George Scamell.

A satisfactory feature of the report is the reference to the increasing interest taken in record work by county and local record associations. Among the organisations acting with or on similar lines to the National Association, the Survey and Record of Surrey, under the presidency of Viscount Middleton, Mr. H. D. Gower, Hon. Secretary, have now collected nearly 1,000 prints, which have been deposited in the Public Library, at Croydon, Mr. I. S. Jast acting as curator. The County of Leicestershire have a thoroughly well-organised survey, Major W. I. Freer, V.D., F.S.A., president, and Mr. A. Roehling, M.I.C.E., secretary. Herefordshire, under Mr. A. Watkins, president, and Mr. C. Gethin, hon. secretary, have now some 300 prints, which are deposited in the museum at Hereford. Dundee and East of Scotland Survey, Mr. B. Hatch, hon. secretary, are working that section of the country, and prints are deposited at the City Library, and the Town Council have voted a grant of £50 per annum for three years towards

the expenses of the survey. The North Middlesex Photographic Society have formed a Survey Section, Mr. J. W. Marchant, as hon. secretary, and have collected some interesting series of the old historical houses of North London, so rapidly disappearing before the speculative builder, and some good specimens were exhibited at their annual exhibition; other societies are at work at Ealing, Brentford, Essex, Birkenhead, Coatbridge, Somerset, Shropshire, with headquarters at Shrewsbury, Clifton, Oxford, Ipswich, Hull, and other centres. For contributions to the collection of record photographs the Association has hitherto been mainly dependent upon practical photographers, amateur and professional, but with a view of enabling the Council to provide the funds for making prints from the most important of the negatives which are available, and as some return for contributions received either in the form of subscriptions or photographs, it has been decided to publish an illustrated pamphlet on record work to be issued to all members, and if sufficient support be obtained to issue one annually. In the first number the illustrations will be of some of the old historical houses of London, several of which have already been removed, and Mr. H. B. Wheatley, F.S.A., the leading authority on the antiquities of London, has kindly contributed a note on Wych Street, Strand, lately cleared away by the London County Council on account of the Strand improvements, now in progress. In future the number of illustrations and the size of the pamphlet will depend upon the amount of subscriptions received, the present intention being to select for reproduction some of the most interesting prints received during the year.

The following were elected to serve as officers and council for the ensuing year:—President, Sir J. Benjamin Stone, M.P.; Council, Right Hon. the Earl of Crawford, K.T.; Sir E. Maunde Thompson, Sir H. Trueman Wood, M.A.; Messrs. F. R. Armitage, C. E. Fagan, H. W. Fincham, L. Fletcher, F.R.S.; A. V. Haslam, A. Horsley Winton, St. John Hope, B. E. Lawrence, Alexander Mackie, J. W. Marchant, G. A. T. Middleton, A.R.I.B.A.; Dr. H. R. Mill, Mr. and Mrs. H. Snowden Ward, and Mr. H. B. Wheatley, F.S.A.; Hon. Treasurers, Alexander Graham, F.S.A.; Hon. Secretary, Geo. Scamell, 21, Avenue Road, Highgate, N.

THE INVARIABILITY OF THE WAVE-LENGTHS IN THE SPARK AND ARC SPECTRUM OF ZINC.

[From the "Chemical News."]

II.

The arrangement of our experiments, as regards the production of the spark discharges in question between zinc electrodes, exactly agreed with those experimental conditions under which Haschek thought he had proved the existence of "line displacements." In his "Spektroanalytische Studien" (These "Sitzungsber.", 1901, Bd. cx., Abt. II., p. 200) he says expressly that the lines were displaced more with the Ruhmkorff inductor and hammer interruption, than when a similar inductor with Wehnelt interruption, or when a transformer was used. Hence, we also used powerful Ruhmkorff induction coils with hammer interruptors; we had two large inductors, striking at a distance of 12 to 25 cm., with correspondingly large condensers, so that a real displacement phenomenon could not possibly have escaped us.

But under these conditions the asymmetrical broadening phenomena of the zinc lines λ 4680, 4722, 4810, etc., appeared clearly, and in our experiments we obtained at once one of the phenomena which Exner and Haschek call displacement phenomena. Fig. I. of our heliographic table shows two zinc spectra* accurately photographed one above the other, which immediately make it clear how the "displacement phenomenon" appears. As a matter of fact, from a superficial inspection one would be inclined to pronounce in favour of a displacement of the lines, although a displacement of the true intensity maximum does not actually occur. Similar false "displacement phenomena" also appear under other different experimental conditions; if the photographs of the zinc lines are illuminated too long they present this appearance, if we produce them on the one hand with pure zinc electrodes, and on the other with zinc alloys, which only contain a little zinc, which is interpreted by Exner and Haschek as the influence of the partial pressure of the vapour; also with defective definition of the spectra, the zinc lines taken for the sake of comparison in the arc (narrow lines) and in the spark (asymmetrically broadened) generally look similar. But it may at once be stated that the two spectra in Fig. I. were obtained

* Facsimile of the original negative in-heliogravure. The figures referred to are not here reproduced; they should be consulted in the original article.—Eds. B.J.P.

one and the same zinc spark, with short and long exposure (one minute to five minutes),* and that the supposed displacement of the lines is only the photographic expression of the asymmetrical broadening of the photograph of a wedge-shaped, outlined streak of light. It shows itself with lengthened exposure, even if the intensity maxima remained quite constant. The spectra, when very shortly exposed, give only the intensity maximum of the lines which is on the blue, while with longer illumination the line of the spark spectrum shifts more towards the red than towards the side of shorter wavelengths, and with rather longer development of the photographic plate the intensity maximum of the line is united with the asymmetrical broadening. After the conditions under which the phenomenon in question appears are explained, we can pass to the description of the results of our own experiments in which those circumstances liable to give rise to error were carefully avoided. When every precaution is taken to ensure minimum illumination, the plates are correctly exposed and the spectra best defined, it appears:—

That at ordinary atmospheric pressure there occur no displacements, which are said to appear, according to Exner and Haschek, in the spectrum as opposed to the arc spectrum.

that also in the spark spectrum no displacements of the lines which were to be ascribed to small quantities of the element that in the vapour, i.e., that any dependence on the partial pressure in the sense of Exner and Haschek's assumptions cannot be proved. In both cases only the known variable asymmetrical broadenings of the lines occur, but the brightness maxima of the lines coincided exactly in our experiments.

studied the same zinc lines in which Haschek observed displacement in the spark spectrum, and first determined their wave-length as best as was practicable, using Rowland's standard, corrected by him, ("Normale aus dem Bogenspektrum des Eisense," "Ann. der Physik und Chemie.," 1900, 4 Folge, Bd. iii., p. 195); the line were then viewed under the microscope, each line at least ten times on different photographic plates, so that our wave-length observations are correct to 0.2 A.U.

According to Haschek the lines in the arc spectrum of zinc show normal wave-length, and with small partial pressure, in Haschek's experiments are better for ascertaining the normal wave-length (without any influence of the disturbing so-called "displacement phenomena"). We chose the formation of the zinc arc spectrum, brass wire (in the small arc), which according to chemical analysis contained 36.9 per cent. zinc and 63.1 per cent. copper.

The carefully determined wave-lengths of the zinc lines of such an arc spectrum, obtained by the use of brass electrodes, gave for the arc spectrum:—

Zinc—III. order				...	...	λ 3302.715
33	33	33	...	...	...	3303.068
33	33	33	...	...	...	3345.141
33	33	33	...	...	...	3345.698
33	33	33	...	...	...	3282.451
33.	II.	33	...	...	...	4680.327
33	33	33	...	...	...	4722.333
33	33	33	...	...	...	4810.719

the same field of vision in the arc spectrum, next to them came copper lines of the third order, λ 3247.671 and 3274.090 (Rowland). In the arc appear reversed (symmetrically broadened), while the spectrum of iron, photographed as normal, contains a trace of copper having a fine black copper line, which coincided perfectly with the phenomenon of inversion.†

The heliographic table, Fig. II., 1 and 2, shows the exact spectrum graph of the arc spectrum of a zinc-copper alloy; it is clear how increasing illumination all the lines of the arc spectrum remain sharp, and broaden symmetrically. Pure zinc gives in the spark spectrum λ 680, 4722, 4810, with increasing illumination asymmetrically broadened strongly towards the red, but with exact minimum illumination; the brightest part of the line appears sharp enough. The strongest spark from a jar to fix exactly its wave-length, and to enable to establish under the microscope its coincidence with the arc spectrum, which is evident from our table (Fig. II., 1-4). With the zinc lines λ 3282, 3302, 3345.1, we found likewise perfect coincidence in the arc spectrum and spark lines; the zinc spark lines λ 3345.1 and 3302.7 are

easily reversed, and then coincide perfectly with the (unreversed) arc line. With over-illumination a broadening of this line towards the ultra-violet occurs. The zinc line 3345.698, which is to be obtained well-defined and clear, both in spark and arc, without difficulty, and 3303.068 are considered by Haschek himself as not capable of displacement, because their tendency to remain well-defined even with inexact times of illumination prevents any error which could exist with defective definition in the case of the zinc lines 4680, 4722, etc., which broaden asymmetrically.

Fig. III. shows in Spectrum 1 and 3 the spark spectrum of pure zinc; Spectrum 2 in the middle is the arc spectrum of the zinc-copper alloy, and over all three is extended the arc spectrum of an iron wire containing traces of copper. We see the perfect coincidence of the reversed copper arc line λ 5247, and 5274 with the unreversed copper spark line. The zinc lines, λ 4722 and 4810 (Fig. III.), are rather much illuminated and developed to strong blackness, by which means the arc lines of the middle spectrum have broadened on both sides fairly uniformly, while the spark lines show a symmetrical broadening and the beginning of apparent displacements, which disappears with minimum illumination and shorter development, after which the perfect coincidence analogous to Fig. II. becomes undoubtedly evident.

In the zinc lines, λ 3345 and 3302 of Fig. III, we further see that these zinc lines in the spark, as compared with the arc lines, are by no means displaced towards the side of greater wave-length, as Haschek (loc. cit.) erroneously states. We see this still more clearly in the measurement of the original negative under the microscope of the measuring apparatus.

The supposition that Haschek had badly-defined spectra gains in probability owing to the fact that the finer structure of some zinc spark lines, which is very remarkable, escaped him. While the asymmetrical very marked broadening of the zinc lines 4680, 4722, 4810 towards the red did not escape Haschek, he did not notice that the zinc lines λ 5345.1 and 5302.7 show a tendency to slight broadening towards the side of shorter wave-length, and hence they lose the tendency to apparent "displacements" towards the red. Nevertheless, Haschek finds the lines in the spark specially strongly displaced towards the red (as compared with the arc), and we find, on the contrary, that here with correct short exposure generally no displacement, but coincidence, results.

After we had failed to establish the results quoted as relating to the line displacements in the spark as opposed to the same lines in the arc, there still remained further experiments to be arranged on the influence of the partial pressure of the luminous zinc vapour on the displacement of the spectral lines. For this purpose we subjected to an accurate investigation the spark spectrum of pure zinc and that of alloys of 1 per cent. zinc + 99 per cent. lead, as well as 50 per cent. zinc + 50 per cent. lead and 36.9 per cent. zinc and 63.1 per cent. copper. In the case of alloys poor in zinc, according to the experience of all spectroscopists, which was first published long ago and is now generally known and never disputed — and this holds good for all spectra, especially with a symmetrical broadened lines—all those lines, even with increasing illumination, remain fairly sharp, which, in alloys rich in zinc, undoubtedly show in a high degree the tendency to a symmetrical broadening. Thus far the partial pressure undoubtedly exerts an influence on the breadth of the spectral line.

Thus, with increasing time of illumination, the asymmetrical broadening phenomena in the case of alloys rich and poor in zinc are not the same; thus, if we measure on the more strongly illuminated plates the wave-length of alloys rich and poor in zinc by placing on the middle of the badly-defined lines, apparent line displacements appear with rising partial pressure (analogous to the photograph in Fig. 1.), which, however, we at once recognise as apparent displacements if we have returned to minimum times of illumination and have obtained the best defined spectra.

A 1 per cent. zinc alloy (1 per cent. zinc + 99 per cent. lead) naturally gives the separate zinc lines in the spark less clearly than one richer in zinc, e.g., a 50 per cent. zinc alloy. A preliminary test for our strongest spark (Ruhmkorff) showed that the poorer alloy (1 per cent.) must be illuminated for about fifteen minutes, as compared with about thirty seconds for the richer (50 per cent.) in order to get the zinc lines 4680, 4722, 4810 approximately equally sharp (equally bright) on the photographic plate for both alloys. Hence in our preliminary experiment in the first case the zinc lines would be thirty times brighter than in the second.

B.—The finer lines in Spectrum 1 are iron lines photographed in. The brass electrodes were used directly for the production of the arc. In agreement with these experiments of ours, Exner and Haschek, in their "Verlängertabelle," Bd. 1, p. 21, speak of the two copper lines 3247 and 3274 as liable of being displaced.

If, now, we use equivalent times of illumination and approach the minimum time of illumination, which in both cases gives faint, just measurable lines in the spectrogram, in the spark spectrum the wave-lengths of the zinc lines 4680.327, 4722.333, and 4810.719 in 1 per cent., 4 per cent., and 50 per cent. alloys, and in pure zinc, are exactly the same, and we could never—even with the strongest jar spark—see Exner and Mache or Haschek's "line displacements."

Haschek (These "Sitzungsber.," Feb., 1902, Bd. cxi., Abt. II.a, pp. 238 and 240) states that alloys with a little zinc (4 per cent. zinc) give in the spark spectrum zinc lines of wave-lengths λ 4722.399, but with 50 per cent. zinc this becomes 4722.434, which would be a considerable displacement towards the red with increasing partial pressure; he finds the zinc line 4680 in alloys poor in zinc (4 per cent. zinc) too faint to be measured. But this line 4680, even in 1 per cent. alloys, can be measured (this is shown clearly in our table, Fig. IV., 4) if we choose the time of illumination properly. Haschek has obviously under-exposed the alloy poor in zinc and over-exposed the richer alloy, and was deceived by an asymmetrical broadening of the lines with defective definition of his spectra. As far as we can see, Haschek applies his theory of displacement only to a symmetrically broadened lines; with the sharp lines not even the apparent displacement of the lines is to be seen in the spark spectrum as opposed to the arc spectrum.

Thus our results are:—

1. In the spark spectrum of zinc, as opposed to the arc spectrum, no displacements of measurable magnitude appear.

2. The mass of the elements present, or the partial pressure of its vapour, produces no displacement of the lines of the spark spectrum, and hence Haschek's system of quantitative spectral analysis falls to the ground; on the contrary, those conclusions which presuppose the constancy of the spectral lines (displacements of the spectral lines in the radius of vision according to Doppler's principle, etc.), and which appeared doubtful owing to Haschek's deductions, are further confirmed by our observations.—"Sitzungsber. der Kaiserl. Akad. der Wiss. in Wien," Bd. cxii., Abt. II.a, October, 1903,

J. M. EDER.
E. VALENTA.

THE OLD SOUTH LONDON PHOTOGRAPHIC SOCIETY AND THE NEW.

[An address delivered at the opening of the Exhibition of the South London Photographic Society.]

I FEEL very much the compliment that your society has paid me by asking me to come and formally declare this exhibition open. I feel a peculiar interest in the South London Society, because it has succeeded—at all events, in name—to the society with which I was myself connected a good many years ago. I think it was somewhere in the early eighties that the old South London Society finished. Perhaps I ought to remember the date better, because I was president at the time of its demise. Whether it was the fact of my being president killed it, or whether it was so moribund that not even the fact of my being president could save it, it is not for me to say. It died after having done excellent work, and it has been succeeded by the present most flourishing society. When one thinks of these things one cannot help contrasting the difference in matters photographic in the early ages with what they are now. For my part I think that photography then was a great deal more interesting than it is now, and for this reason: Those of us who attempted to produce photographic work at all had to do practically everything for ourselves. We know how things are now. At the time I was speaking of gelatine plates had just been invented, and were being commercially put on the market, but I know we did make plates for ourselves. Now, I do not suppose there are very many of you ladies and gentlemen who have ever made a gelatine plate, but I can assure you that when you have spent a good many hours, a good many evenings in making a batch of plates, you have got a good deal more pride, a great deal more interest in the plates than you could possibly obtain from the plates you purchase now. I am afraid they cost us a good deal more, because when I think of the percentage of failures in plates, and in the drying (the drying was a horrible nuisance), I fancy that probably a whole plate must have cost me (some of my friends were more skilful) about 2s. 6d. a plate, and you were disposed to be more careful of those plates than you are now. It was a period of great anxiety and hard work. At that time (I looked up the matter in the BRITISH JOURNAL the other day) I see there were, I think, just a dozen photographic societies in Great Britain and Ireland. At the present moment there are, I think, 266. I think my memory serves me rightly,

but I only counted them once. The work we did in those days in old societies was of very great value. In those times the people who did the experiments were really the amateurs, and I know we were all of us useful to very many professional photographers, who were always willing to give us any tips they got, because the amateurs were perfectly ready to work them out if they could, and they were not likely to make any improper use of them. Amateurs in those days were really amateurs, and there was a very distinct line between those who carried on photography merely for pleasure and those who made it a matter of business. I am afraid the line is not now so strictly drawn. I think this is a matter for considerable regret. A great deal of the scientific progress in photographic matters has become a matter of trade interest and the manufacturers of plates and papers very naturally and very properly do not care to take the world, as their rivals, into the confidence as to the manner in which they make the very beautiful plates and papers which are now at our disposal. I do not suppose there are half-a-dozen amateurs (people unconnected with photographic manufacture) in this country who really know how the most rapid and best gelatine plates are made. I only know one amateur who does—my old friend Sir William Abney. Except for him I doubt if anybody could undertake to produce a high-class plate which would compare with those now made. If photography, therefore, is now more of a commercial matter than it was, I think the main objects of such a society as this are to prevent it becoming so entirely. I do not know what proportion of the people who use cameras develop their own plates and films. I am inclined to think that the proportion is really a small one. I do not speak, of course, of those photographers who form members of a society, but I mean those we meet with at the hotels, where almost every other person has got a camera, and who generally shirk the work of developing their films. This is not as it should be. Do as much as possible of the work yourself; then you are entitled to some credit. In the other case you are not entitled to any credit at all. An old friend of mine (he was a good deal older than I am myself, and I don't profess to be a chicken) went to Egypt for a month, and thought he would like to take some photographs. He took a camera and a large amount of films. The other day he proudly told me that he had exposed 33 pictures. He called them pictures! He evidently thought he had done a very good month's work. This is not the sort of work we want to encourage. I am sure the real good work which the societies do nowadays is to keep up the standard of photography—scientific and pictorial photography—by meeting and discussing among themselves the best methods of getting the work done. The old South London Society was killed by tobacco and drink. Not because of these two enjoyments, but because of the absence of them. The old society used to meet in the Society of Arts' Rooms in the Adelphi, and drinks were not provided at that establishment, nor was it possible to arrange for smoking; and a good many photographers in those days used to like a little of something to drink during the evening when talking, and were also fond of smoking. The consequence was the South London Society was practically succeeded by the London and Provincial Association, which owed its success to more convivial methods. I do not know whether the members of this society are anti-tobaccoists, or whether they look after themselves during their meetings, but if they do not, I think they would do well to do it. I congratulate you most heartily upon the very fine collection of pictures which has been brought together. It is a new thing for the society to get together a fine collection; and I am sure I can speak from experience, for I saw one collection of yours a few years ago, and I was struck with what I saw. This appears to me quite as good if not better than that. I can only congratulate you most heartily upon the success you have achieved, and hope you will regard it as an encouragement to persevere. The side of the room containing the pictures of the members seems to me to hold its own against the side of the room which is open to all the world. This is a thing of which you ought to be proud. I am not quite certain that what used to be your speciality—the architectural interiors—is quite so striking now as it was a few years ago; but I suppose you have more or less exhausted that field for your own amusement, and you have gone on to others, and you have reason to be proud of your landscape pictures. You have listened to me very patiently, and I am now only keeping you from the inspection of the pictures, and from the collection of apparatus which is here as well as pictures. I do not think I ought to detain you any longer except to close by congratulating you heartily upon the success which you have achieved, and I hope that that success may only be an encouragement to you to do similar work in future years.

SIR H. TRUXMAN WOOD, M.A.

THE EVOLUTION OF AN INDUSTRY.

[From the "Barnet Photographic Record."]

When we hear, as we do almost daily, of decaying trades, of closed factories, and of discharged hands, it is cheering to be able to turn instances of the opposite, which we are glad to think are not so few and far between as the most pessimistic fiscal prophets are inclined to believe. There are British trades which can show a history manifesting in its own way quite as rapid a growth, and a far more solid one, than some of the much-lauded American ventures. How many of the users of the "Barnet" products, for example, give thought to the extent of the operations of which they are the result? In the belief that a few details on the point will be without interest, the following table may serve as a concrete example of the evolution of a purely British industry.

1878.—The silver printing business started by Mr. J. J. Elliott.

1880.—Carbon printing, enlarging, and tissue making undertaken.

1881.—Dry plate making commenced.

1883.—Bromide enlarging started; the dry plate factory doubled in size.

1889.—A new plate factory put up, and coating and other machinery introduced.

1890.—The "Barnet Extra Rapid" plate first made.

1891.—The "Studio Plate" put upon the market.

1892.—Flat celluloid films introduced.

1894.—Bromide paper making added, and a special factory constructed for the purpose. The "Rocket" plate produced.

1895.—The "Barnet" lantern plate first made.

1896.—"Barnet P.O.P." put upon the market.

1897.—The third dry plate factory erected, with electric lighting and power plant, and a new factory for the manufacture of bromide and P.O.P.

1899.—Another factory for the manufacture of carbon tissue, built and fitted with entirely new and up-to-date machinery.

1902.—The fourth plate and paper factory constructed.

1903.—The "Barnet" roll film introduced.

Such a record is one of which a Briton may well feel proud, and if we are asked to account for so strong and vigorous a growth, we believe we could put our finger upon one particular spot, and say that therein lay the germ of the popularity of the "Barnet" products of the past, and our hope of their still greater favour in the future. That spot would be the laboratories in which all day and every day trained staff is employed exclusively on the testing of the quality of the materials made. In no manufacture is this so absolutely important as in photography, where the user relies often upon the quality of goods, the defectiveness of which—if they were defective—could only be discovered when it was too late to remedy. For that reason, then, we realise that, given a good article at the outset, its absolute reliability is the thing that is to make it known and appreciated; and, that being so, no labour or expense within reason is too great to secure such an end. But a captious critic might say, "Yes! you have told us all about your new factories, your electric installation, and your carbon tissue, but what about their output? A shed six feet by six may be dubbed a factory, and sound enough in the ears of those who have not seen it." Well, then, here are some figures which may give our friend an idea of the capacity of his "sheds." Let us take the case of plates first, of which ten different brands (and, alas! how many different sizes) are manufactured. The combined capacity of the last two plate factories erected is one hundred thousand half-plates per day, weighing about eight tons. Over and above this there are two kinds of films and two of roll films for negative purposes. Then, in the case of papers, we have (excluding carbon tissue) nine kinds of wide paper, ten of P.O.P., and four of gaslight papers. How many kinds of carbon tissue we make is hard to say offhand, but we make no less than fourteen. The last bromide paper factory has an output of 12,000 ft. of paper 42 in. wide, equal to three hundred seventy-five thousand quarter-plate pieces per day.

Now, to produce all these, there are in constant employment four steam engines, two steam engines, four gas engines, three dynamos, eleven electric motors, six hot-water boilers, and six fans (the largest are 18 in. in diameter). Seven cutting machines are occupied in cutting the paper, some of them being of the latest rotary type, while the plates are cut by special machines, each of which will divide

seventeen whole-plates into quarters in one minute. The "Barnet" goods will be found in use in every country in the world, for professional portraiture, by amateurs, and for trade purposes, not to mention the scientific applications to which they are put. The Astronomer Royal employs them for the great chart of the heavens now in process of formation; they are also used in the Antarctic expedition. The items connected with publicity in connection with the "Barnet" products are in themselves almost staggering. Between eight and ten tons of showcards are sent out annually, exclusive of packing, the "Barnet" book has run through seven editions, making in all 50,000 copies, the "Barnet Handbook" goes out at the rate of 100,000 copies a year, with no signs of cessation, while the issue of the "Record" totals up to 270,000 per annum. To secure freedom from defects, the site was chosen amid the pure country air of Hertfordshire, in the fields by Hadley Wood, near the quaint old coaching town of Barnet, where *Oliver Twist* thought every other house seemed to be a public-house. Yet even this precaution—the country air, not the public-houses—is not sufficient, and all the work-rooms are supplied with air filtered through cotton wool to exclude the smallest particles of dust. Over and above the strictly manufacturing side of the business at Barnet, there is, as readers of the "Record" know, the printing and enlarging work in which the factories took their origin. These have gone on and grown with the rest, until we find six enlarging rooms for carbon and bromide work, together with the many other requirements of that particular side of the business. Our sketch would not be complete without some mention of the department which is to the rest as the brain is to the human body—the research laboratory. Here are all kinds of elaborate appliances such as science is constantly putting at the disposal of industry—spectroscopes, photometers, microscopes, balances, and countless forms of physical and chemical apparatus. But we have surely said enough to convince our sceptical friend of the nature and extent of the buildings, the erection of which we noted in the chronological table.

A few words more, and we have done. This complicated organisation, in which all is done that elaborate applications of mechanics, chemistry, electricity, and optics can do to supplement and assist human skill, has as its final outcome—what? No intricate maze of wheels and levers, no mighty engine that can drag three hundred tons as many miles in a few hours, no delicate and costly fabric that may ultimately clothe a queen. It is represented in its simplest form by a quarter-plate, costing the sum of one penny, a mere square of glass coated on one side with a mixture of gelatine and a salt of silver. But that compound represents the substance that is of all the most delicately sensitive to outside influences of the slightest character, and in that penny plate lie potentialities of human pleasure of which the mightiest monarchs of the past could have no conception. It may be flung away—the failure of one who will never learn; but perchance it will serve to keep green the memory of a loved one who has gone, and show us features we can never otherwise behold again—an artificial, inanimate, but indestructible memory.

THORIUM for Radiant Energy.—What is stated to be probably the first instance of a photograph being taken by the emanations from thorium was recently exhibited at the Röntgen Society. Mr. H. Lacy exhibited a negative taken by means of the emanations from the thorium contained in an ordinary Welsbach mantle, which had been cut and spread out flat, two coins placed upon it, and covered over with a sensitive dry plate. The whole was then wrapped up and put away in a safe, and at the end of thirteen days the exhibitor found that he had obtained a good negative.

LENGTHENING the Usefulness of the Electric Glow Lamp.—The filament in glow lamps gradually diminishes in diameter in consequence of the slow volatilisation of the carbon. According to the "Elektrotechnische Rundschau," a German firm introduces into the glass globe certain chemical compounds with a high boiling point; these, under the influence of the temperature in the lamp bulb, slowly give off vapours containing carbon, which is deposited on the filament, thus making up to a large extent for the loss referred to above, and keeping the resistance and also the brightness of the lamp more uniform throughout its useful life.

Exhibitions.

NOTTINGHAM CAMERA CLUB.

THE above exhibition, opened at the Mechanics' Institution, Nottingham, on the 11th inst., is quite up to the average as regards the pictorial value of the exhibits, while the technical element is of a high standard throughout. No less than 37 awards, divided amongst ten classes, have been made by the judges (Messrs. Harold Baker, Birmingham, and W. R. Bland, F.R.P.S., Duffield), the proportion of awards to exhibits comes out at one in ten, with one over for the champion.

In the Champion Class, pictures previously medalled, we were pleased more particularly with Mr. Etches' "Wengern Alp," a bromide of good tone and marvellous softness and beauty; while No. 23, a carbon by J. C. Batkins, entitled "The Hill Side," is by far the most pleasing in its vicinity. It is seldom we can see a figure study of this quality so instinct with life and so free from the suspicion of artificial posing. There are many pictures in this class deserving of detailed notice, notably "The Village Ford," Graystone Bird; "The Pool," C. E. Etches; "Welcome Evening," J. C. Batkin; "On the Hill Side," F. Pinder; No. 61, "A Gleam of Light," deservedly secures a silver award here, and no one is likely to cavil at Mr. Clayden's success with this fine work. A local man, Mr. Arthur Marshall, shows his carbon study, "The End of the Day," a picture in the Robinsonian vein and suffering little by comparison with a work which is historic; and we finish off with Mr. Harold Barrett's "Hunting Scenes," a class of work which, no doubt, brings in more money than exhibition fame.

The light on this side of the room does scant justice to the really admirable work shown. No. 49, for example, "The Brook," by Douglas Deeling, suffers terribly from this cause; look at it how we may the impression is that of a sheet of khaki-coloured paper, with a streak of white across the middle distance. It is only fair to assume there is a *raison d'être*, some foreground, and suggestions of detail, but it is impossible to tell with accuracy. It would be a great improvement to hang the frames on screens and place them at right angles to the wall.

The colour of print achieved by most of the exhibitors in carbon and bromide is pleasing and undeniably successful throughout; the effect is, we think, not a little discounted by the prevailing, not to say universal, method of mounting in glazed frames. Many of these pictures would show up better without the glass, and, having written that, we suddenly arrive at No. 93, "Rufus," a study in carbon (sepia), by F. Pinder, which turns out to be very nearly what we had in mind. This print is mounted upon a raised stained wood block, with a deep bevel, and—nothing else! The effect is very good, however, though this style of block mounting is not to be commended for general adoption. Good stout boards are to be had, the surface of which could be prepared by pasting thereon a suitably tinted art paper, and on this the print would be mounted and prepared for the frame, with no fear or tendency to cockling.

The Architectural Class is very strong, not only in the open, but also the members'. In the former Mr. Percival W. Crane scores with "Crypt de l'Aquilon, Mont St. Michel," a difficult subject treated with great skill, and is closely followed by Mr. F. J. Phillips with "The Chapel of Our Lady of the Undercroft, Canterbury," who also receives recognition. Mr. Edwin Halley demonstrates that Nottingham is not far removed from similar beautiful subjects of ancient architecture. Mr. Thomas Wright has some fine examples of his work in the Members' Class, "The Sentinels," "The Fisherman's Home," and "March Winds" being worth more than passing notice; in fact, Mr. Wright's positions in the prize list must not be taken *au sérieux*. Mr. Arthur Marshall's work here calls for special mention, though, on the whole, we rather prefer this gentleman's portrait and architectural work, in which classes, as will be seen, Mr. Marshall scores heavily—and properly.

The following is a full list of the awards:—

OPEN CLASSES.

Class A.—Champion Class: Silver gilt plaque (No. 1), John C. Warburg.

Class B.—Landscape, Seascape, and River Scenery: Silver plaque

(No. 61), W. Clayden; silver plaque (extra) (No. 27), John C. Warburg; bronze plaque (No. 20), Chas. E. Etches; certificate (No. 76), S. W. B. Vines.

Class C.—Portraiture, Figure Studies, Animals, and Still Life: Silver plaque (No. 109), Furley Lewis; bronze plaque (No. 113), Furley Lewis (debarred); bronze plaque (No. 104), Furley Lewis (debarred); bronze plaque (No. 108), F. J. Mortimer; certificate (No. 115), Miss Cecily Adams.

Class D.—Architecture and any subject other than Classes B and C: Silver plaque (No. 158), Percival W. Crane; bronze plaque (No. 154), Francis J. Phillips; certificates (No. 171), A. A. Bellingham (No. 163), S. G. Kimber; (No. 159), Alfred J. Loughton.

Class E.—Stereoscopic Work (set of four prints): Silver plaque (No. 8), Harry Wormleighton; bronze plaque (set No. 9), Harry Wormleighton (debarred); bronze plaque (set No. 6), F. G. Tryhorn; certificate (set No. 5), T. G. Hibbert.

Class F.—Lantern Slides (set of four, any subject): Silver plaque (set No. 26, slide 1), F. G. Tryhorn; bronze plaque (set No. 9, slide 1), Wm. Clayden; certificate (set to 23, slide 3), Wm. Mosley.

MEMBERS' CLASSES.

Class G.—Landscape, Seascape, and River Scenery: Silver plaque (No. 218), Will Darcy; bronze plaque (No. 183), R. R. Enfield; certificates (No. 205), Will Darcy (debarred); (No. 190), Thos. Wright (No. 222), Arthur Black.

Class H.—Portraiture, Figure Studies, Animals, and Still Life: Silver plaque (No. 268), Arthur Marshall; bronze plaque (No. 266), R. Chapman; certificate (No. 269), S. D. Middleton.

Class J.—Architecture, and any subject other than Classes G and H: Silver plaque (No. 287), Arthur Marshall; bronze plaque (No. 292), E. H. Atkin; certificate (No. 284), Percival W. Crane.

Class K.—Lantern Slides (set of four, any subject): Silver plaque withheld; bronze plaque (set No. 35, slide 4), Henry Crowdon; certificates (set No. 40, slide 1), Arthur Marshall (debarred); (set No. 42, slide 3), William Mosley.

Special Award.—Silver gilt plaque for the best picture by a member of any society affiliated to the R.P.S. (No. 109), Furley Lewis

G.E.R. MECHANICS' INSTITUTE.

THE photographic section of the Great Eastern Railway Mechanics' Institute held its eleventh annual exhibition at the Institute, Stratford E., on the 8th and 9th inst.

Although the exhibitions of the Great Eastern Railway Mechanics' Institute are hardly on the plane of rivalry with those of the important metropolitan societies, they are always interesting to us, as an index to the progress of untutored photography. We do not mean untutored in its literal sense, for the section has the advantage of the tuition of Mr. H. W. Bennett, than whom the members could have no better guide in practical photography, and in the elementary principle of its application to pictorial work, but rather in the sense of photography which is not or but little influenced by the passing fashions of the hour. The work generally of the members was as unambitious as that shown half-a-dozen years ago. The craze for enlarging everything seems not to have infected the Stratford photographers, and the various ways of toning bromide paper are apparently still untried. The average size of the pictures in the exhibition was much less than one finds in even small exhibitions of society work nowadays; half-plate pictures were plentiful, and even the modest quarter-plate print was not infrequent. But in spite of the modest character of the work as regards size and boldness of attempt, we are pleased to be able to report a very decided advance in a most important direction. The work generally gave evidence of very much greater care in selection, of better technical photography, and more taste in the get-up of the prints. A few rather florid frames there were truly, but they were the exception. From among the collection we could select quite a number of little pictures which, in the days when work of the kind produced by Colonel Gale was considered worthy of the highest admiration, would have received more than passing notice had they appeared in one of the leading exhibitions. Such work is no less commendable now, although modern taste is in the direction of bolder treatment and greater freedom of style.

In the two classes which comprised landscape, seascape, and river scenery, "The Mill, Evening," "A Misty Day," and "Early Autumn," by W. Salter; "Hopforth Wood," and "Dividing Ways," by A. Woolford; and "The Meadow Gate," "Russet Autumn," and "Anchored,"

A. Cracknell. "By the Zuyder Zee" and "The Willow Bank," by A. Smith, were particularly good. Quite a large class of architecture contained many carefully chosen and well rendered examples, including "The Font," "Jesus Chapel," "The Bridge," and "The Angel," all at Norwich Cathedral, by P. J. Perry; "Chichester Cathedral," by L. C. F. Robson; "Interiors in Exeter and Peterborough Cathedrals," by A. Woolford; "Choir and Nave, Salisbury," by E. Ayling; and "South Choir Aisle, Chichester," by T. A. Smith. Engraving reached but a very low ebb, but several of the fruit and flower studies in the same class were very good indeed. "Cankers and Oakspray," by A. Woolford; "Flowers and Fruit," by E. Ayling; "Dessert and Sweet Peas," by W. Salter, amongst the best; and "Shoeing," by P. T. Perry, perhaps was the best animal study. In a small beginner's class E. J. Chapman showed promise. The class for engineering and mechanical subjects did not show any particular aptitude on the part of any of the exhibitors. We certainly think it a pity that the branch of photography in which, from their opportunities and mechanical knowledge, so many of the members are in a position to make a mark, should be neglected. Besides the proportion being useful and even valuable, the technical skill required, in photographic manipulation and in the treatment of the subjects, is to show their salient points, provided the best possible exercise those faculties which are essential to success in all branches of photography.

A small open class of pictures contained a few interesting works. The judges were Messrs. J. T. Ashby and E. Marriage, for the general class, and Mr. J. Holden, M.I.C.E., M.I.M.E., for the engineering class.

THE AWARDS.

MEMBERS' CLASSES.

Landscape.—Silver medal: A. Salter; bronze, A. Woolford; commended, T. A. Smith.

Architecture.—Silver medal: P. J. Perry; bronze, A. Woolford; commended, L. C. F. Robson.

Landscape and River Scenery.—Bronze medals: A. Cracknell and W. Salter; commended, T. A. Smith.

Portraiture, Flower, and Animal Studies.—Silver medal: W. Salter; bronze, H. D. Banks.

Engineering and Mechanical Photographs.—Bronze medal: H. D. Banks.

Lantern Slides.—Silver medal: T. A. Smith; bronze, A. O. Shave; commended, A. Woolford.

Beginner's Class.—Bronze medal: E. J. Chapman.

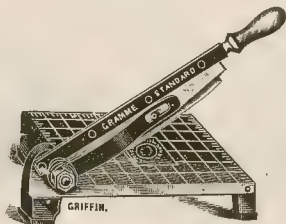
OPEN CLASSES.

Landscape.—Silver medal: Rev. H. R. Campion; bronze, J. Bruce; commended, A. Woolford.

Lantern Slides.—Silver medal: F. Parkinson; bronze, Graystone; commended, A. Woolford.

Stereoscopic.—Bronze medal: H. Wormald; commended, F. P. Wormald.

tones a good colour. We understand that this paper does not contain an excess of acid-preservative, but, nevertheless, keeps excellently, and in view of the fact that photographers, particularly of the higher artistic school, are reverting to albumen as a printing medium



possessing a characteristic delicacy and atmosphere not to be found in any of the other printing out papers, it is likely to enjoy much popularity.

Some new developing dishes have likewise been put on the market recently by Messrs. Griffin. The "Iltz" dish (Fig. 1) is an entirely new model for plate development. It consists of a strong, deep dish, with two wells, one on each side of the dish. This permits the immediate lifting of the plate from the solution without any plate lifter. When once used, its convenience is readily apparent. The Ribbed Papier-maché dish is also likely to commend itself (Fig. 2).



Fig. 1.



Fig. 2.



Fig. 3.

The usual form of papier-maché dish has a flat bottom, making it very inconvenient for use with plates owing to suction between the plate and the dish. This difficulty is now overcome by the two ribs at the bottom of the dish. The "Cellulite" (Fig. 3) dish is an extremely light and portable dish, but made of extremely hard material. Quite unbreakable, and not liable to crack. All these dishes are very inexpensive.

The Southport Enlarging and Copying Table and Screen.—Sold by Sanders and Crowhurst, 71, Shaftesbury Avenue, London. W.C.

The table is fitted with fold-up legs, adjustable to uneven floors. On the top of the table grooves are provided, and at one end of these is the carriage for the lantern. The base-board of the lantern sits on this carriage, and by that means can be pushed up to, or away from, the screen (at the opposite end of table) to give the various degrees of enlargement. The lantern moves in a plane at dead right angles to screen, and cannot get out of the straight.

The screen is of novel construction. The front is glazed with plate glass, and opens on hinges like a book. Behind the plate glass front, and in contact with the glass, is a white focussing cardboard screen. The cardboard is ruled off to the usual photographic sizes, from 15 x 12 down to 4 1/4 x 3 1/4. The frame is so held in a carrier that it has horizontal, vertical and circular motions. A horizontal or vertical picture can at once be projected on the focussing cardboard, and a correct idea of how to enlarge the picture may at once be formed. The carrier is held by a screw attachment at its back, the screw passing through a strong bracket, and the bracket being hinged at its base. By a quick release, this bracket with carrier can be moved back (on its bottom hinges), so that it lies flat on the table end. The front of the frame can then be opened while lying in a horizontal position, and the bromide paper put in flat, so that it lies within the ruled lines. The plate glass front should then be

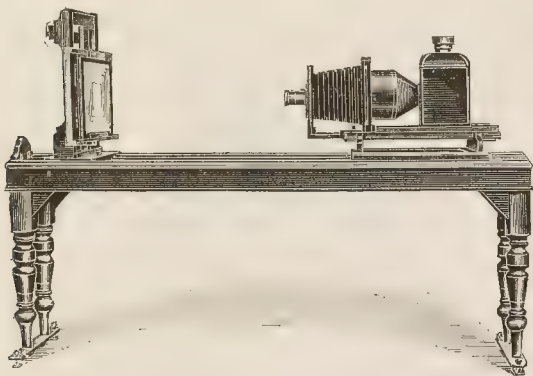
New Apparatus, &c.

Simple Print Trimmer, etc.—Sold by John J. Griffin and Sons, Limited, 20-26, Sardinia Street, Lincoln's Inn Fields, London, W.C.

This is a useful tool for photographers in the shape of a print and trimmer. It is well made, of heavy metal, and the cutting edge is capable of making a remarkably clean cut with either paper or thin cards. We can confidently recommend this as doing all that is needed for it, and it will be noticed that the base-board is ruled in inch squares to facilitate the trimming of prints, etc. We have had submitted to us specimens of a new bromide paper of excellent quality, which has been placed on the market under the name of "Griffin's Bromide Paper." It appears to be produced from a solution especially adapted for making enlargements. It is of fair density, and yields prints with rich blacks and good whites.

This enterprising firm is also exploiting the old favourite albumen printing process. Samples to hand of the 'Climax Sensitised' Paper show a carefully prepared production which prints easily and

closed and clamped, and the bracket, with carrier and frame complete, may be pushed up to the exact position at which focussing was performed, and the exposure made. For daylight enlarging the lantern is removed from the carriage, and a camera, the actual one



with which the negative is made may be used, placed there instead. By pushing the table against the darkened-out window, unclamping the screen bracket, and sliding the screen up and down the guides, the degrees of enlargement may be obtained. For copying photos, engravings, manuscripts, etc., they may be placed in the frame, and the camera brought up to it. Special frames are built to order, for every purpose, such as holding old books or large deeds, etc. The apparatus complete, to enlarge from $\frac{1}{4}$ plate to 15×12 , is comparatively inexpensive (lantern extra), and packs up flat into a parcel about 6ft. long \times 18in. wide \times 6in. deep. The screen can, however, be obtained in other sizes or separately. This firm is also responsible for the "Birdland Camera—an ingenious instrument of the Reflex



focal plane type—made to the specifications of Mr. Oliver G. Pike, the well-known bird photographer. The camera is specially designed for the natural history photographer, and appears to be a thoroughly efficient camera for the work. The plate may be placed in the camera and carried about all day ready for exposure at an instant's notice, and focussing can be done up to the moment of exposure. It embraces a long focus (four times the length of the plate), and while focussing with one hand it is possible to instantly release the shutter with the other. This camera, designed for such a purpose, should prove as valuable a companion to the naturalist in his country rambles as a field glass.

Wynne's "Infallible" Shutter Speed Tester.—Manufactured by the Infallible Exposure Meter Co., Wrexham.

There can be no doubt that a reliable and not too complicated an apparatus for accurately testing and recording the speed of the photographic shutter would fill a long felt want. Such an instrument has now been placed on the market by Messrs. Wynne, which appears to do in a satisfactory manner all that is claimed for it. There are not many shutters put on the market which have speeds marked on them correctly, and it is the function of this piece of apparatus to place in the hands of the amateur or professional a means of finding out what the various speeds given by his shutter really are.

It is obvious that, if perfect results are aimed at, it is just as important that an instantaneous exposure should be as accurate as time exposure, and it is of no use to use an exposure meter, having found by it that the correct exposure is, say, 1-20th, 1-40th, 1-60th, 1-80th, 1-120th of a second, to give (through ignorance of the speeds at which the shutter works) an entirely wrong exposure.

The speed tester consists of a weighted lever, which, when placed on its stand, oscillates on two fine and sharp points and swings seconds. At the upper end of the oscillating lever is a polished nickel-plated convex mirror or button.

A diagram, ruled with white lines on a black ground, is fixed at such a height, and the speed tester so placed, that the bright button (when at rest) is just in front of the round white spot in the centre of the diagram.

The lens of the camera with the shutter to be tested is then pointed towards the speed tester and diagram, which should be sharply focussed on the ground-glass, the camera being placed at such a distance that the image of the diagram nearly fills the ground glass screen of the camera.

The speed tester is then oscillated until the bright button swings the full width of the diagram, and an exposure made with the shutter whose speed it is desired to test.



When the plate is developed and fixed, the negative will show the lines of the diagram, and crossing them at right angles a curved line which represents the path of the oscillating bright spot during the time the shutter remained open. As the distance between each of the vertical lines represents the distance the bright spot moves in the 1-100th of a second, the time of exposure may be readily ascertained by noting the number of vertical it has swung across during the interval of exposure. If more convenient, the test may be made in a room by the light from the burning of a strip of magnesium ribbon.

The "Midget" Sensitised Postcards.—The Rotary Photographic Co. Limited, 14, New Union Street, Moorfields, E.C.

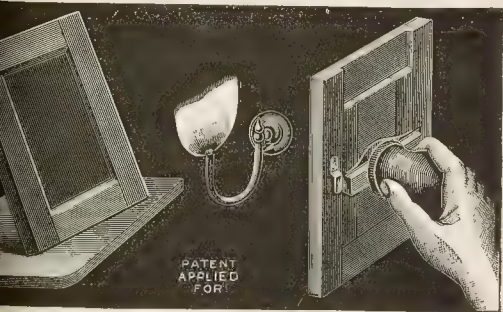
The extraordinary development of the postcard craze has been largely responsible for the impetus given to the production of sensitised cards for making the pictorial postcard at home. The Rotary Co. has been well to the fore in all new developments of the industry. Their latest introduction is the "Midget" postcard (2½ by 3½). They not only supply this new-sized postcard ready to use embellished with portraits of celebrities, but the sensitised cards coated with the well-known "Rotograph" bromide emulsion, with either glossy or matt surface, or the "Rotox" emulsion for gaslight printing are also obtainable at cheap rates, and can be recommended as a full-sized picture can be printed from the quarter-plate negative, and also there are no restrictions with regard to correspondence by inland postage on the address side as with the Panel Book postcard.

graphic Novelties.—W. Tylar, 41, High Street, Aston, Birmingham.

"Perfecta" photographic plate-holder for developing is an ingenious little contrivance of metal and celluloid for gripping the plate during the operation of development, and so saving all risk of plates or stained fingers. No metal whatever is dipped in the developer, but the plate is held and supported by the small celluloid clips, in such a way that there is no possible chance of their slipping at the side when being examined by reflected or transmitted light.

"White Title Ink."—A preparation likely to prove of value for printing in white characters upon the black paper masks or binders for lantern slides; and for greetings on photographs, etc., while other preparations will readily suggest themselves. "Aluminium Bronze Title Ink" can also be employed for similar purposes. "Frames for Miniatures," in black glazed wood pulp and Ormulu gilt. These closely resemble the old ebony and gold frames beloved of our grandmothers, and would prove a very tasteful mount for small carbon portraits. They are intended for oval prints 2½ by 2¼. "Border Negatives for Artists." These embrace a variety of excellent designs made to order on drawings. They are prepared on flat films, and may be printed either side. "The Art of Photographic Dodging." A booklet containing much useful information to the photographer, the price of the various materials and apparatus made or sold by W. Tylar is not the least interesting. "Ferro-Bleach."—A preparation to prove of great use to all who have to deal with blue and white prints by the cyanotype process. The application of this preparation by either brush or pen discharges the blue colour of the print in about a minute. For titling blue prints, for adding to or correcting architects' and engineers' plans, etc., it should be valuable.

Gaslight Printing Frame and Film Developing Dish.—Sold by J. Butcher and Sons, Camera House, Farringdon Avenue, E.C. A new printing frame called "The Mecca," recently put on the market by this firm, strikes us as both novel and useful. It is made for printing by gaslight, and the accompanying illustration explains itself. The back of the frame is immediately heated by means of one spring, and is fitted with handle for holding the burner, or can be stood on any convenient shelf or table. It is 4 in. 4, 5 by 4, and ½-plate, and is comparatively cheap.



"Carbine" film-developing dish is also likely to prove of great use for the user of roll films. It is a well-made porcelain dish, with rounded porcelain bars, the under sides of which are rounded. The film is developed in lengths, and, being drawn regularly through the developer against the bars, it ensures even development.



The dish is spotted at one end, so that developer can easily be poured into the bottle. It takes all sizes of film up to 3½ inches wide, and is inexpensive.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

March	Name of Society.	Subject.
18.....	Plymouth Photo. Society	Lantern Slide Making. Mr. W. C. Johns.
19.....	Aberdeen Photographic Assoc.	The Carbon Process. Demonstrated. Mr. W. T. Borthwick.
21.....	South London Photo. Society	To be announced later.
21.....	Camera Club	A Peep at Prehistoric Man. Mr. Cornelius Robbins.
21.....	Ilford and District Photo. Soc.	Wells Cathedral. Mr. J. W. Hodges.
21.....	Bowes Pk. and District Ph. Soc.	The Patinotype Process. Mr. W. H. Smith.
21.....	Glasgow & W. of Scotland P.A.	Control in Development. Mr. Wm. Goodwin.
21.....	Southampton Camera Club.....	Lantern Slide Competition.
22.....	Birmingham Photo. Society	The Making of Lantern Slides. Mr. J. H. Gear.
22.....	Glasgow Southern Photo. Assoc.	Through the Val D'Anzusa. Mr. Tlios. W. Robertson.
23.....	Cricklewood Photo. Society.....	Portraiture by Artificial Light. Demonstrated. Mr. W. Emery.
23.....	Everton Camera Club	Members' Photographic and other Curiosities.
24 to 25.....	Woolwich Photo. Society	Exhibition.
24.....	London & Prov. Photo. Asso.	Some Toning Experiments. Mr. H. C. Itapson.
24.....	Liverpool Amateur Photo. Asso.	The Carbon Process (Single Transfer). Demonstrated. Mr. Robert Bourke.
24.....	Richmond Camera Club.....	Luncheon at an Old Developer. Mr. Oetzmann.
24.....	Hull Photographic Society.....	Alpine Photography. Dr. Hollingsworth. M.R.C.S.
24.....	Watford Camera Club	Competition. Members.
24.....	Bath Y.M.C.A. Camera Club.....	Folio Night.
24.....	Gainsboro' Camera Club	Hand Camera Work. Mr. A. H. Hinton.
24.....	Croydon Nat. Hist. and Sc. Soc.	Moscow. Dr. Franklin Parsons, F.G.S.
24.....	Camera Club	Illustrations of Insect Life. Mr. Frederick Enoch.

CAMERA CLUB.

VERY instructive and entertaining, to use an old formula, was the lecture given to the Camera Club last week by Mr. Alfred Hands, who discoursed upon "Lightning, and the Science of Protection Therefrom." The lecture attracted a large audience, as was quite natural, for lightning has a great interest for the photographer, because the camera has provided a means of picturing it in a manner which no painter can ever equal. We can hardly say as much of any other natural phenomenon. It is true that a few artists—including, of course, Turner, who was such a close student of nature—have pictured the true form of lightning, but most of the others have been content with the stereotyped forked appearance, which bears as much resemblance to the real thing as does the scent of violets to the odour of a motor-car. Photography has taught artists that the conventional zig-zag will not do, and although our brethren of the brush are generally rather slow to confess any debt which they may owe to the camera, they cannot deny that in the matter of forms of lightning it is a most reliable guide.

Like many other things, if it can be called a thing, lightning is classed according to the forms it assumes, and meteorologists speak of the sinuous, the ramified, or the meandering type of flash. Mr. Hands showed a number of very fine photographs of these typical forms of lightning. One was especially good, and was taken from a vessel in Sydney Harbour. In this case the columns of fire appeared to be of abnormal size, an effect doubtless due to irradiation. The beauty of the picture was much enhanced by the duplication of the flashes by water reflection.

After showing these pictures of lightning in its various moods, Mr. Hands touched lightly upon that somewhat obscure topic, the origin of atmospheric electricity, and this proved the prelude to a general summary of the theory of thunderstorms. He pointed out that the old belief in the falling of some solid substance from the clouds, "a thunderbolt," was a superstition doubtless brought about by the damage wrought by lightning, which it was found impossible to account for except on the supposition that something solid and heavy had struck the blow.

Although the storms which we experience in this country are neither so frequent nor severe as those which occur in equatorial regions, the damage done by lightning is really very great. Mr. Hands has for the past twenty years collected reports of such accidents as have been caused by lightning, and by means of an enormous map of the British Isles, which was hung for the occasion of the lecture in the club room, it could be seen at a glance where such occurrences

were most common. This was a sketch map, and was dotted all over with tiny coloured wafers, each wafer having a meaning. Thus the black ones denoted fatal accidents by lightning, a red one with a white dot in the centre meant that at that particular place a church had been struck. Other wafers indicated private houses, hay stacks, farm buildings, and so on. Mr. Hands was able to compute the damage from lightning in this country as amounting to between fifty and one hundred thousand pounds annually. Every year about twenty churches are struck, and the same number of persons killed by lightning. Many of the churches might be saved, and so might the lives, if proper precautions had been observed.

A large number of photographs showing damage by lightning formed a most interesting series of pictures. One showed a tree in a park, neither trunk nor limbs exhibiting any trace of damage, but beneath its branches were lying about twenty sheep, the strangeness of their attitudes at once indicating that they were stone dead. The tree had been struck, and the same flash had killed the sheep. There were other pictures of the clothing, all in strips, of labourers who had been struck down in the fields, or whilst seeking protection under a tree. In one of these cases, although the man was entirely stripped by the action of the lightning, he never lost consciousness, and ultimately quite recovered from his terrible experience. And this was not a unique case. Provided that a man's clothing be thoroughly wet with the rain, the electricity runs off the surface to the ground, and he is not seriously hurt.

The importance of providing high or exposed buildings with lightning conductors was illustrated by many photographs of churches and other edifices which had been terribly knocked about. Most of these were not provided with conductors, but others were furnished with rods which proved to be ineffective through the faulty manner in which they were fixed, or the position which they occupied relative to masses of metal in the building itself. Many diagrams showed the good and faulty arrangements as applied to buildings of different designs. A copper rod or tape of sufficient capacity would, if it had a good earth, say a connection with the water-pipes or gas-pipes below ground, effectually protect the building to which it was attached. But if it came near a mass of metal, say at the other side of a wall, there was always the chance of the electricity making for the alternative path, and doing damage on its way. In such a case, the remedy would be to form a small branch metallic connection between the two conducting bodies. On the Continent there have been many cases of ringers being struck in church belfries, for, strange to say, the superstition still exists in certain remote districts that the sound of the bells will frighten away the lightning. Thus the ringers are gathered beneath the bells at the very time when they should keep clear of them. In Yorkshire there is, we are told, among the country boys a less poetical belief concerning the vagaries of lightning. They believe that if the word "lightning" be spoken during a thunderstorm the electricity will, in revenge, tear out the seats of their trousers.

The second part of Mr. Hands' lecture dealt entirely with methods of protection from lightning. The common idea that it is only necessary to stick up an iron rod with one end projecting above the roof and the other buried in the ground is a mischievous one, and a rod so placed will often prove to be a danger rather than a protection. Each building requires to be studied by itself, and the conductor must be placed in such a position that the lightning will not be tempted to choose an alternative path.

Among the most attractive of the pictures shown were several of the work of "steeplejacks" affixing lightning conductors to high chimneys and to church spires, pictures which have been taken at short intervals, so as to show the entire process of raising the ladders from the ground to the parapet. Considering that so much of this dangerous work is in progress, it is a relief to hear that fatal accidents from it only number about three annually. It is interesting to hear that even this profession has been invaded by the other sex. At Bradford there is, or was, a lady steeplejack, who often assisted her husband, and when he was ill carried out his work without hesitation.

The lecture led to an interesting discussion, in which many members joined, and the chairman, Mr. Inwards, called for a very hearty vote of thanks to Mr. Hands for all the trouble he had taken in preparing such an excellent discourse.

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

MARCH 11TH.—Mr. R. Beckett in the chair. A large meeting, looking forward to Mr. Haddon's paper on "The Action of Light on a Silver Image, Bleached with Mercury Bichloride, and the Elimination of the Mercury Bichloride from the Film," and the meeting enjoyed a paper carefully put together, thoroughly well thought out, and illustrated by experiments. The object of the paper was to show exactly what part the gelatine itself played in the operation of intensification, and Mr. Haddon made all his experiments upon films supplied by Messrs. Wellington and Ward, being of and of very even thickness. The first experiment showed that gelatine film, soaked in a plain solution of mercury bichloride or a solution of mercury bichloride and ammonium chloride gradually assumed a dense opalescence, which no amount of washing would alter; but, if, after a short preliminary washing, a bath of a 1 per cent. solution of either hydrochloric acid or citric acid be given again wash, and repeat the acid bath and washing four or five times it was possible to immerse the film in dilute ammonia, and get it out without darkening of the film.

In the discussion following the paper, Mr. Child Bayley asked Mr. Haddon how the opalescence of the gelatine film was accounted for, which was not so much in evidence in a negative, and also whether the mixture of mercury bichloride with a soluble bromide or chloride was best. Mr. Haddon replied that in the first case a trace of acid was present in the usual formula, and in the other, that he had not yet finished his experiments with films containing silver bromide.

Mr. Somerville, in trying to deposit platinum on a silver bromide image, had tried every acid, organic and mineral, but had not succeeded when the bleaching had been effected in a solution of mercury bichloride acidified with citric acid, if the print after treatment was immersed in hypo it became weaker, but the remaining image was pure platinum. Could Mr. Haddon explain the part that citric acid played, and what is the combination of mercury and platinum?

Mr. Haddon could not decide definitely, but surmised that calomel would probably be formed, and being a reducer the platinum would be deposited.

Mr. Child Bayley had negatives intensified years ago, which were now much denser, i.e., although no apparent visual change had taken place, they took longer to print now than formerly, and asked the reason. Mr. Haddon attributed it to sulphuretted hydrogen in the atmosphere.

Mr. Brown was anxious to know whether hydrochloric acid or citric acid was best. Mr. Haddon recommended citric for addition to the mercury solution, and to soak the plate in after bleaching, and Mr. Child Bayley asked for a definite treatment of negatives based upon the use of acidified mercury bichloride solution. Mr. Haddon replied: Bleach, then wash quarter of an hour, soak in a 1 per cent. solution of acid, wash quarter of an hour, repeat three times, then a final wash.

Mr. Teape had washed a gelatine film (bleached in mercury bichloride solution) for twenty-four hours, soaked in a water containing 6 minims hydrochloric acid to the ounce of water, then washed till no trace of acid remained, repeating the operation till 10 minims of hydrochloric acid were used, and repeating the washing three times until no trace of acid was left. No mercurial deposit upon copper when boiling the gelatine in a test tube could be obtained. This experiment was repeated at the meeting by Mr. Teape, and conclusively proved the extreme difficulty in entirely getting rid of mercury when used with acid.

RICHMOND CAMERA CLUB.

MARCH 10TH.—A lecture on Northamptonshire church architecture was delivered by Mr. F. J. East, of the Kingston Photographic Society. Mr. East had spent a fortnight making a special study of the early English churches in which Northamptonshire abounded, and had taken a large number of photographs of them, with special regard to the architecture. Many of these were shown by lantern, and the points of interest lucidly explained. They comprised a number of views of arches, windows, spires, and towers of different periods, with dogtooth and zigzag ornamentations and other marked peculiarities of the Saxon, Norman, and Early English

es of architecture. Mr. East showed some very fine views of
riors and of old carved pulpits, fonts and tombs, and concluded
some excellent views of Peterborough Cathedral.

SOUTHAMPTON CAMERA CLUB.

CH 9TH.—About 170 members and friends of the above Club,
uding a large number of ladies, responded to the invitation of
Committee, and indulged in a very pleasant conversation. The
eedings of the evening included vocal and instrumental con-
tations of a high order, for which suitable appreciation was shown,
appearance for the first time of the Southampton Camera Club
estra, under the conductorship of Mr. W. H. Trigg, eliciting
h satisfaction. A display of colour photography slides, kindly
by the Lumiere N.A. Company, was much admired, as also were
slides by Mr. F. J. Mortimer, the whole being projected by the
s's limelight lantern, under the management of Mr. G. T. Vivian.
admirable variety of light refreshment was partaken of during
evening, and the whole arrangements were carried out in a highly
satisfactory manner by a special Committee, composed of Messrs.
Copeland, W. R. Kay, F. G. Ryder, T. M. Weaver, and the
secretary, Mr. S. G. Kimber, to all of whom the greatest praise
re, and also to a number of ladies who gave invaluable assistance.
whole proceedings are calculated to give valuable stimulus to the
ody rapidly rising popularity of the Southampton Camera Club.

NEWCASTLE-ON-TYNE AND NORTHERN COUNTIES PHOTOGRAPHIC ASSOCIATION.

A. B. GARDINER, in the course of his remarks during a lecture
the "Development of Exposed Photographic Plates," before the
bers of the above society, laid great stress on the necessity of
ect exposure whenever this is possible; but also showed that
when exposure is not correct, a great deal may be done by
able variations in the developer to produce negatives of good
ity. Under-exposure and over-exposure were dealt with, and
y hints for their correction during development and formulae for
production of suitable negatives for various printing processes
freely given. The after correction of negatives by means of
ction and intensification was also touched upon, as were also the
ssity of careful development, perfect fixation, and thorough
hing. Mr. Gardiner developed several plates exposed under
ring conditions, and obtained good negatives in each case. The
loper recommended for portraiture is pyro-ammonia, while pyro-
is recommended for negatives in which greater contrast is
ired.

WES PARK AND DISTRICT PHOTOGRAPHIC SOCIETY.

CH 7TH.—Mr. F. P. Bayne read a paper on birds' nests, etc.,
trated by about 100 lantern slides. In the course of his remarks
became quite evident that the photographing of birds, nests, etc.,
ired an extraordinary amount of determination and patience,
ral instances being mentioned of the expenditure of hours of labour
out result. On one occasion Mr. Bayne spent four and a half hours
tree, standing for the whole of the time on one leg (at a time),
rder to photograph a nest, great difficulty being found to make
exposure owing to the high wind. The slide shown of this nest
Bayne was justly proud of. On another occasion Mr. Bayne
covered a doormouse in a nest, and in his eagerness to obtain a
rd of this made two exposures, only to discover when developing
that they had been made on one plate. Great difficulty was
often found in fixing the camera in position, long exposures being
a necessary owing to the dark and secluded position of some
s. He, where possible, uses a mirror to reflect light on to the
s. Mr. Bayne showed two slides from photographs of Brushers
s, the Hermit of Epping, and told some characteristic stories about
man, who had evidently a very suspicious nature. The members,
ddition to hearing Mr. Bayne, held a competition of photographs
terior, the following members being judged the winners:—1st
2nd, Mr. Bellingham, to photographs of St. Albans Abbey; 3rd,
Craston, a photograph in Enfield Old Church.

HE Koh-i-Noor Pencils.—A delightful illustrated brochure
ing with the merits of these pencils is to hand from the makers,
and C. Hardtmuth. A copy will be gladly forwarded on applica-
to Fredk. E. Potter, 56, Ludgate Hill, London, E.C.

News and Notes.

THE third edition of Julius Verfaesser's standard work on "The
Half Tone Process," recently published by Messrs. Iliffe and Sons,
Limited, differs from the two preceding editions in that it has
been almost entirely re-written and supplied with new blocks. As
a practical guide to the better-known branches of photo-engraving
we see no reason to depart from the favourable opinion of the book
we have so often passed in these pages.

DEATH by Cyanide of Potassium.—Charles Edward Guest, aged 45,
a clerk in Lloyds' Bank, lately residing at Ascot Lodge, Wood Lane,
Shepherd's Bush, poisoned himself at Wormwood Scrubbs on Thurs-
day by means of a preparation of cyanide of potassium used for
photographic purposes. He had been in ill-health for some time,
having suffered from mental trouble, and a coroner's jury at
Hammersmith on Saturday returned a verdict of suicide while tem-
porarily insane.

ROYAL Photographic Society.—At the Technical Meeting on
Tuesday, March 22nd, at 66, Russell Square, at 8 p.m., the following
papers will be read:—"A New Link between Calculating and Effect-
ing Camera Exposures," by Mr. Alfred Watkins; "A New Print
Meter," by Mr. Alfred Watkins. Mr. Arthur C. Banfield will
describe his method of photographing splashes, and show slides and
parts of the apparatus. Mr. F. A. Crallan will show a new tripod
stand.

THE Photographic Society of Ireland announce an exhibition of
photographs to be held in the Leinster Lecture Hall, 35, Molesworth
Street, Dublin, from Monday, 16th, to Saturday, 28th May, 1904.
The judges will be Professor J. Joly, D.Sc., F.R.S.; Alfred Werner,
F.R.P.S.; Reginald Craigie, and additional for lantern slides, H.
Goodwillie and E. Webb-Smith. There are eight classes, and gold,
silver, and bronze medals are offered for competition. A new "open"
class is also announced, viz., for amateurs resident in Ireland, mem-
bers of the society also being eligible for this award. The particulars
and entry forms will be forwarded on application to the Hon. Secre-
tary, Mr. E. Webb-Smith, c/o Royal Dublin Society, Kildare Street,
Dublin.

PLYMOUTH Photographic Society, which will open its exhibition for
six days on May 11th, has again secured as judges Dr. P. H.
Emerson, Mr. Baragwanath King (a West Country artist who has
held successful exhibitions in London), and Mr. F. Shelley (the
director of Plymouth Corporation Art School). The classes will cover
the whole field of pictorial photography, and a silver cup is offered
in the open competitions, besides medals and certificates. The exhibi-
tion will be held in the Athenaeum, which has ample wall space and
a shaded top-light. The Camera Club of the adjoining borough, Devon-
port, follows with its exhibition, and all who desire it may have
their pictures sent on from Plymouth to Devonport. Mr. Wilfred
Grist, 105, Old Town Street, Plymouth, and Mr. A. W. Hicks,
8, Chester Place, are the hon. secs.

MESSRS. TENNANT AND WARD, publishers, of 287, Fourth Avenue,
New York, write: "We believe you to be acquainted with the very
practical value of the researches made a few years ago by Hurter
and Driffeld, concerning the factors controlling exposure and develop-
ment in photography. Papers contributed by Messrs. Hurter and
Driffeld to various learned societies were practically buried in the
journals of these societies soon after their appearance. For some
years there has been a steady demand for their re-publication. To
meet this demand we persuaded Mr. Vero C. Driffeld to embody the
subject matter of these papers in a monograph which has been
published as No. 56 of the "Photo-Miniature" Series. In view of the
value of these researches, we take the liberty of calling your attention
to their publication in monograph form as the Photo-Miniature,
No. 56, entitled "The Hurter and Driffeld System," which can be
obtained from Dawbarn and Ward, Limited, at 6d. per copy.

ROYAL Institution.—The following are the lecture arrangements at
the Royal Institution, after Easter:—Professor L. C. Miall, three
lectures on the "Transformations of Animals"; Mr. L. Fletcher,
three lectures on "Meteorites"; Mr. H. F. Newall, two lectures on the
"Solar Corona"; Professor Dewar, three lectures on "Dissociation";
Dr. A. W. Ward, three lectures on "German Princes and Parties
(1558-1618)"; Mr. H. G. Wells, two lectures on "Literature and the

State"; Mr. Cyril Davenport, three lectures on (1) "Mezzotints," (2) "Cameos," (3) "Jewellery"; Mr. Donald Francis Tovey, three lectures on the "Sonata" (with musical illustrations); and Sir W. Martin Conway, two lectures on "Spitzbergen in the Seventeenth Century." The Friday evening meetings will be resumed on April 15th, when Monsignor the Count de Vava and Luskod will deliver a discourse on "Korea and the Koreans." Succeeding discourses will probably be given by Lieutenant-Colonel David Bruce, the Dean of Westminster, Dr. P. Chalmers Mitchell, Mr. M. H. Spielmann, Professor E. Rutherford, H.S.H. the Prince of Monaco, Professor S. Arrhenius, and other gentlemen.

Patent News.

The following applications for patents were made between February 29th and March 5th, 1904:—

- Film and Plate Holder.—No. 4,908. "Improved photographic film and plate holder and adapter therefor." The Thornton-Pickard Manufacturing Company, Ltd., and Charles Richard Whinfield.
- Colour Photography.—No. 4,941. "Improvements in or relating to colour photography." Adolf Heskkel.
- Daylight-loading Slides.—No. 4,947. "Daylight-loading plate and film slides." Charles H. Shuman.
- Colour Photography.—No. 4,994. "Improved manufacture of coloured photographic images or prints and of sensitive surfaces therefor." Farbwerke vormals Meister, Lucius, and Bruning, Germany. Oliver Imray.
- Printing Frame.—No. 5,143. "Improved photographic printing frame." John Batty.
- Timing Device.—No. 5,188. "Timing devices applicable to photographic development and other appropriate processes." Frederick William Emuss and John William Jones.
- Magazine Change Backs.—No. 5,190. "Improvements in and connected with magazine change backs for photographic cameras." Newton Livingstone Scott.
- Cameras.—No. 5,204. "Improvements in photographic cameras." Jean Frachebourg.
- Flash Lamp.—No. 5,254. "A flash lamp for studio and home portraiture." Tress Azulay.
- Studio Lamp.—No. 5,255. "A studio lamp for studio and home portraiture." Tress Azulay.
- Hand Cameras.—No. 5,327. "Improvements in and relating to photographic hand cameras." Samuel Dunseith McKellen.

Correspondence.

* * Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.

* * We do not undertake responsibility for the opinions expressed by our correspondents.

PINACHROME, ETC.

To the Editors.

Gentlemen,—With reference to the articles which appear on pages 202, 207, 208 of your current issue *re* pinachrome, orthochrome, and various other coal tar colours for photographic purposes, manufactured by Messrs. Meister, Lucius and Bruning, it may not be generally known that we are the sole agents for that firm in this country, and we shall be pleased to supply full particulars to intending users, and to send price lists on application.—Yours truly,

17, Philpot Lane, London, E.C.,
March 11th, 1904.

STRIPPING OLD NEGATIVES.

To the Editors.

Gentlemen,—I have received the "Almanack" for 1904, for which many thanks. I notice amongst the articles two methods of cleaning the film from old negatives, both of which are a matter of days. I have been in the habit of using a method which I consider much simpler. Take any old negative and immerse it in water for about

half a minute or a minute, take it out of the water and wipe with towel, you can then roll the film away from the glass easily, starting from a corner of the negative. If the negative has been aluminized it is all the easier. I send you this method as it does not seem to be generally known.—Yours faithfully,

PERCY M. CLARKE

Victoria Falls, Livingstone, N.W. Rhodesia,
February 10th, 1904.

INTERNAL REFLECTIONS IN THE CAMERA.

To the Editors.

Gentlemen,—Mr. A. Lockett raises some interesting questions in his letter, but he has rather missed the point of mine. I did intend to suggest that orange paper would be a perfect remedy for reflections in all cases, but only that it would most probably be better than so-called "dead black," which, in many cases, has the appearance of a bad polish. If the paper is better than the black with a slow emulsion I don't quite see why it should not also be better with a fast one, leaving the matter of orthochromatic plates out of the question.

A fast ordinary plate may be slightly sensitive to orange light, but the conditions in the camera are very different to those which existed in the case I mentioned. In that, the reflections were caused by magnesium burning for a minute or more in close proximity to the reflecting surface, and they were sharply focussed on the sensitive surface. In the camera the reflections are scattered and much less powerful, while exposure is very short if a rapid plate is in use. These conditions may more or less counteract the extra sensitivity of the plate, which is certainly not "rapid" as regards orange light. Even with orthochromatic plates little action is produced by orange light unless the exposure is longer than the usual duration of a snapshot. With time exposure on an orthochromatic plate no doubt dead black would be better than orange paper, which might be altogether ineffectual if a filter screen was used. In any case should think orange paper to be undesirable in a stand camera, a light interior is anything but advantageous for visual focussing. In suggesting the trial of orange paper in the camera the idea of the camera alone was in my mind.

I am uncertain from Mr. Lockett's letter whether he speaks from experience in approving the use of orange paper with slow ordinary plates; but if he does some particulars of his experience would be interesting. As regards its actual use in cameras I am only suggesting possibilities.

With regard to the hood screen, a circular hood is better than a rectangular one, and is more easily fitted than a rectangular one, but the latter, if properly adjusted, must surely give more efficient protection to a rectangular plate.—Yours, etc.,

C. WELBORNE PIPER.

March 11th, 1904.

THE METRIC SYSTEM.

To the Editors.

Gentlemen,—Your correspondent Mr. Welborne Piper in his letter of the 5th inst. rightly says that your pages are not a place to give lessons in elementary arithmetic, but he proceeds to argue against the metric system, and in favour of a duodecimal system of weights and measures in a manner which is only suited to a school. The argument is inapplicable to our system of weights and measures because, even if a duodecimal system were demonstrably preferable, it in fact nowhere exists, certainly not in the British islands.

What is certain is that those who are most familiar with computation in all the forms in which it is applied are unanimously in favour of the decimal system of multiplication and division of the units. It is not denied that for certain purposes and for certain sorts of problems vulgar fractions, especially the simpler ones are more convenient, but then no reasonable advocate of the metric system ever proposed to prohibit the use of such fractions when preferred. It is easy to see that by selecting problems we may make it appear that one method or other of the various modes of dealing with them is comparatively easy, and it is not at all easy to put into a small space a selection of such problems as would give an absolutely fair comparison, and is still less easy to avoid partiality in selecting a few. The safest plan then surely is to appeal to the judgment of experts of wide experience and their evidence is practically unanimous.

There is an old story of a learned gentleman who wanted a written

made in France, which among other qualities should be thirty times as high, and he found that he could only express this to the cent by using many decimals; he had, however, a table which varied the conditions, and a friend brought the carpenter who made the necessary dimensions with his metric rule and found no difficulty in completing the job. That is a specimen of the difficulties to be found in the metric system, when difficulties are expected they are to be found, and when they are boldly faced with a desire to overcome them they vanish.

Of course it is not supposed that a certain amount of inconvenience will not be found at first in adopting the new system, and this will especially occur with the less educated classes and those whose arithmetical operations have run in a groove, but all experience in other countries shows that it does not take long to overcome this, and that once overcome no one wishes to revert to the old confusion. In the last paragraph but one of his letter I fear that Mr. Piper presumed on the ignorance of your readers; the problem involves possession of accurate weights, or of weights whose errors have not been determined, and which have been extraordinarily carefully prepared, and of such balances as are rarely available. Then the errors in the weights are variable with the density of the atmosphere, and that matter so too is the weight of the chemical and of the water. Accurate determinations of all these things would take a considerable time, and in fact no man in his senses would approach the problem in this manner. The practical solution is quite easy, and the fact that a cube centimeter of water is not always a kilogram in weight, and the liter exactly 1,000 cube centimeters would not affect the solution. The metric system is in practice found to be as perfect as paper, and it is used by all who have accurate work to do in large quantities. It seems safe to say that in some form an Act to make the metric system compulsory will before long pass the legislature, and it would surely be better for the skilled to use their knowledge to make things easy for the unskilled, rather than to spend time and talents in fostering prejudice.

I have spoken of the metric system and decimal weights and measures as practically the same for no other decimal system has been proposed which has the faintest chance of reception. Moreover, notwithstanding the want of perfect agreement between the units theoretically defined, and the accepted representatives of them in use (and is likely to be) no other in which the advantages resulting from the inter-dependence of the various units is so great.—I am, gentlemen, yours faithfully,
J. F. TENNANT.
March 14th, 1904.

THE DECIMAL AND METRIC SYSTEMS.

To the Editors.

Gentlemen,—It is very evident from Mr. Welborne Piper's letter that he is not conversant with metric measurement and calculation, though he sets himself up as a judge of a system he persistently insists on mixing with other systems of calculation, and finds out to his satisfaction that he cannot do so to advantage. I know perfectly well that there is nothing new in the so-called Duodecimal system, which Mr. Piper has the coolness as bringing forward against the metric system, or at all events the Decimal system. I have challenged Mr. Piper to show that the so-called Duodecimal system is able to take the place of the Decimal system as a system of notation and as a fundamental principle out of which a harmonious system of weights and measures may be evolved. The answer is not forthcoming, but instead of it haggling over side-issues, setting as examples chosen as it may be. But I will give the answer myself:—The Duodecimal system is a device for working certain calculations with a certain amount of facility. It is not a system capable of forming the basis of a better system than the Metric unless the present notation be changed from a Decimal to a Duodecimal one.

I agree that decimals may be an abomination to one who wants to keep the two systems and prefers "thirds, sixths, eighths, and sevenths." I have deliberately stated, a half-hearted adoption of the Decimal system is no good, and must be aggravating to one so prejudiced as your correspondent. To one versed in the Decimal system and its practical application, the Metric system, the thirds, sixths, and sevenths are an abomination. That is where we differ. We are told, further, that decimals cannot be used alone, "for when we do so, "we cannot reach a high state of efficiency," and any monetary and metrical system which knows decimals only "is essentially defective." Almost all

monetary systems of civilised nations, our own excepted, are based on decimal subdivision. Has any one ever heard from experience that their systems were "essentially defective?" It is clear to Mr. Piper that I must be all wrong; for example, the litre of water does not weigh 1,000 grams, but 997.8066! Why the four decimals when they could have been expressed in vulgar fractions in fewer figures, more clearly and with greater precision. I should like to see them so expressed. Now, the conditions under which a litre weighs 1,000 grams are known of water to every one conversant with the Metric system. They are water at its greatest density—viz., 4°C. (appr. 39°F.) under normal barometrical pressure. The 997.8066 are thrown down without stating under what conditions they are supposed to be correct. The same argument would, however, hold good for the ounces of water or any other Imperial measure the weights of which would vary with its volume exactly in the same way. As a taskmaster Mr. Piper is highly amusing. I have done many similar calculations to the one he sets me to do, both in the un-Decimal and the Decimal measurements, and have invariably found the latter the simpler and more precise of the two.

I am finally made to say that I consider our present crown to be worth 96 half-pennies. I can hardly conceive a schoolboy to misread my meaning in this manner when suggesting a decimal division of our monetary values. It is hardly worth pen and ink to argue that I did not do so, nor do I see any good in continuing this discussion unless a fair attempt is made to argue the question of the best system of weights and measures with real facts instead of mere assertions.—I am, yours truly,

215, Shaftesbury Avenue, London, W.C.

March 14th, 1904.

J. R. GÖTZ.

Answers to Correspondents.

* * All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.

* * Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.

* * Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.

* * For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

J. W. Tattersall, 15, Avenue Parade, Accrington. Photograph, Snow Scene, Oak Hill Park, Accrington.
T. Bacon, 24, Royds Street, C.-on-M., Manchester. Photograph of House, Crowcroft Park, Manchester.

PYRO.—Sorry we can add no further information at present. We will bear your question in mind when details are available.

"SALARY."—Such work may be characterised as of the fourth rate professional order. It should entitle you to a salary of £0s. a week, and would be absolutely useless in South Africa.

J. DOLMAN.—Such an emulsion would not be sufficiently sensitive for your purpose. Better consult Abney's "Photography with Emulsions."

FESTINA LENTE.—Messrs. Marion and Co., of Soho Square, London, publish a book on the subject, to which we refer you. We cannot at present afford space for the details you require.

J. ROBERTS.—Review of the book you mention has not yet appeared in our columns, but will be dealt with in due course. You do not give your address in your communication.

"AN OLD SUBSCRIBER."—To make sure that the pictures are out of copyright, we should recommend you to make a search at Stationers' Hall. Consult the Copyright Act, printed in each edition of the ALMANAC.

E. CROSS.—Messrs. Marion and Co. would probably be able to supply you with the plush frames bearing photographic views. As

to the negatives, no doubt, if you advertised them in the JOURNAL, giving an idea of the subjects, you would find purchasers. There is a very great demand for good negatives just now.

E. R. BROOKS.—We do not see what you can do in the matter. The negative has been accidentally broken, and it is usually understood in the trade that printers are not responsible for the breakage of negatives. To recover damages you would have to prove wilful damage. We do not reply to queries by post. The prints have been returned as desired.

SILVER ON NEGATIVE.—"TROUBLED" asks: "Would you be kind enough to let me know how to remove nitrate of silver from negative?" In reply: We presume you mean silver stains from damp paper? If so, they may often be removed by rubbing them over with an alcoholic solution of iodine until they disappear. Then refix in a new solution of hyposulphite of soda. The iodine solution should be about the colour of dark sherry.

ADDRESS WANTED.—G. V. SIMMONS writes: "Kindly let me know where I can get the 'Photographisches Wochenblatt,' for this month, which gives particulars of new incandescent lamp referred to in 'B. J.' for March 11th?" In reply: We refer our correspondent to the BRITISH JOURNAL ALMANAC, which publishes every year a list of the principal foreign photographic periodical literature, and the addressed of the publishing offices.

COPYRIGHT.—E.H. writes: "About ten years ago I photographed a well-known athlete, for which he paid me at the usual rates. He is now, I believe, in Canada, and I find that a certain athletic journal has reproduced (in England) two of the photos. Can I claim damages? The photos were not registered or made copyright in any way. Should not they have written to me and paid for reproducing them?" In reply: Claim damages? Certainly not. You were paid for your work. What more do you want or expect?

LENSES.—"SANDFORD ORCAS" writes: "Will you please say which of the two following lenses you would choose for a half-plate camera for landscape work and large heads—(1) A rapid landscape lens (single), 7 x 5, stops F. 8 to F. 64, price 25s.; (2) a Suter landscape lens, No. 3, fitted with wheel diaphragm, price 32s.? I do not know the focus of either, but should like to know, probably are equal." In reply: As the lens is required for large heads, as well as for landscapes, we should recommend the one that has the largest focus, and the largest working aperture.

BROMIDE PRINTING.—H. J. BLISS AND Co. ask: "How to best fit up a small room for bromide printing; is electric or gas light best? Water to be laid on; no daylight available: or advise where we can find the necessary details." In reply: We do not know where you will find any published details, as we think none are required beyond what would suggest themselves to those who are going to work in the room. You will require a sink suitable for the size work you propose to do, and also dishes, a dark-room lamp, and a light for the exposures, either electric, incandescent, or gas will answer. If the latter be employed, we should recommend the incandescent.

COPYRIGHT.—BORDERER writes: "Some time ago we had private theatricals, and employed a country photographer to take some groups and single figures. The proofs were sent round to the different actors so that they might order those they preferred. Three or four dozen were ordered. The photographer sent in a bill for the proofs at the rate of 3s. each for whole, 2s. each for cabinet, and 1s. 6d. each for single figures. What I want to know is—(1) Is he entitled to charge for the proofs when copies have been taken? (2) If he is, am I entitled to the negatives?" In reply: Unless there was a contract on your part to pay the photographer, he is entitled to make such charges, and the negatives are his property.

B. T. H. writes: "Enclosed please find six rough prints taken with the intention of obtaining exhibition pictures. I want you to criticise same as such, and through the medium of your valuable journal let me know which you consider will make the

worthiest exhibit when enlarged? Should space permit, I would also like to know (1) does the moon in No. 1 add to the general effect or otherwise; (2) is the belt of trees made in No. 2 too pronounced for the making of that picture; what size and colour would you suggest for enlargements of the chosen picture?" In reply: (1) Four, five, and six are good photographs, and might be used. The moon does improve. No. 2. Yes; much too pronounced. (3) About by 12. A sepia would perhaps be the best for the subjects.

STUDIO QUERY.—E. M. BOSS asks: "Will you kindly advise me the following questions? I have a small studio 12 x 7, which I am going to remove. I intend enlarging it to 12 ft. wide and adding a piece 13 ft. on to it, making it 25 ft. long; also intend having the light on the single slant system. I want to ask you if it would be effective in a studio that size or would you advise side and top light? There would be about 9 x 8 ft. of light in the single slant, and a north-east light." Reply: The studio, as shown in the sketch, would be a very good one, but if the single slant be adopted, should advise that the glass be brought a little lower, say, foot nearer the floor. It is quite a matter of opinion as to whether the single slant or a top and side light is best. Both are good.

LACK OF EMPLOYMENT.—"SEEKER" writes: "I am desirous of obtaining a situation as copyist, but find it difficult to get a class of work I want. I have made a study of isochromes, work, copying painting, etc., both with dry plates and collodion emulsion, and should like a situation to do same, London. I have tried advertising in the JOURNAL, but with no effect. What other course would you recommend? What salary do you think one might reasonably ask, having twenty years' experience and a wide knowledge of carbon, platinum (S. and B.) and the silver printing processes?" In reply: We can only suggest your advertising for the employment you desire. We are afraid there are a large number of assistants out of employment at the present time. As regards salary, we can say nothing, as so much depends upon individual ability.

PHOTOGRAPHY AS A PROFESSION.—J. W. BURRELL says: "Having an idea of taking up photography as a profession, I have applied to a local artist, and he requires a premium of £20 for a twelve months' tuition, covering everything. Is £20 above the usual figure asked? He also says I will be able to easily earn from £2 to £3 per week as operator-retoucher at the end of the twelve months. Will there be any difficulty in doing so thoroughly proficient, and any chance of that figure being increased? Would you advise me to 'go in' for it professionally, as I have heard of its being 'cut up' very much in the provinces?" In reply: We should advise you to hesitate before entering photography for a livelihood, seeing that the photographic labour market is already so over-stocked with assistants. We think you would be unusually fortunate if you succeed in obtaining an engagement at a salary of from two to three pounds a week, with only twelve months' experience in a small country place. We think you might probably spend your £20 to better advantage in some other way.

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EX CATHEDRA.

Radium everywhere. The interest in this mysterious body is kept up by all kinds of unexpected news; we recollect no fact of pure science that has held the public mind and held it so long as has radium. We have described the disappointed expectations of the inhabitants of Bath in the finding that, though radium was discovered in the waters of that famous resort, it was not there in payable quantities. Now we learn from the Geneva Archives of Sciences that air and soil are radio-active. Experiments were made to find the effect was inherent in the air. It was proved not to be the case; the soil conveyed the activity. Some specially rich soil was tested, and found to contain a trace of radium, and it was concluded that the radio-activity of the atmosphere in its vicinity was derived from it, as the activity decayed at the same rate as that induced by known radium salts. Then again at the Cambridge Philosophical Society, Professor Thomson described the results of an examination of a large number of samples of water from different parts of the Kingdom. In nearly every case the radio-active gas which is present in Cambridge tap water, and is probably identical with the emanation from radium, was present. In order to find its source, a number of clays, gravels, and sands were examined—still radium! It was also in garden soil from the laboratory garden, in the Cambridge gault, in gravel from a pit at Chesterton, in still greater quantities from the sand on the sea-shore at Whitby, in the blue lias at Whitby, in powdered glass, one specimen of flour! This is very wonderful. What does rise to some little anxiety is the probability that the

presence of radium may be offered as an excuse for bad plates and bad workmanship. Who shall say?

* * *

Blondlot's n-Rays.

This most recent addition to what we may term radiation records continues to be matter of controversy, if not even of actual doubt. In *Nature*, a week ago, Mr. W. A. Douglas Rudge writes: "In trying to repeat Blondlot's experiments I have met with the usual lack of success," but in the preceding week the same journal had a letter from so well-known a worker in Röntgen-ray work as Mr. A. A. Campbell Swinton, who states that "It is by no means difficult to repeat some of the effects M. Blondlot describes; but, so far as my observations go, these effects when obtained are in every case due to heat." Mr. Swinton refers, further, to some experiments, whose results were communicated to the French Academy, to the effect that the luminosity of calcium sulphide screens is increased when they are placed in a weak magnetic field. He says that: "Having spent considerable time in endeavouring to confirm this observation without the slightest success, it would interest me to know whether anyone else had tried it, and with what success." After all that the various effects described are really objective and not subjective scarcely seems to admit of doubt when we read the long array of names of writers of papers sent to the Academy of Sciences quite recently. Thus, in one séance, we have M. Blondlot himself detailing further experiments, M. Bichot giving the transparency to n-rays of various metals, and also showing that liquids under pressure emit the rays, M. Crénien describing the magnetic rotation and their plane of polarisation; M. Bayard on the same subject; MM. Dubois and Charpentier treating of the action of the rays on the senses; and so on. So far the work done seems mainly with the luminous screen: if a screen can be made luminous it should be able to reproduce itself on a photographic plate, and there can be little doubt, if such permanent records could be produced and shown, they would have a tendency to put down the scoffers.

* * *

Irradiation Effects.

At a recent meeting of the Royal Microscopical Society a discussion took place upon the cause of certain effects that produce an imperfect mental image of microscopic objects under the conditions described, and an explanation was given, which form the brief précis of the report before us appears to be at the least superfluous. Most photographers who have done any photomicrographic work have tried their hand at a blow-fly's tongue, and are familiar with the minute spinous hairs that are shown with a good photograph from a good specimen. When one of these hairs is seen by the eye through the microscope, first on a dark and then on a light ground, a considerable difference in size was dis-

cernible, and the difference was explained as being due to "anti" points, and a table was given showing the amount to be added to the micrometric measurement of the bright ground image. Mr. Gordon, who originated the anti-point theory, had made accurate drawings of both bright and dark ground images, and found a ratio of 45 to 65 between them. The photographic point of this discussion lies in an acquaintance with the effect of pinholes in a negative. In the days of wet-plate work pinholes were a very common defect, but are nowadays less frequently met with; but every expert worker used to be familiar with a remarkable quality of these defects. A conspicuous hole in the negative did not show in the print, and the puzzle to be solved was, why did they not show? The explanation then given was not "anti-points," but irradiation. It was known that when a bright object was cut into by a dark object the light portion appeared larger than its true size warranted, while the dark portion was smaller. The effect was markedly discussed years ago at the time of the transit of Venus across the sun. When the planet was almost but not quite apparently touching the sun, a "drop" or "ligament" shot out and joined the two. This was explained as being due to irradiation just described, which was physiologically accounted for as being due to the rods and cones of the retina immediately contiguous to those receiving the image in eye being excited sympathetically, and so causing the brain to receive a larger image than the true retinal image. Returning now to the pinhole negative, the matter works out in this way. When the plate is looked through at a bright light the pinhole, when on a dark ground, appears through irradiation larger than it really is, and, further, when it is printed upon paper, its reduced true size is represented, which again is subject to irradiation, the surrounding white appearing to encroach upon the minute speck of black, and so reducing it again to the eye. The moral to be derived from this is that when small transparent spots appear in a negative they should not be spotted out until a trial print shows that they really need it. It is to the inexperienced really surprising what a number of good-sized pinholes may be visible in the negative and yet disregarded. It is a difficult matter to dexterously spot out a minute hole, and it must be remembered that a white spot on a darker ground, such as would be produced by over-spotting a pinhole, will, by virtue of this same irradiation, appear to the eye larger than it really is.

* * *

Miniature Painting.

Some persons are inclined to regard photography as a kind of devouring monster which makes it its business to intrude into every branch of art and take the bread out of the mouths of talented and deserving men. And they quote the case of the wood engravers who, before the advent of the process-block, ruled the roost so far as illustrated journalism was concerned. Or possibly they instance the case of the steel engraver, who has been altogether abandoned now that such beautiful results are obtainable from photogravure. At one time a cry went up that the daguerreotype had killed miniature painting, and for a number of years it seemed that that was the case. Owing, however, to the labours of a few enthusiasts this beautiful method of portraiture has not been allowed altogether to sink into oblivion, and although we, editorially, have the interests of photography at heart, we are unfeignedly glad to see that it has not, as was at one time expected, driven the art of painting on ivory out of the field. For there is a charm about these pictures which is seldom seen in the photograph, and it would be quite a disaster if the art of producing them was lost. It is difficult for the imagination to recall the time when the photograph was not and the miniature reigned

supreme; when every gallant would carry on his snuff-box on the top of his malacca cane, or attached to some other indispensable part of his gay equipage a tiny portrait of the loved one of his heart; and when ladies would follow suit with corresponding portraits of their beaux on rouge box or brooch. Some of the older photographers among us can remember how, in the early days of sun pictures, the custom of using portraits as personal adornments was common. It was, of course, reflected from the earlier days of miniature painting. As we have already indicated, the miniature received what many believed to be its death-blow at the hands of Daguerre, but there were a few men who seemed determined that the art which began about the time of Holbein, and was brought to such vigorous perfection by Cosway and others, should not be allowed to die without a struggle. A handful of miniatures were generally to be found on inquiry each year at the exhibition of the Royal Academy, but it was not until 1896 that the revival of the art began to be talked about. At this time Mr. Alfred Praga founded the Society of Miniaturists, and gathered round him a band of young artists who were determined that the cabinet photograph should not have it quite its own way, and that the little picture on ivory should have once more a chance of recognition. And their efforts have been crowned with success. We may be quite certain that many of these little pictures are copied from photographs, as must certainly be the case in painting the miniature of one who has joined the majority. So that we may say that in this revival of an almost forgotten art the photographer is not altogether out of it. The miniature has much to recommend it, apart from its beauty. It is as permanent as any form of painting that we know of; indeed, it might be said that, considering the nature of the material upon which the colour is laid, it must be more permanent than either an ordinary oil or water-colour work. It is not costly, and the pictures, being of small size, take up little room. It is the fashion now for people to live in snug apartments and in flats, and the wall space available is at a premium. Miniatures, alternated with the more sober-garbed photograph, are regarded as the best kind of mural decoration for such homes.

* * *

Electric Illumination.

Electricity has now been in common use as a light-giver for so many years that it may be profitable to inquire whether we are getting the best possible results from the means at our disposal. The little glow lamps used for interior illumination and for exterior display leave little to be desired, for they give an effective light and can be used in situations in which the open flames of lamps or gas jets would be quite inadmissible. They can also be employed to follow the lines of ornamental ceilings and other architectural adornments as no other form of illuminant can be. They are not cheap to maintain, but the extra price paid for their employment is counterbalanced by their safety, their cleanliness, and their decided convenience. Arc lamps are mostly in request for street lighting or for the illumination of large halls, and when we come to consider the general way in which they are installed we have some reason to think that we do not benefit as much as we might by the initial light given out by the white-hot carbons. The common custom is to enclose each arc light in a glass globe, which is hung from a standard some thirty feet above the roadway. It is to the nature of this globe, or lantern, that we wish to direct attention, for there is no doubt at all that, in the majority of cases, a good 50 per cent. of the light is lost before it finds its way to *terra firma*. The other night, in a suburban street, we happened to come across one of these lamps, the globe of which had been broken. There was a jagged piece of glass, a few inches in area, broken out from

lower part. From this orifice a splash of most brilliant light struck the pavement, and the contrast between this brightly lighted-up patch and the diffused light around was as great, or seemed to be as great, as the difference between daylight and moonlight. Hence we think that we are justified in putting the loss of light in these particular ground-glass globes at quite 50 per cent. In other cases, where lanterns with "chipped glass" panes are employed, the loss is probably not so great, but it seems to us that there is a distinct need of some medium better than either of these kinds of glass which will diffuse the light and at the same time not impoverish it to the extent described. Ground glass has another disadvantage in very quickly glowing under the action of light. Anyone who has had occasion to replace a gas globe, part of which is ground, will have noticed how the old globes suffer by comparison with the new ones; they have darkened with a darkness which no washing will remove. It may be considered necessary to take off the glare of the electric arc light by the use of some kind of translucent medium, but we doubt if this is the case with lamps placed far above the level of the eye. At any rate, it seems to be bad economy to furnish a brilliant light at considerable cost and then to shut out its radiance in the way described. We may mention that at the Geological Museum at Jermyn-street electric arc lights are employed in a very satisfactory, and we have quite a unique, manner for interior illumination. The naked arc is furnished with an inverted reflector, so that the light is not seen, but is cast up on to the ceiling. From this white surface a diffused light comparable to that of daylight is shed all over the hall with excellent effect. It is difficult at first to see where the light comes from, for there are no tell-tale shadows to tell one of its origin. It would be worth while for our municipal authorities to do something of this kind for street illumination. The reflecting surface might take the form of an inverted cone of porcelain, or some other material of a like kind, which would at the same time protect the naked carbons from the

* * *

Photography and the Solution of Problems.

It is not so many years ago that the use of sulphite of soda in photographic operations was entirely unknown, and when Berkeley first introduced it, the numerous repetitions of its claims were needed before photographers would even look upon it; years passed before full recognition of its value was given. At the present time it is scarcely a dark-room from which it is absent or elopement performed without its aid. Metabisulphite has its place in many workers' hands, and especially in the dry-plate maker's formulae, although the cases are few in which every purpose is not subserved by the use of the ordinary sulphite of soda, to which a certain amount of potassium has been added, a plan which, moreover, helps towards uniformity, for metabisulphite in crystal is less stable than sulphite, and the same may be said of their respective solutions. A matter not to be lost sight of in times when economy has to be the order of the day is that the former is much dearer than the latter, either weight for weight or in the quantity required to produce a given preparative action. But, superior as the neutral salt is in its preserving properties, some little care is required in keeping crystals and much care as regards the solution. For crystals it will suffice to see that the bottle containing them is always kept well corked: we have seen samples of crystals scarcely touched with efflorescence taken from a bottle in daily use for upwards of a year. The cask, however, was one of a kind which deserves more frequent adoption than hitherto has been the case; in fact, we have only seen it in use, though one extensive manufacturer at

Bow usually sends out his goods packed in these casks. They are virtually air-tight, and are provided with a lid which fits accurately and as tightly as a cork in a bottle. We heartily commend them to our readers' notice. When sulphite is kept in stock solution particular care should be taken to see that the stopper of the bottle (it should never be kept in a corked bottle) is an accurately-fitting one and always kept in its place, and replaced as quickly as possible whenever the bottle is used. Otherwise the solution is very liable to absorb oxygen from the air, and by consequent conversion of its sulphite into sulphate to become quickly inert. Touching this conversion, some singular facts with regard to dilute solutions have recently been published in a well-known German scientific paper. When the water used for dissolving the salt in weak solution was distilled from a boiler with a silver or tinned copper, still some 200 minutes were required for oxidation (from the oxygen dissolved in the water) of half the salt present; when the purest water possible to obtain was used, as much as from 1,500 to 1,800 minutes had to elapse; while when water distilled by the aid of an iron still head, and so containing traces of iron, was made use of, the change was half completed in from ten to twenty minutes. The velocity of oxidation is extraordinarily sensitive to traces of copper, and it is stated that a marked acceleration of the oxidation is produced by a solution of sulphate of copper of a thousand-millionth normal strength, or by merely dipping a piece of bright metallic copper in the water for less than a minute. Other substances had an opposite effect; thus mannitol in a hundred-thousandth normal strength delays the oxidation by 50 per cent., and the salts act in the same manner still more powerfully—one two hundred and fifty thousandth normal reduced the speed of oxidation 25 per cent. These facts are so remarkable that they produce a tendency to speculate whether or no some photographic reactions in which sulphite takes part may not be influenced to some extent in an analogous manner.

* * *

Photographed Ghosts.

We remember reading, some years ago, a story by the author of "Vice Versâ," the scene of which was laid in Ghost-land, and in which was described a meeting of spirits to discuss the question whether or not such a thing as a human being actually existed. It was a clever piece of topsy-turveydom, for the problem of the disembodied spirit is as old as the hills, and has for centuries been the subject of argumentation among the descendants of Adam. Certain it is, too, that there are many who seriously believe that the records of ghosts having been seen do not point to any hallucination of the brain on the part of the observers, but to a semi-transparent actuality, which is the intangible form which the more spiritual part of our nature takes to itself after the death of the body. It has been claimed by many, as our readers know, that these ghostly visitors, who seem to appear to only a very few persons, who are known as mediums, will, under certain vague conditions, permit themselves to be photographed. But among the great majority of photographers these pictures have been generally regarded as frauds. They labour under one disadvantage in common, in that it would be extremely easy for any photographer, if he were so minded, to produce the same effects. In other words, we have never yet seen one which could not be easily faked. And we have just been carefully examining a collection of many dozens of these pictures, which were thrown open to public exhibition on Friday and Saturday evenings last by the Spiritualist Society of Chiswick. When works of any kind are thus exhibited in public they must run the gauntlet of criticism, and their exhibitor, Mr. H. Blackwell, will doubtless be

prepared for adverse comments. Our attention was first called to this unique show by a notice in the *Daily Chronicle*, and from that publication we are able to glean a few curious particulars concerning these pictures, which the paper referred to calls "weird" and "uncanny," "interesting and marvellous." The same authority quotes Mr. Blackwell as saying that "only one photographer in England was able to take the portraits, and he has now retired from business." But our readers will naturally ask, "What are the pictures like in this extraordinary one-man-show?" Well, there is a family likeness between them all. There is generally only one sitter, and this, we presume, is Mr. Blackwell. But over his shoulder, or in some other part of the picture, is seen the shadowy outline of someone else, and generally this someone else is a person of some note. To again quote from the *Daily Chronicle*, "Mr. A. Blackwell has placed on view a large number of spirit photographs, the 'sittings' for which, in his own words, have been given to him in fulfilment of promises made by the disembodied, whose materialised forms peep over Mr. Blackwell's shoulder." We attach a good deal of importance to this statement as to promises fulfilled, as will presently be seen. But we may first note that the ghosts presented include Browning, Tennyson, Longfellow, Charles Dickens, Huxley, Darwin, Napoleon, Rev. Haweis, John Knox, and sundry other notables. Some of these, we have no hesitation in saying, are taken from pictures, and in nearly every case the face of the ghost is framed in stiff new muslin. This gives the conventional translucent outline to the spirit form. Mr. Blackwell, we are told, indignantly repudiates any suggestion that the results are obtained from what is known as a "double exposure." We have no wish at all to impugn his veracity. But we are by no means so sure of the *bonâ fides* of the unnamed photographer. Here it is that, we think, the significance of the *promised* sittings comes in. What we mean is this. Suppose that a photographer, intent upon fooling a credulous mortal, were to arrange with a medium in collusion with him that the spirit of Shakespeare should appear on a promised occasion. Would not this postponement of the appearance give time for preparation of a model for the ghost and its partial exposure on the plate to be subsequently used for the portrait? The pictures did not attract us either by their pictorial merit or their technical excellence. We have seen plenty like them before, although there is apparently only one man gifted enough to produce them.

"The Cinderella of the Arts" was the title of a lecture on photography recently given at Staines by Mr. Thomas Bedding, F.R.P.S., Editor of THE BRITISH JOURNAL OF PHOTOGRAPHY.

BOROUGH Polytechnic Photographic Society.—Mr. P. C. Cornford has been obliged to resign the secretaryship owing to increased business responsibilities. The news was received with much regret by the society. Pending a fresh appointment, all communications should be addressed to the acting secretary.

THE Royal Photographic Society's Practical Demonstrations.—The fourth of the series of practical demonstrations on printing processes will be held at 66, Russell Square, on Tuesday, March 29th, at 8 p.m., the subject being "Carbon Printing," by Mr. John H. Gear. The following is the synopsis:—(1) Reasons for the selection of the process; (2) the making of the paper or tissue; (3) manufactured tissue sensitive and insensitive; (4) home sensitising and its latitude; (5) single transfer prints upon paper and opal; (6) double transfer prints upon paper, opal and ivory; (7) the negative; (8) printing the necessary precautions, exposure, mounting and developing, local development and reduction, fixing and washing; (9) spotting and working upon the print. Mr. J. Fielder Haden will occupy the chair.

MISCONCEPTIONS AS TO PHOTOGRAPHIC COPYRIGHT.

It seems more than passing strange, seeing that so much has appeared in the pages of the JOURNAL on copyright law, and that the Act itself is printed annually in the ALMA MATER, that there is still so much misconception amongst photographers as to their rights—and supposed rights—when regard to copyright. That such do exist is evidenced by the number of queries that are constantly being replied through the "Answers" column. The existing Copyright Act, it is pretty well known, was passed in 1862, and is clearly explicit, and gives photographers all the protection that they can reasonably desire if they choose to avail themselves of it; but too often they neglect to do so, and then find their work pirated by others, so that they have no redress. That is their fault, and not that of the Act. In not a few instances photographers imagine that they possess rights to which they are in no way entitled, and not infrequently complain of the present state of copyright law. As just stated, the present Act is a reasonable one, and cannot well be improved upon so far as the interests of photographers are concerned. There certainly would not be in that direction by any of the different Bills that have from time to time been promoted to amend the present Act if they had become law.

Here is a very common grievance amongst professional photographers, though it is quite an imaginary one. He takes, say, a portrait in the ordinary course of business, and afterwards sees the picture reproduced in a magazine or, maybe, a newspaper. Or, perhaps, he may find that the sitter, who may only have paid for a single portrait, upon which much time was expended in the expectation of future orders, has placed the picture in the hands of another photographer to be enlarged, or, possibly, to be reproduced in cheap form. This is certainly annoying, but, after all, there is little really to complain of. The photographer has been paid his charge—whether much or little—for his work, and the copyright belongs to the sitter. In these circumstances it would be absurd if the customer could not do as he likes with his own property, be it a photograph or anything else.

There is an idea prevailing with some that if a picture does not bear the imprint "Copyright," there is no copyright in it. This is a fallacy, for it is not at all necessary that the picture should be so marked. On the other hand, it is illegal to mark a photograph copyright in which there is no copyright, as it implies a legal right that does not exist. We may mention en passant, however, that we are not aware of proceedings being taken against anyone for this illegality, so far as the word copyright is concerned. In the case of the illegal use of the word "patent," where no patent had been granted, although Provisional Protection had been obtained there has been more than one conviction, and substantial penalties and costs inflicted.

It is sometimes thought that there is no copyright in a photograph until after it has been registered. That is a mistaken idea. Copyright exists immediately the picture is taken, and is the property of someone. No proceedings, however, can be taken until it has been registered by its owner, and registration may be done at any time. But it must be understood that the owner cannot recover penalties or damages for anything done before the registration was effected. The Act is very clear on this point. Although there is no remedy for anything done before registration, there was no offence in law committed, action can, however, be taken for anything done afterwards. Section 6 of the Act makes it an offence to sell, publish, exhibit, let for hire, or offer for sale, etc., any copyright work. Therefore anyone whose pictures may have been pirated before the copyright in them was registered, may still register it and

restrain further sale, as the sale or exhibition will then be illegal. He can then obtain an injunction and recover damages, but not penalties, as he would have been able to had the registration been effected before the piracy was committed. This fact may not be so well known as might be to some who have had their photographs reproduced as picture postcards and the like without their consent. They can, after registration, by injunction, restrain the sale of the piracies and recover damages. The latter would doubtless not be large, but the sale would be stopped. We may add that it is not necessary that proceedings be taken against those who actually made the reproductions, as they may be taken against all and everyone selling them or offering them for sale. This some may be glad to know, as it may enable them to obtain some compensation for the injury done them. For example, many Stationers and others who hold a large stock of picture postcards of local views, etc., made without the permission of the one who took them, and who had neglected to register them, would often be glad to make terms with the photographer after he has registered the copyright, either by way of a royalty or otherwise, rather than risk being mulct in damages and the costs of an injunction, and also having to sacrifice his stock of pictures.

Some imagine that if a sitter, whose portrait has been taken for, gives the photographer verbal permission to register the copyright in it, that, after the registration, he has a legal copyright in it. That is a mistaken idea. The photographer must formally assign the copyright to him in writing, and the assignment should bear a sixpenny agreement stamp. Then the copyright will be legally his, even if he has been paid for taking the portrait. Some persons when they purchase a business, together with the stock of negatives, amongst which may be some copyright ones, imagine that the copyright passes to them. It does not, however, and he cannot proceed against anyone pirating them unless the copyrights have been separately assigned to him, and the assignments duly registered at Stationers' Hall. If a sitter has his portrait taken in the ordinary course of business and does not pay for it, some imagine that they are entitled to register the copyright in it, and prevent the photographer making use of the picture for any purpose of his own. That, however, is not so. In the case of *Boucas v. Cooke* it was decided that as the sitter had had the portrait taken in the ordinary course, and in that way had incurred a debt that could be sued for, the copyright was not vested in the photographer. In the above we have pointed out one of the misconceptions that some photographers labour under with regard to copyright; but there are others, though, perhaps, of somewhat minor importance, but space will not allow of them being dealt with now.

JOTTINGS.

SUPPOSE it may be taken as a delicate compliment to THE BRITISH JOURNAL OF PHOTOGRAPHY that Liverpool this week is the opening of the Northern Photographic Exhibition, which from all accounts will include a very fine selection of up-to-date photographic work. It is fifty years since THE BRITISH JOURNAL OF PHOTOGRAPHY was founded in that very town, and it is fitting that at the end of the half-century its birthplace of the B.J. should witness the best possible modern manifestations of the art which the paper was founded to encourage and foster. Those readers of this year's JOURNAL who have followed with intelligent interest the extracts from the 1854 volume which have recently been given in these pages will hardly need reminding that one of them, indeed the very first, dealt with an exhibition of the Liverpool Photographic Society in 1854, for which premiums on the best specimens of the art were offered. So does history repeat itself. In congratulating the Liverpool photographers on the step they have taken, and wishing their exhibition the very highest artistic and popular success, I will append

the hope that if the New Zealander should arrive here half-a-century hence, he will find the Liverpool Society holding an exhibition of photographs, and THE BRITISH JOURNAL OF PHOTOGRAPHY recording the fact.

It must be about sixteen years since the late Mr. Traill Taylor, subsequent to a visit which he paid to Liverpool, printed in these pages an article dealing with what Liverpool had done for photography. Taylor, whose historical knowledge on his subject was probably unequalled at the time, and has not been excelled since, save perhaps by one contemporary journalist whose name will occur to many of my readers, rendered the very highest tribute to the early photographic workers of the great city on the Mersey. The collodion emulsion process which forms the basis of modern gelatine photography was originated at Liverpool by Sayce and Bolton. At one time, too, Liverpool was the English emporium of Transatlantic productions once so popular amongst professional workers. I need hardly say that I allude to the celebrated house of John J. Atkinson. Such renowned amateur workers as the late Canon Beechey and Mr. Osmund Green were in the long-ago connected with Liverpool, as was Mr. Peter Mawdsley, a pioneer worker in gelatine and collodion dry plates. It is permissible to conjecture that had Liverpool not taken the prominent part which it undoubtedly did in perfecting photographic technique, such an exhibition as that which is being opened to the public, as these pages are making their way through the post, would not have been found feasible. We to-day are profiting by the labours of the unrewarded experimentalists of the past.

So far as British photography is concerned, it may be truthfully said that Liverpool at the present time holds the one living English link between the photography of 1904 and the photography of fifty years ago. If I am wrong here I trust that some older photographer will take the opportunity of correcting me. I do not think I am. Some weeks ago a letter appeared in these pages from a member of the present Liverpool Society, stating, although he had reached the patriarchal age of ninety-odd years, Mr. James Alexander Forrest was still in the land of the living and taking an interest in photography. Mr. Forrest was one of the editors of the "Liverpool Photographic Journal" fifty years ago, and anybody who cares to turn up the first volume of that journal may see for himself what a strong and vivid interest in photography Mr. Forrest then took. In the directly personal sense the news that Mr. Forrest still retains a direct interest in matters photographic came to me as a most agreeable surprise. I was turning over, the other evening, some of the many photographic scraps which I take the greatest pride in preserving—I mean those having some associations of a particular or individual character; such scraps, indeed, as most of us, whether we be photographers or not, take care to preserve. I came across a 12 by 10 group taken by Mr. J. B. B. Wellington in the ruins of St. Mary's Abbey, York, in the year 1896. In that group, besides the humble writer of these lines, and one or two others, there were the owners of three great names identified with photography in Liverpool—H. P. Robinson, Paul Lange, and James Alexander Forrest. Robinson and Lange have, alas! gone over to the majority. This was on the occasion when Robinson was president of the Convention at Leeds. The meeting that year gave great impetus to photography in the Yorkshire city.

Paul Lange's death is so recent as to hardly need detailed reference here. Suffice it to say that in his time he was a pillar of the Liverpool Association, the most genial of men, and one of the best producers of photographic lantern slides in Britain. When I come to write the autobiography to which I made reference at a recent London festival I think I shall devote a portion of a chapter to the adventure which the editor of a contemporary and myself had with poor Lange at the Shrewsbury Convention of 1895. He quite failed to see the point of a small joke that was played upon him, in respect of which he differed from his fellow victim, Robinson, who submitted with the utmost meekness to initiation into a photographic association which no longer exists. Robinson had family connections in Liverpool. I spoke just now about the York group in which so many able Liverpool photographers

figured. It was on that occasion that I had the very great pleasure of meeting and shaking hands with the veteran Forrest, and I shall never forget the kindness and cordiality with which—old man that he was and probably better versed in the practice and history of photography than anybody else present on that occasion—he came forward, gave me an almost paternal greeting, and spoke of the honour he felt in meeting me. The honour, of course, was on my side. I do not know whether Mr. Forrest will be present during the exhibition which is to be held in Liverpool during the next few days. If he is, I am quite sure he will receive a cordial and respectful welcome from all those who meet him; at any rate, I trust I may be pardoned if, while recalling the association of this JOURNAL with Liverpool, I indulge in these few reminiscenary details. With regard to Sayce and Bolton, I never met the former, but as to poor "W. B.," my recollections are alike of the pleasantest and the saddest. It was my melancholy duty some years ago to see that he was tenderly laid to rest in a little Hertfordshire churchyard. Is it too much to hope that one of these days his memory will be perpetuated in some permanent form?

There will be other opportunities of telling in greater detail the part which Liverpool has played in the history of photography, so that I may leave the subject at present; but as I take it the exhibition partakes of the international character which we have been wont to associate with the displays held in such great photographic centres as Bristol, Leeds, Newcastle, Dundee, Glasgow, and elsewhere, it may not be an unfitting occasion to ventilate a small grievance with regard to what should be a much greater display of British pictorial photographic work, namely, that at the International Exposition at St. Louis. From what one gathers, if British pictorial photography is worthily, or, at any rate, adequately represented across the Atlantic this month it will be nothing short of miraculous. No official systematic attempt seems to have been made to secure a thoroughly representative display of photographs from leading British workers. The duty of collecting the exhibit appears to have been handed over to two or three gentlemen of a particular school, whose names, though commanding respect in virtue of personal probity and ability, will hardly command general approval on the score of breadth of view and catholicity of taste. There have been one or two protests already uttered in the matter, and it is as well that the subject should be further ventilated until some satisfactory explanation of the transaction is made public. Not being an exhibitor I have no axe to grind in the matter, but in common with many other photographers who have the best interests of British photography at heart, I should like to know by what process the appointment of those having charge of British pictorial photography at the St. Louis Exhibition was arrived at, how these gentlemen made their selection, and the nature of their credentials. Like Rosa Dartle, I am asking for information, and I pause for a reply. Meanwhile, will my friend, Mr. J. C. Strauss, note that so far as I can discover no British photographic institution has had anything whatsoever to do with the organisation of the pictorial photographic exhibit for St. Louis, and that therefore whatever is shown cannot by any possibility be considered as either representative, typical, or impartially selected?

One or two correspondents have recently submitted specimens of their portrait work, and have asked opinions on the same. From the replies given it would appear that the work resembles those crude abominations of the Mile End Road, which satisfy the æsthetic aspirations of those charming specimens of femininity, the factory girls, to whom a right rev. prelate referred in such sympathetic terms the other day. By the way, I wonder if his Lordship has ever mixed with the class on a Bank Holiday afternoon at, say, Hampstead Heath? An opportunity for the professional rightly struggling to produce good portrait work, and not knowing where to look for direct guidance and incentive, has been offered him by the authorities of the Royal Photographic Society this week at 66, Russell Square, where a display by three masters—William Crooke, Frederick Hollyer, and T. C. Turner—is on view. The exhibition, which will probably be re-enforced by examples from the studio of that charming Bohemian, Mr. Furley Lewis, deserves to be visited by every portrait photographer, and as non-members are invited to view it no doubt the hall porter at Russell Square will be kept very busy during the next few weeks. During the last day or two I have been turning over a somewhat

large collection of portraits of myself, and I have an idea that when the society is hard up for subject matter for an exhibition a one-man show of a distinctly novel kind might be organised; that is to say, a display of photographs of individual taken by different photographers at different periods of his life, or even contemporaneously. I have about a dozen different photographs of myself. The points of resemblance between any two of them are so few that doubts are often cast upon their being portraits of the one original. If this illustrates the old saying that point of view is everything, it also, to my mind, shows that the personal element in portrait photography is much greater than is supposed.

My friend, Mr. W. A. Rouch, who is, I believe, the surviving member of his historical house, sends me a copy of a letter which he received from a correspondent on the subject of the keeping qualities of Rouch's plates. This is what he says: "Yesterday I was particularly anxious to photograph a view and having no roll-film, and only a hand camera fitted for film I had to 'make shift.' I had a small stock of quarter plates which had been lying on one side for years, and with a little stamp paper I fixed one in the camera; it was 3.30, and I was very doubtful as to exposure on account of the age of the plate so I used F. 11, and gave 1-25th sec., and on another plate used F. 16, and gave one second exposure. I tried to develop one of the plates (I don't know which) with ferrous-oxalate, but found it apparently under exposed. I then tried the other with hydrokinone, and got a most excellent negative, full of detail, and without the very slightest sign of fog or stain, or anything detrimental. All this may sound very ordinary until you know the date of the plates, and then I think it becomes a little short and marvellous. I bought the plates in 1889 from Mr. Owen Angier who was a photographer in this city (Exeter), but has since relinquished business, and he had marked the box July, 1888. The plates were 'Rouch's Extra Rapid Gelatine Plates.'" This excellent testimony to the keeping qualities of English-made plates, and probably establishes a record. If any of our readers have had similar experiences I shall be glad to hear of them. I myself have used plates quite as old, or nearly as old, with satisfactory results, but such an experience is probably not very common, as few of us keep unused plates so long.

One or two notes with regard to society matters may fitly conclude this somewhat lengthy batch of jottings. The publication of the arrangements for the Derby Convention suggests the reflection that the picnic character of this agreeable annual gathering has received the sign manual of official recognition, as for the first time no mention is made of papers to be read in the evenings. As a lover of photographic picnics I make no complaint of this omission, but it is open to question whether the longevity of the Convention is assured by the entire elimination of the solid fare from the annual menu. A word as to the P.P.A., whose annual dinner was held last week. As one who had something to do with the formation of this association I am pleased to be the recipient of a commemorative medal, which passes into my collection of heirlooms. The membership of the association does not increase so rapidly as might be desired. On the other hand 10 per cent. of the professional photographers in the United Kingdom seems a very reasonable proportion. I was reading the other day about a professional organisation conducted on similar lines, and the proportion seemed to be about the same to the total number of the profession. One plank in the platform of the P.P.A. is probably destined to form, in the future, its greatest element of strength, namely, examinations for assistants. If a suitable scheme for this purpose can be devised and carried into effect a great benefit will be conferred on professional photographers. At the present time there is a great dearth of really capable assistants, men of artistic instincts, good studio knowledge, and technical ability, and as the assistants of the present are to be the masters of the morrow it stands to reason that unless something be done in this matter the future outlook for professional photographers is not of the brightest. Thanks not only of professional photographers but of the community in general will be due to the P.P.A. if they could ensure by practical examination the presence in our midst of a body of refined and capable photographic studio assistants; for, as we once observed, your studio photographer is brought into an intimate relation with his sitter as a doctor is with his patient so that personal fitness and good studio manners are just as much essentials to success in studio photography as the necessary personal and scientific qualifications are in medical and surgical practices.

SOME SPECTROSCOPIC NOTES ON TRICHROMATIC PHOTOGRAPHY.

II.

For confirmatory tests Dr. Eder constructed a chart of vermilion, chrome yellow, emerald green, ultramarine, and ethyl violet, with small patches of the normal trichromatic printing inks underneath, a dead black border, and a scale of greys, the latter being somewhat similar to an H. and D. strip. The black border and the white paper represent the deepest blacks and highest white of the original, whilst the grey scale presents the half tones. He gives the spectrum reflected from these colours, but whereas this chart cannot be reproduced, the only spectra which interest us specially are those of the normal printing inks, chrome yellow, milori blue, and alizarine red lake. In these the letters above refer to the Fraunhofer lines and the titles are given underneath. It is, of course, unnecessary to point out that the white paper represents the colours reflected by these pigments.

As to the particular method of determining these spectra it is somewhat beyond the scope of this digest, but due regard has been taken of the reflection of white light.

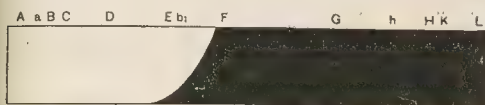


Fig. 1.—Chrome yellow.

Chrome yellow has good covering power, and the absorption spectrum may be estimated through a very thin film by transmitted light. The absorption in the red is little; it reflects the red fairly well, but orange, yellow, and yellow-green up to E-F. is very good. In the green λ 542 the reflection is weaker, still weaker from λ 500-480; blue-violet and ultra-violet are strongly absorbed.



Fig. 2.—Alizarine red lake.

Alizarine red-lake has a good transparency for the red, the absorption band begins at λ 602, with a maximum at λ 592-500, sinking at the latter point. It is tolerably translucent to the blue from λ 486, still more to λ 470, and thence into the blue-violet and ultra-violet.

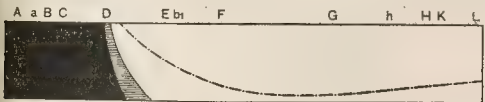


Fig. 3.—Milori blue.

Milori blue, which is a particular shade of Berlin blue, absorbs the whole of the red and orange; with thin films it is transparent to bright green; thicker films absorb the whole of the spectrum to the blue, as shown by the dotted line.

Painted and printed colours always reflect colour mixtures, and it is besides their own particular colour zones of the neighbouring colours in the spectrum; for instance, chrome yellow not only reflects pure spectrum yellow, but also orange and green. Green pigments reflect yellow and bright blue, and frequently also a narrow zone in the extreme red. Most violet pigments reflect not only blue, but also considerable quantities of bright red.

This peculiar property of paints and printing inks increases to a great degree the possibility of separating their photo-

graphic action by suitable light-filters and colour sensitive plates, and explains on the other hand the practical experience that three-colour filters which leave gaps in the spectrum allow all pigments in a painting to act more or less.

For the yellow printing plate the negative should be produced by the blue-violet rays, and the green rays should act as little as the yellow and red. Wet collodion, bromo-iodide collodion emulsion, gelatino-bromide, and gelatino-chloride of silver plates, the chief sensitiveness of which lies in the blue and violet, may be used.

The wet collodion plate, with acid iron development, gives with normal exposure the violet and blue to λ 437, and even with over-exposure does not extend further towards the bright blue or blue-green. As practical work proves that excellent yellow printing plates may be thus made, it was found that a normal negative from λ 437 to the end of the violet is satisfactory, but an inclusion of the ultra-violet gave rise to trouble in trichromatic work.

Gelatino-chloride of silver, with chemical development, in spite of its dominant violet sensitiveness, is unsuitable for trichromatic work, as it is not sensitive enough to bright blue, though with over-exposure this fault may be overcome, but the general sensitiveness is too little for it to be of any value.

Pure silver iodide collodion is also not sensitive enough, and bromo-iodide is much to be preferred, as it is more sensitive to bright blue and more sensitive to blue violet.

Gelatino-bromide of silver, with generous exposure, is very sensitive to violet and up to bright blue, and also slightly into the blue-green, and with very long exposures the action extends into the yellow beyond the D line. Practice has proved that the blue-green in pigments acts too strongly on gelatino-bromide plates, and the interposition of a violet filter is advisable. Ammonio-oxide of copper filters give less satisfactory results.

An important point is that for multiple printing, the individual negatives should have approximately the same gradation, and a plate was tested in a Scheiner sensitometer with an amylacetate lamp, with a cell filled with water, with methyl violet solution 1:10000, and acid violet solution 1:2000, and the result is shown in Fig. 4, from which it will be seen that the

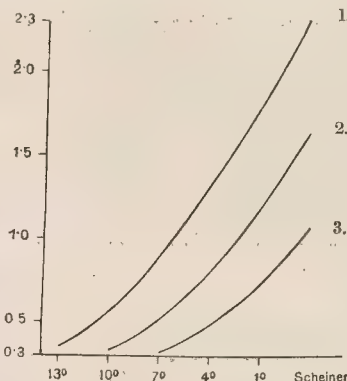


Fig. 4.—Characteristic curves on gelatino-bromide plate:—1. Behind a water filter. 2. Behind methyl violet filter. 3. Behind acid violet filter.

characteristic curves are practically parallel, but that the light is much reduced.*

The green sensitive plates which are used for the red printing plate are not easy to prepare; the sensitiveness should extend

* Scheiner's sensitometer is practically the same as the Harter and Driffeld, but with different ratio of apertures in the rotating disk. This experiment, whilst instructive and interesting, does not answer the argument brought forward so frequently in England by the advocates of the single plate system, that it is impossible to secure similar gradation on plates of differing colour sensitiveness, nor am I aware of any actual test of this point.—E. J. W.

from D through the blue-green to beyond F. The erythrosine plate, which is generally used, and is still the best,* has too little sensitiveness to blue-green, and is too sensitive to yellow, and therefore in order that the latter should not act too strongly it must be dampened by blue or green filters, and a generous exposure must be given to allow the blue-green to act sufficiently.

Most commercial orthochromatic plates are erythrosine plates. For his experiments the author used bathed plates, softening them first by bathing in water 100cc., ammonia 1.5cc., for two minutes, and sensitising by soaking for a similar time in water 100cc., erythrosine solution 1:500 6cc., ammonia 1.5cc., and drying in absolute darkness.

Eosine, or allied dyes, which give greater sensitiveness towards the green, should be theoretically more correct than erythrosine, but unfortunately the general sensitiveness and that to blue-green is so much less that in spite of a strong damping filter the exposure for the erythrosine plate is less. Collodio-bromide emulsion, sensitised with eosides of silver, made from sodium tetrabromofluoresceine, or ethyleosine, phloxine, etc., acts better than gelatino-bromide of silver and eosine. Fluoresceine silver is very sensitive to green, but too little sensitive to yellowish green, and therefore not sufficiently so for trichromatic work. With this and all plates similarly sensitised green pigments have sufficient photographic density, but yellows have not.

Monobromofluoresceine silver in collodio-bromide emulsion acts very well, for its sensitiveness to dark green is similar to that of fluoresceine, but it acts less vigorously than eosine in the yellow-green, which is what is required. The author finds the best formula for a green sensitive emulsion to be 100cc. of collodion emulsion, such as Albert's, mixed with 10cc. of alcoholic solution of monobromofluoresceine 1:500,† with, in some cases, a small addition of cyanosine or ethyleosine.

With all these green sensitive plates there is always a vigorous blue-violet sensitiveness, the particular sensitiveness of silver bromide, which must be dampened by a suitable yellow filter, and this is an important point.

The blue printing plate is made on a red sensitive plate behind an orange filter, and such plates should be sensitive at least from C to beyond D, to the limit of the yellowish green. According to the author, sensitisers with a maximum between C and D, which with generous exposure reproduce beyond C, are satisfactory, and Wollschwarz (wool-black) and nigrosine are satisfactory, for the action extends beyond A. Commercial collodion emulsion is sometimes unsatisfactory.

The author sensitises his red printing plate with Wollschwarz as follows, with excellent results:—An ordinary gelatino-bromide plate is first soaked for two minutes in a 1.5 per cent. solution of ammonia, then for the same time in a sensitiser of

Wollschwarz 4B (B. A. A. Fabrik) 1:500	5cc.
or Dianilschwarz N (Meister, L. and B.) 1:500	5cc.
Water	100cc.
Ammonia	1.5cc.

The plate is bathed in this for two minutes, and then in a bath of similar constitution for another two minutes, and dried in complete darkness.

For typographic work the following collodion emulsion is particularly suitable:—

Albert's collodion emulsion	100cc.
Ethyl violet solution (1:500)	5cc.
Monobromofluoresceine solution (1:500)	5cc.

After coating, the plates are bathed in a 1:500 silver bath (not acidulated), and exposed wet.

* It must not be overlooked that later researches by Valenta, König, and Hübl have given us some very energetic green sensitisers which completely oust the erythrosine plate.—E. J. W.

† This dye is made by the Badische Anilin u. Soda Fabrik, Ludwigshafen, but it cannot be obtained commercially, though Messrs. Penrose inform me that they hope to obtain some.—E. J. W.

The monobromofluoresceine is added to the ethyl violet plate because it gives better general sensitiveness and cleaner plate. Frequently emulsion thus freshly prepared gives fog, but after keeping a week or two works quite clean; but if after exposure the plate be bathed in dilute acetic acid there is no fog.*

WHAT WOMEN HAVE DONE FOR ASTRONOMY IN THE UNITED STATES.

[Abstracted from *Popular Astronomy* for March.]

THE United States of America is a large country with large hearted and liberal-minded people. There is no other country in the world where women, as a class, have advanced so rapidly. In their studies they encounter very little narrow-mindedness and jealousy among their fellow-workers in the same field. research, but, in general, are treated with the greatest courtesy, encouragement, and assistance. While we cannot maintain that in everything woman is man's equal, yet in many fields she works her patience, perseverance, and method make her his superior. In no line of work has her influence been felt more than in the field of astronomy. A review of the progress of astronomical research during the past century is incomplete without a distinct recognition of woman's activity in furthering the science, not only by actual work, but also by substantial pecuniary assistance.

Williamina Paton Fleming was born in Dundee, Scotland, May 15, 1857. She was the daughter of Robert Stevens, picture dealer. She received her early education in her native town in the public schools, in which she subsequently taught for five years. In 1877 she married James Orr Fleming, of Dundee, Scotland.

On coming to the United States she became connected with the Harvard Observatory, one department of which she is at present in charge. Beginning with the simplest forms of computations, the responsibility of her position increased every year, until now she has a splendid record as an astronomer. She has charge of a corps of women assistants by whom the stars are studied in the daytime by the aid of photography, in the same way as by night through the telescope, and by whom the observations made by the meridian photometer since 1888 have been discussed. Mrs. Fleming, from her examination of the spectra of stars, of which she has examined over a million, has achieved distinction as a discoverer, having increased the number of known stars whose spectrum is of the third type from about 1,000 to 3,000, while of the rare class of stars of the fifth type the number has been raised from 16 to 67. "At no other observatory have any stars of the last-mentioned class been discovered during the last eleven years," says Professor Pickering. She has furthermore discovered 54 new variable stars by means of the bright hydrogen lines in their spectra, and in each case has proved their variability from photographic charts of the same regions. In 1890 she was able to announce, from its spectrum, that a certain star in the constellation Cygnus was variable. She also has the honour of having first discovered planetary nebulae by the aid of photography, while in 1893 and 1895 she made the remarkable discoveries of new stars in the constellations Norma and Carina. Besides numerous contributions to astronomical periodicals, she has aided in the preparation of several volumes of the *Annals of the Observatory*; her signature has appeared from time to time in the *Astronomische Nachrichten* and other astronomical journals. Her name is well known among European scientists. The Observatory has called her a brilliant discoverer.

The application of photography to astronomy has wonderfully increased the opportunities for women. The most

* The same result can, I think, be obtained by immersion of the exposed plate in an extremely dilute solution of potassium bromide, after exposure and before development.—E. J. W.

ended application of the aid of women in this speciality has been under the Directorship of Professor Edward Pickering at the Harvard Observatory, where a large force of women are constantly employed under the supervision of Mrs. Williamina Fleming. She is in charge of the department for the examination of views and of photographic plates taken with the Draper telescope. In the course of this examination Mrs. Fleming has made a large number of discoveries of variables, and has connected the discovery of several new stars. Mrs. Fleming is assisted in this work by Miss E. F. Leland and Miss A. Maury, who have made a detailed study of the spectra of the eight northern stars, also by Miss M. C. Stevens and Miss L. Wells, all of whom are women having more than one discovery to their individual credit. The observatory has a corps of about forty assistants, seventeen of whom are women; twelve of these are engaged more or less on photographic work.

Photographs obtained with the various telescopes now in use at the Harvard Observatory are of various classes. The most important of these are chart plates, having exposures of from five to sixty minutes; spectrum plates having the same exposure and heat plates having several exposures of a few seconds duration. Women assistants are not engaged during the night in taking photographs, but find their time during the day efficiently occupied in examining, measuring, and discussing them, and in the various computations therein involved. The most important work at present along this line is being done in the chart plates taken with the eight-inch Draper telescope. This consists in the measurement of stars for standard stellar magnitudes. Measurement of about forty thousand stars are now being made by Miss Eva F. Leland, Miss L. D. Wells, and Miss C. S. Stevens, and have shown great accuracy in making the identification of stars shown in the photographs with those contained in existing catalogues. Photographs of stellar spectra are all carefully examined in order to detect new stars of interest, such as 3rd, 4th, and 5th type stars, or those whose spectra consists mainly of bright lines. Many interesting discoveries have been made from the study of these photographs of stellar spectra. First in importance was the discovery made by Professor Pickering that Ursa Major is a close binary star, the components revolving around each other at a velocity of about 100 miles a second in a period of about fifty-two days. This discovery led to the finding of a second object of this class, namely Auriga, by Miss A. C. Maury. Micrometric measurements of the lines in the photographic spectra of the bright stars have been made by Miss Florence Cushman. From an examination of the photographs of stellar spectra, thirty-eight stars having spectra of the fifth type have been added to the eleven previously known, making the number now known forty-two in all.

Over thirty years ago Lewis M. Rutherford began in New York City his experiments in astronomical astronomy. He continued his work for over twenty years. His best photographs were taken with a refracting equatorial corrected for chemical rays of light. This telescope was 11½ inches in aperture, and had object glasses, one for seeing and the other for photographing. He used wet plates entirely. Mr. Rutherford devised and constructed his own machine for measuring the star plates. This was arranged so as to measure the position, angle, and distance of every star on a plate from a known central star. In 1890 Mr. Rutherford gave all his best negatives to Columbia University. When this collection of negatives was turned over to the Observatory it was arranged to have the work of reduction of the measurements of the star plates pushed forward as rapidly as possible. Mr. Harold Jacoby, assistant at the observatory, undertook the reduction of the Pleiades plates. Rutherford Stuyvesant, son of Mr. Rutherford, although not interested in science himself, gives 1,000 dols. every year to pay the expense of reduction and publication of results of the

Rutherford negatives. The women computers have charge of this work.

Notwithstanding the various ways in which the preceding sketches reveal woman's application of thought and energy to the cultivation of astronomy, nothing has been of such aid to its development as the unbounded liberality of some of our American women. The most notable patronesses are Mrs. Henry Draper, of New York City; Miss Catherine Bruce, of New York City; and Miss Alice Bache Gould, of Boston.

Dr. Henry Draper, in 1872, was the first to photograph the lines of a stellar spectrum. His investigation, pursued for many years with great skill and ingenuity, was most unfortunately interrupted in 1882 by his death. Early in 1886 Mrs. Draper made a liberal provision for carrying on this investigation at the Harvard Observatory, under the direction of Professor E. C. Pickering as a memorial to her husband. She gave several instruments, and contributes 10,000 dols. annually for the work of this department. Owing to the extensive field of investigation in this branch of astronomical physics, Mrs. Draper has decided to greatly extend the original plan of work, and to have it conducted on a scale suitable to its importance. In this work Dr. Draper's 11-inch photographic lens is used, for which Mrs. Draper has provided a new mounting and observatory. There are also at Cambridge a 28-inch reflector and its mounting, also a 15-inch mirror, both gifts of Mrs. Draper. In the observatory there is a central room where the comparison of charts and photographs is carried on. This is known as "The Draper Memorial Room."

The most unbounded liberality so universally bestowed by Miss Catherine Bruce upon every branch of astronomy in all parts of the world will make her name go down in future ages as worthy of unlimited admiration. One can hardly pick up an astronomical publication in these days without finding a mention of some new gift from her to astronomy—250 dols. to purchase a small instrument for a zealous astronomer in a far-away island of the sea; 25,000 dols. to aid in the removal of a vast observatory to a better location; 15,000 dols. to pay for printing various valuable astronomical researches; 50,000 dols. to purchase a new photographic telescope. These are but a small portion of her benefactions bestowed with so much wisdom as to make the first gift no less acceptable than the last. Miss Bruce has been called "the Maecenas of Astronomy." Her intelligent generosity knew no limits of race or country. Her kind and thoughtful care lightened many a burden in her own land and helped to finish many a task where patience and other resources were nearly gone. To Professor Max Wolf, at Heidelberg, she gave 10,000 dols. for a telescope. With this instrument he discovered a new asteroid and named it "Brucia" in honour of Miss Bruce.

Harvard and Columbia seem to have been the institutions which have gained most through Miss Bruce's liberality. To the former, from time to time, she gave 50,500 dols., and to the latter 14,100 dols. Her donations to astronomy in ten years, from June, 1889 to Nov. 29, 1899, amounted to 174,275 dols.

Miss Bruce was born January 22, 1816. Her home was in New York City, where she died March 13, 1900. She was a daughter of George Bruce, the famous type founder. She was an accomplished woman, having a knowledge of Latin, Greek, French, and Italian. She was for many years an invalid. She has left a gracious memory of good and generous deeds, and an impressive example of noble womanhood.

ANNE P. MCKENNEY.

We understand that an addition to our monthly literature will shortly appear in the shape of "The Optical Lantern and Cinematograph Journal"—the title of which sufficiently discloses its purpose. In it are incorporated "The Optical Lantern and Photographic Enlarger" and the "Lantern World." Mr. Theodore Brown will be the editor.

GEOLOGICAL PHOTOGRAPHS.

In the course of a recently published article on this subject, "Nature" remarks that geologists will welcome the second issue of photographs by the committee of the British Association, appointed for the collection, preservation, and systematic registration of photographs of geological interest. The value of these illustrations, both for teacher and student, is beyond question; indeed, as furnishing material for comparative study they may not infrequently prove useful to the investigator also; it may not perhaps be regarded in the light of a compliment when it is added that there is at least one university professor who makes them serve for examination purposes, but this is a perhaps too practical inquisitor, who, when weather permits, sets his examinees in front of previously unseen sections in the field. Every student, not to say teacher, of geology should have seen most of the phenomena somewhere or other which these photographs display, but it is very possible that not everyone has; it is even possible that some geologists have not seen a cirque, an esker, and a pitchstone-lava flow, i.e., not all three. Nothing, of course, can be a substitute for direct observation, but these photographs are certainly the next best thing to it.

Their value is greatly enhanced by the fact that the descriptions have in each case been entrusted to a specialist familiar with the structure illustrated; we need only refer to Profs. Bonney, Lapworth, Marr, Watts, and Garwood, not to mention many other familiar names, to show that the scientific description of scenery has been placed in the best of hands. The subjects chosen for illustration cover a wide range; the Scur of Eigg, with its old lava flow filling a valley now exalted into a conspicuous hill, is shown from a point of view not often selected, and with excellent effect; the column of the Hemlock stone, very reminiscent of the Sahara, offers an admirable illustration of wind abrasion, though it is said to have been at one time mistaken for a sea-stack; a cirque in Bala rocks is interesting both in itself and on account of the associated glacial and fluvial phenomena; the Cheddar ravine is a good example of an unroofed subterranean stream; and a boulder of Silurian rock resting on a glacially polished pedestal of mountain limestone affords a proof of the comparatively trivial amount of subaerial denudation which has taken place since the close of the Glacial period; the cliffs of Muckross, an excellent study in jointing, here, as sharply shown as in a text-book diagram; the raised beach at Saunton Down End, near Barnstaple, is probably one of the finest examples of such beaches to be found in the British Isles; the classic unconformity of Old Red Sandstone on Silurian rocks at Siccar Point, referred to by many of the old masters, and figured by Lyell in his "Elements," is well described by Prof. Lapworth; there is a good example of metamorphism produced by the great Whin sill; the rumbling hole in the ravine, Glenariff, co. Antrim, is a triumph of the photographer's skill.

THE Affiliation Lantern Slide Competition, 1904.—The second lantern slide competition has been supported by forty-seven affiliated societies, 663 slides by 245 members having been entered. The number of societies submitting slides by six or more members, and therefore competing for the certificates of distinction, was 21 with 480 slides by 182 members. The judges have awarded the six plaques to the following slides:—"A Stormy Sunset," W. A. I. Hensler (Hackney Photographic Society); "In the Market Place," F. E. Roope (Hackney Photographic Society); "Repairs," Henry Wright Dick (Manchester Amateur Photographic Society); "At the Smithy," Edgar G. Lee (Newcastle-on-Tyne and Northern Counties Photographic Association); "A Norman Crypt," J. W. Hodges (London and Provincial Photographic Association); "Becalmed," Rev. H. O. Fenton (Devonport Camera Club). Certificates of distinction for the average excellence of the slides submitted have been awarded to the following societies in the order named:—(1) Hackney Photographic Society; (2) Manchester Amateur Photographic Society; (3) Newcastle-on-Tyne and Northern Counties Photographic Association.

Exhibitions.

BRENTFORD PHOTOGRAPHIC SOCIETY.

THE Brentford Photographic Society is not one of those societies which make their importance felt in the photographic world by reason of the great works of its members, though it has one or two members whose productions are not beneath recognition at the Royal, but it has an extremely energetic hon. secretary, who, amongst hon. secretaries of photographic societies is *facile princeps* at beating the drum. It is before the time for sending in exhibits to the annual show readers of our own pages, and those of our contemporaries, will perhaps have noticed in the columns devoted to correspondence pointed reminders of the existence of the society, and the imminence of its exhibition. "Owing to a printer's error in our prospectus the last moment for entry in the Brentford exhibition is made to appear as 7.30 p.m. on such and such a date; it should be 7.35 p.m.," and so on. We far from deprecate this method of procedure. It shows, at the least, a spirit of enterprise which many societies which should be of far greater importance than these are, would do well to imitate. At the worst it does no harm in the world, while in the limited sphere over which the Brentford Society spreads its influence, it does good by attracting attention from people who might otherwise pass it by.

The exhibition was held on the 15th, 16th, and 17th instant, at the Public Baths, Brentford. A large preponderance of the exhibits were in the open classes, the society itself taking but a modest part in the show. On the whole it was an interesting collection of pictures to those who, unlike ourselves, have not met the same photographs over and over again during the past season. In the open classes the best picture was "In the Height of the Storm," by F. J. Mortimer. The "Cod and Lobster Staithe," by G. B. Clifton; "Sweetly They Slumber," by C. D. Kay; "November and Poole Harbour," by H. Wild; "A Winter Afternoon" and "Bankside," by G. H. Capper; "Autumn Sunset," by D. M. Fillshell; "Weary They Wend Their Way," by E. P. Taylor; "Autumn," by F. C. Stear; "The Church on the Mount," by "June," by A. and F. Read; "Rolling Mists," by George J. Wightman; "Eventide," by J. H. Latham; Mrs. Holmes' figure studies "A Study," by Gerald K. Rule; "Morning Service," by T. A. Swaine; "Ettie," by A. & F. Read; "Norman Work, a contrast," and "Quoniam Dilexi," by Rev. H. R. Campion; "Crypt d'Aquilon, Mont St. Michel," by Percival W. Crane; "The House of Prayer," by S. Kimber; "Entrancé to the Undercroft, Wells," by J. W. Gregg; "A Pillar of the Church," by A. Marshall; "Vestibule, Undercroft, Wells," by A. Bedding; "Crypt, Winchester," by W. A. Clark. The flower and fruit study class was particularly good, among the best being that by Miss M. C. Eames, M. Barritt, J. Hummel, A. W. Walburn, H. Cross, and S. G. Kimber.

In the members' classes Miss M. A. Newlands appeared to have the most promising future among those who have not already made a name for themselves. The judges were Messrs. R. C. Bayley, J. Craigie, and J. C. S. Mummery.

The Awards.—Members' Classes.—Landscape: Award, Miss M. A. Newlands; commended, Miss M. A. Newlands, and A. & F. Read. Other Subject: Award, H. Gordon Stollard. Beginners' Class: Award, Miss M. A. Newlands; commended, G. J. Baker.

Open Classes.—Best Picture in Exhibition: Gold Plaque, F. J. Mortimer. Landscape: Silver Plaque, J. B. Johnstone; commended, D. M. Fillshell, and A. and F. Read. Portraiture, etc.: Silver Plaque, A. Marshall. Architecture: Silver Plaque, Rev. H. R. Campion. Bronze Plaque, W. A. Clark. Flower and Fruit Studies: Silver Plaque, Miss M. C. Eames; Bronze Plaque, A. W. Walburn. Landscape Slides: Silver Plaque, F. J. Mortimer; Bronze Plaque, A. Bedding; commended, W. H. Joy.

EXPERIMENTS WITH RADIUM.—A Reuter telegram from Vienna dated March 19th, states that at the request of the Academy of Science, the Austrian Minister of Agriculture, in order to facilitate the solution of certain important questions relating to the nature of radium, has ordered that from January 1st last until further notice no trading should be permitted in the residues from the manufacture of uranium colours at Joachimsthal, and that 10,000 kilogrammes of those residues should be reserved for purchase by the Academy, and another 10,000 kilogrammes for M. Curie, the discoverer of radium in Paris. These consignments are to be devoted entirely to the purpose of scientific experiment.

New Apparatus, &c.

The Watkins Print Meter. Manufactured by the Watkins Meter Co., Hereford.

The latest addition to the series of meters made by this company likely to prove as useful to the photographer as its predecessors. It appears to be based on sound practical principles, and allows for variations of light in carbon and other printing processes. A much slower paper than usual is used, darkening in full sight. Only



The segment of the paper is exposed, and its darkening compared with either of the eight tints given. It is strongly made in hard white metal, nickel-plated, and has blue glass dial. The speed of paper and range of tints are suitable for timing process copying, by hanging on side of copy. The gradation of the tints are not so nearly alike as to puzzle judgment, and are in geometrical progression. It is not expensive.

The "Indelible" Background, Manufactured by Marion and Co., Ltd., 22 and 23, Soho Square, London, W.

The new series of backgrounds just introduced by this firm, and named by them the "Indelible," possesses many striking points of excellence that should command a ready sale. They are extremely portable, of a thin light material, but strong, and likely to stand a lot of wear. The two points, however, that commend themselves to us are (1) the background can be folded or creased in any direction, and yet can be easily smoothed out again for immediate use; (2) it can be washed without in any way disturbing the design, which is indelibly fixed in the material itself in the form of a stain. The backgrounds are made in all the usual stock sizes and supplied on rollers. The range of designs offered should commend themselves for the delicacy of tint which, particularly in the cloud and graduated series, are as fine as anything we have seen. They should prove of great use to the pictorialist who moves with the trend of modern high-class portraiture. The colour, too, of the designs is good, being an excellent neutral brown that should reproduce well. The lightness and semi-transparency of these grounds should suggest novel forms of lighting, as the tints are perfectly graduated, with no visible brush marks by either reflected or transmitted light.

The International Printing, Stationery, and Allied Trades' Exhibition will be held at the Agricultural Hall, Islington, London, N., from Saturday, April 30th to Saturday, May 14th, 1904, inclusive.

Through a report appearing in our columns of a demonstration recently given before the Croydon Camera Club, Mr. Hickox, the inventor of the Quta Ferrotype Camera, received an invitation to exhibit the apparatus on the 5th inst., before the members of the Royal Institute, Albemarle Street. The Platinotype Company lent its portrait lamp for the occasion, Mr. W. H. Smith, its originator, being in charge. A large number of photographs were taken at the rate of a little over 1 a minute, the lamp and camera working without a hitch. In order to soften and diffuse the light, a translucent screen was interposed between the sitters and the source of illumination, the latter consisting of five grains only of magnesium ribbon, and which with the rapid lens employed, was found amply sufficient to secure fully exposed positives.

Patent News.

The following applications for patents were made between March 7th and March 12th, 1904:—

Shutters.—No. 5,522. "Improvements in photographic roller blind shutters." John Edward Thornton.

Washing Apparatus.—No. 5,524. "A washing apparatus for photographic plates, films, or prints." Harry Smith.

Portable Dark-Rooms.—No. 5,586. "Improvements in portable dark-rooms for photographic purposes." Amet Meunier.

Squeegees.—No. 5,628. "Improvements in flat squeegees for photographic and other purposes." Alfred William Stainton Sanderson.

Stands.—No. 5,680. "Improvements in and connected with folding stands for photographic apparatus and the like." Johann Becker.

Dish-Rocker.—No. 5,757. "Improvements in apparatus for rocking developing dishes or like trays or dishes used by photographers." Alfred Whowell.

Printing Process.—No. 5,814. "An improved photographic printing process resembling mezzotint." Henry Bennion-Booth.

Printing Frames.—No. 5,894. "Improvements in or relating to photographic printing frames." Clement and George Gilmer.

Base for Sensitive Emulsions.—No. 5,948. "Improved base or support for photographic sensitive emulsions." James Findlay.

Enlarging Camera.—No. 5,962. "An improved enlarging camera." Thomas Peter Bethell.

Photographs.—No. 6,018. "Improvements relating to photographs." Otto Fulton and William Mountstevens Gillard.

Developing Apparatus.—No. 6,059. "An apparatus for developing roll films, cut films, and glass plates for photographic purposes." Charles Roxburgh Wylie.

THE P.P.A. PRESIDENTIAL BADGE.

As we briefly announced in our last issue, the third annual dinner of the Professional Photographers' Association was made the occasion of presenting a commemorative gold badge and medal to the past and present Presidents of the institution. A reproduction of



the design of the latter is here shown. The medal is attached to a handsome badge, which in its turn, admits of being secured to the lappet of the coat. The President's name and his year of office are engraved upon the medal.

Mr. E. J. Thom writes from 15 and 16, Giltspur Street, Holborn Viaduct, London, E.C.—In consequence of these premises being required for the extension of St. Bartholomew's Hospital, I have removed to 9, Giltspur Street, Holborn Viaduct, London, E.C., where all communications should be sent in future.

EASTMAN Kodak Company of New Jersey.—The usual quarterly dividends of 1½ per cent. (being at the rate of 6 per cent. per annum) upon the outstanding Preferred stock, and of 2½ per cent. (being at the rate of 10 per cent. per annum) upon the outstanding Common stock, have been declared by the Eastman Kodak Company of New Jersey, payable on April 1st, 1904, to stockholders of record at the close of business on the 29th February, 1904.

THE approach of spring should induce those photographers contemplating telephoto work (the opportunities for which are unfortunately not so frequent as they might be in this country) to peruse a little work on the subject by the late Dr. G. H. Deller, published by Messrs. Dawbarn and Ward at the price of one shilling. It is a simple and instructively illustrated little compilation, which draws for much of its matter upon the writings of Marriage, Dallmeyer, and several others.

New Books.

"The Real Dickens-Land." By H. Snowden Ward and Catherine Weed Ward. 240 pp. Illustrated. Price 10s. 6d. London: Published by Chapman and Hall, Limited, Henrietta Street, Covent Garden, W.C.

A University Professor, in the pages of a monthly review some years ago, contemptuously described Charles Dickens as "a mere Cockney humourist." The lapse of a third of a century since the great writer's premature death, which was undoubtedly hastened by overwork, has not diminished the interest of the world in his inimitable books, whilst the name of his scornful critic has passed into the limbo of obscurity. In setting themselves the task of tracing the backgrounds against which Dickens placed the characters in his principal novels, Mr. and Mrs. Ward undertook what was obviously a labour of love. If not exactly a life of Dickens, Mr. Ward's chapters, which record the novelist's movements in England, America, and on the Continent, may very well pass for a skeletonised biography. The plan followed was to endeavour to locate the scenes in the various English books, and wherever practicable to illustrate them by means of photographs. Central London supplied Mrs. Ward with many subjects for her camera, which also found employment at Ipswich, Rochester, Tong, Salisbury, and many other places. This notice is being written in the room adjoining that at 26, Wellington Street, Strand, where for many years Dickens worked on "All the Year Round," and one of the views depicts Nos. 24 and 26, Wellington Street, with York Street in perspective. The photographs in general are of good quality, and well attest Mrs. Ward's remarkable industry and ability. We have no hesitation in recommending this handsome and interesting volume to all lovers of Dickens's works. The text is sympathetically written, and with a minuteness of detail which proves Mr. Ward to have made a careful and at the same time discriminating study of his subject. Many of the buildings illustrated in the book, especially within a stone's throw of these offices, have within very recent times made way before the assaults of the municipal improver, and thus Mrs. Ward's photographs are bound to become of considerable historical value. We congratulate the authors on a most interesting production. It is, in our opinion, the best bit of work they have done, and very probably is destined to live as long as the writings of the great master of fiction whom they have made the object of their well-deserved hero worship.

"The Grant and Validity of British Patents for Inventions." By James Roberts, M.A., LL.B. Illustrated. 647 pp. Price 25s. London: Published by John Murray, Albemarle Street.

In his preface the author informs us that his work has been undertaken "to enable the inventor to confine his claims to what can be supported, and to avoid errors in drawing his specification. Under the new procedure," he adds, "there will arise questions of alleged anticipations which hitherto have only been brought to the notice of the inventor during the progress of litigation; the inventor will therefore have to consider such questions in future before the grant is made." Part I. of the book consists of the principles and rules affecting the grant and validity of patents and the practice respecting the amendment of specifications; Part II. deals with abstracts of cases illustrating the applications of the principles; Part III. gives the statutes and rules. Although primarily appealing to inventors, it is doubtful if the latter class will find such a formidable and profound book of much practical value. We incline to think Dr. Roberts will discover his larger clientele amongst patent agents and solicitors. Your ordinary inventor is usually an irritable genius with little knowledge of patent procedure and practice, and loth to submit his ideas to the disciplinary examination of history and precedent. The volume appears to be an exhaustive and painstaking compilation, which should find its way to many shelves in the neighbourhood of Lincoln's Inn Fields and Chancery Lane. The quoted cases should be extremely valuable for reference; and the third section, which appeals directly to the would-be patentee, is so clearly compiled that it might be worth the author's while to reprint it separately for the information of the general public. The book on the whole is of very high value, and will probably rank as authoritative.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

March	Name of Society.	Subject.
25.....	Nottingham Camera Club	Wellington and Ward's Plates and Films and "Cozin" Daylight Developer. Demonstration. Mr. W. F. Slater.
25.....	Plymouth Photo. Society	Members' Lantern Evening.
25.....	Watford Photographic Union	Kodak Printing Papers. Mr. R. Robins
25.....	West London Photo. Society.....	Northumbrian Rambles. Mr. G. Lamley
25.....	Aberdeen Photographic Assoc.....	Norway. Illustrated. Mr. V. C. Blair
25.....	Ilford and District Photo. Soc.....	Colour Sensitive Plates. Mr. Ernest Human.
25.....	Ox'ord Camera Club	Days of my Soldiering. Capt. Henderson.
25.....	Southampton Camera Club.....	Lecturette Competition.
25.....	Birmingham Photo. Society ..	The Use of Bichromate of Potash to Secure Soft Results in the Development of Bromide Prints from Hard Negatives; and Eder's Method for the Reduction of Too Hard Contrasts in Negatives. Mr. H. Vought Cornish
25.....	Royal Photographic Society.....	Carbon Printing. Mr. John H. Gear.
25.....	Devonport Camera Club	The Carbon Process. Mr. W. Clayton.
25.....	Glasgow Southern Photo. Assoc.....	Photography Prize Slides.
25.....	Cricklewood Photo. Society.....	Criticism of Prints, &c.
31.....	Richmond Camera Club.....	Scenes in South Africa during the War. Major F. F. Latham.
31.....	Liverpool Amateur Photo. Asso.....	A Caravan Tour from Palmyra to Damascus. Mr. Harry Mahler.
31.....	Gainsboro' Camera Club	Members' Night.
31.....	Watford Camera Club	Discussion on Outdoor Work.

ROYAL PHOTOGRAPHIC SOCIETY.

TECHNICAL meeting, March 22nd.—Major-General Waterhouse, I.A., in the chair. Three interesting items were announced for the evening—viz., "A New Tripod and Universal Tripod Head Movement," by Mr. C. A. Franklyn; "A New Link between Calculating and Effecting Camera Exposures," and "A New Print Meter," by Mr. Alfred Watkins; and "A Method of Photographing Splashes," by Mr. Arthur C. Banfield.

Mr. C. A. Franklyn's new tripod with universal movement to the head embodies many striking and original features that should make this adjunct to the camera of more than ordinary utility. When closed, the complete stand and head is self-contained, and has no loose parts or straps. The handle is placed at the most convenient point for carrying—viz., at the extremity of the closed tripod; and metal clips, forming part of each individual leg, holds the three together at one end when shut up, and the tripod screw itself clamps the other end.

The tripod when closed is no larger in bulk than an ordinary 4ft. 10in. stand, but its greater extension and variety of movements were ably demonstrated by Mr. Franklyn. The chief point of interest lies in the head itself, which is tri-sected, or, rather, composed of three overlapping parts, each of which is hinged to the top of a tripod leg, the whole being held together with the camera in situ by the tripod screw. The aim and result of this arrangement is that the camera when fixed to the tripod head can be turned in practically every possible direction and firmly clamped without in any way moving the tripod legs and without affecting its rigidity. The principal claims made for the utility of the tripod are that it can be placed on uneven ground and the camera instantly levelled without shortening or otherwise manipulating the legs. The camera retains its horizontal position without altering its height or relative position to the foreground, which is necessary with other forms of tripods, and the tripod can be placed flat against a wall or other obstruction and the camera then pointed in any direction for use.

Mr. Alfred Watkins briefly described his new print meter, which we review this week under the heading of "New Apparatus." He then proceeded to demonstrate a new system of scales of comparative shutter speeds and lens apertures, which he proposed introducing as an accessory capable of being attached to most existing shutters, and to be used in conjunction with them. He criticised and pointed out the faults of many of the shutters on the market, and made it clear that the link between calculating and effecting camera exposures would be supplied by his new slide calculator, which shows at a glance the relation between the shutter speed and stop, and

means of a series of moving scales on the shutter itself (the method would be most applicable to shutters of the diaphragmatic type), the movement of one pointer would not only set the shutter at the requisite speed, but also alter the diaphragm to the required aperture, the relation between any stop and speed being ingeniously indicated by the scale when once the light value and required exposure for any one stop had been ascertained.

Mr. A. C. Banfield showed first a series of slides depicting the descent of a roughened sphere into milk, and then a companion series showing the result when a polished steel ball was employed. The difference was very marked.

This beautiful series of representations of splashes taken at exceedingly intervals of 1-250th sec. showed the complete phenomenon in the instant the sphere was released, to the formation of the initial ripples in the fluid after it has disappeared from sight; its contact with the liquid, its immersion, the immediate effect on the liquid surface, and the different phases of the splash.

All were disclosed with startling realism, but the series, as a whole, would have been beyond the power of the human eye to follow and perceive during the actual occurrence of the operation.

The photographs, Mr. Banfield explained, were obtained by means of an electric spark obtained from Leyden jars in connection with a release apparatus of his own construction. An ingenious clockwork arrangement allowed for a variation between the release of the sphere at the instant of exposure, as minute as 1/1,000 of a second, and throughout the series depicted showed a series of different splashes, the adjustment of the timing arrangement was so perfect that the continuity of the photographs was unbroken, and each showed a splash at a period of 1/250 of a second later than its predecessor.

CAMERA CLUB.

Fortnight ago, in our "Ex Cathedra" columns, we gave a brief account of a method of photo-sculpture, which had been shown at a meeting of the Royal Institution. At that time it had not been announced that Signor Carlo Baese, the inventor and patentee of the process, had consented to lecture on the subject at the Camera Club, possibly we should have refrained from dealing with the matter in view of the later opportunity presented for placing it in a more complete form before our readers. The lecture was given on Monday last week, and it attracted a considerable audience, for the earnest amateur photographer is ever on the look out for novelties, and this one also well worth the attention of professional photographers, for the public, too, are keen for things which are new, and the idea of finding a new image in relief on a plaque, or on a medal, is one which will certainly appeal to many, who had no notion of finding their features reproduced in such unusual and imperishable form. The image and inscription of Cæsar becomes by this invention within the grasp of man in the street. It is known to all photographers that a certain amount of relief is possible with an ordinary gelatine plate, especially if the film be treated with some hardening solution so that it can be developed by heat. Upon a negative so produced we can, by reflective lighting, see that various parts of it stand up much higher than others, and many will remember that some years ago Sutton's method of making printing blocks from ordinary negatives depended upon this phenomenon. A large measure of relief is obtained by printing on film of bichromated gelatine, as in the Woodbury process. But by the other method it is possible to get, without further help, a bas-relief which is in any way comparable to that formed upon a medal made by the die-sinker's art.

Signor Baese makes use of swelled bichromated gelatine as a printing medium, but he first of all takes a negative, or rather two negatives, under new and special conditions of lighting. Two methods of doing this he described in his lecture. In the one he employs two electric projecting lanterns to light up—say, the profile head of the sitter, placed upon either side of the model. Each of these lanterns stands up the sitter with what we may describe as an optical wedge. That is to say, each lantern is furnished just in front of its condensing lens with a vertical moving strip of opaque film, which is cut with a series of Vandyck's, or horizontally-placed V shaped openings. In making the first negatives the wedge-shaped beam of light is so angled that the nose and back parts of the head receive the widest parts of the slice of light, the ear and the forward portions being least illuminated. This exposure having been completed, the arrange-

ment is reversed, and this time the forward portions receive the most light, and the back ones the least. Positives are then made from the two negatives, and these combined are used for impressing, by means of light, a bichromated gelatine film. If one negative only were used the colours of the hair, eyes, etc., would present a difficulty, for their dark shades would be translated into relief, which would be untrue to Nature. By taking two negatives as explained this difficulty is altogether obviated, and the disturbing colours are ignored.

An alternative and better plan is to use only one electric lantern, which is placed by the side of the camera in front of the sitter. In this case the wedge of light, by a modification of the travelling film with its >-shaped openings, is received on a section of a parabolic reflector, which is placed around the sitter's head and bust, so that it is reflected with the same graduated effect upon the various parts of the model. The exposure is about the same as that for ordinary portraiture under daylight, and the change in the apparatus necessary between the taking of the two negatives is almost instantaneous. Signor Baese at first employed wedges of coloured glass, in order to secure the necessary graduation of the light, but doubtless because of the refraction difficulties he abandoned that plan and adopted the opaque film, with >-shaped openings as described.

Signor Baese, as was explained by the chairman, Sir H. Trueman Wood, laboured under unusual difficulties in giving this lecture; for, although his linguistic powers are such as most of us would envy, English is not his strong point. He could have easily talked in French, German, or his own native Italian, but out of good nature and compliment to those whom he addressed, he spoke in English. He was kindly helped by the chairman out of the pitfalls which our grammar prepares with such prodigality for the benefit of foreigners, and Mr. Gordon, who had had the advantage of a previous private audience from the inventor, was able to give a succinct account of the process as an addendum to the lecture. By means of his valuable help sundry points were made clear, and the meeting acknowledged its indebtedness for the assistance afforded. The paper was illustrated by various lantern slides, some diagrammatic, showing how the amount of relief was governed by the quality of light which each portion of the face received in addition to which were several photographs taken from plaster casts and metallic plaques. These plaques were subsequently handed round, and they excited much interest among those present. It was the general impression that these were not the best results which could be obtained from the process in the hands of an expert worker. Signor Baese does not pretend to be a skilled photographer, but he has given all his time and attention to proving that his process is based upon reliable data, and that it is a practical success. We presume that he will presently be in a position to put the necessary apparatus upon the market for the use of all who desire to practise modelling by the aid of photography, and from what we saw, we should judge that the necessary equipment need not be an expensive one. The arc-light is, of course, a necessity, but in these days of electric mains its production in most towns is not a matter of difficulty. The method is one of much promise, and we feel confident that when it is made available to experienced photographers it will be improved, if not made perfect.

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

A MEETING of the General Committee was held at 51, Baker Street, W., on Friday, 18th inst. Present: Messrs. Alfred Ellis, Wm. Grove, J. A. Bridge, H. Edmonds Hull, A. Mackie, and Lang Sims, Mr. Alfred Ellis, President, in the chair. Mr. Lang Sims informed the meeting that every member of Committee had subscribed to the fund for providing gold badges for the present and past Presidents of the Association. After paying for the three badges which were presented at the annual dinner, a balance remained. It was decided that this should be handed to the hon. treasurer, to be applied to a similar purpose on another occasion. The accounts for the annual dinner were presented and passed. A discussion took place upon the eligibility of a candidate for membership. It was decided to bring the matter again before the Committee for a definite pronouncement as to bearing of the rule in similar cases. Letter read from the Fine Art and General Insurance Company, in reply to an inquiry, explaining that the arbitration clause contained in their policies provided that the costs of the arbitration be borne by the unsuccessful party, and was therefore free from the objection that had been

raised to the clause which appeared in the policies of most fire insurance companies.

Various applicants for advice, etc., and other matters which cannot be reported were dealt with. The honorary secretary reported the progress of the Derby Exhibition. It was decided that if sufficient applications for space were not received to fill the exhibition the Committee should issue personal invitations to members whose work might be considered typical of modern professional photography. The proposed foundation of an Examining Board for assistants was further discussed, and progress made.

RICHMOND CAMERA CLUB.

MARCH 17TH.—Mr. Walter P. Watmough, on behalf of Messrs. Burroughs, Wellcome, and Co., of that firm's system of putting up photographic chemicals in tabloid form. Mr. Watmough showed first the results of toning and intensification of lantern slides by means of a series of slides prepared and treated with tabloids. He then explained that his firm do not make any claim to secret or mystical formulae, but simply to the production of tabloids containing the purest chemicals in a form most convenient for mixing at the time they are required for use without the trouble of weighing the different constituents of each formula, and thus saving the necessity of keeping stock solutions which are in many cases liable to deteriorate. He then gave a practical demonstration of toning black and white lantern slides and bromide prints with tabloids containing copper sulphate, potassium ferricyanide, and a neutral citrate. The plates and prints were immersed in a solution of these tabloids, and in a few minutes the cold black and white tones were changed into warm brown. This was followed by intensification of a thin film negative by the use of mercuric iodide with sodium sulphite. The film was cut in two for the purpose of comparison and one half, after immersion for a few minutes in the intensifier, was re-developed with an alkaline developer. A comparison of the result with the non-treated half of the film showed that the printing quality of the negative had been very greatly improved.

CROYDON CAMERA CLUB.

MARCH 9TH.—"Slow Plates for Short Exposures" formed the title of a most interesting and original paper, read by Mr. C. E. Kenneth Mees, an added interest being given the lecture by the fact that Mr. Mees and his colleague, Mr. S. E. Sheppard, have recently gained distinction for themselves, and the club, by obtaining the first B.Sc.'s for original research work in photo-chemistry. In the space at our command it is only possible to epitomise the salient features of the lecture, and the general conclusions to be drawn from it, which may be summed up as follows: "That, disregarding certain types of subject, and in reference to the period of under-exposure only, slow plates, within certain limits of speed, will give better practical results than rapid, or ultra rapid plates; and that, with a given exposure below that correct for the fast plate, the slow plate will in all cases show as much detail, and, in addition, owing to its inherent qualities, will render a far better negative judged by ordinary standards." Granted that the slow plate will give all detail possible with the fast plate, then the reason for its superiority in other directions is not hard to find. The slow plate generally has a higher γ , or, in other language, will develop to a greater density with infinite development. It has also a higher κ , or rate of development, together with great freedom from fog on prolonged development. Now, the length of useful development depends upon freedom from fog, and with a fast plate fog steps in comparatively early. From general conclusions, no doubt there must be a cardinal difference between the negatives produced under the circumstances stated, but the difference in landscape-lit subjects would not be perceptible to the eye. Mr. Mees specially excluded certain subjects from his dicta, such as may be met with in portraiture and interiors. These, as a rule, presented much greater relative contrasts than the average landscape, if the sky portion be omitted.

The lecturer's attention was first drawn to the matter almost by accident. In an attempt to devise a simple scheme for approximately ascertaining plate speeds without resource to exact measurements and instruments of precision, he constructed a negative, or rather six little

negatives, on one plate, of equivalent density, the plates to be tested being exposed behind, for various predetermined periods to a standard light. He soon found that with slow plates, owing to their latitude it was impossible to say which exposure was best; the length of development having such an important influence. The eye was, in fact, insufficient, and although a photometer might have been brought into service, this would naturally have defeated the object in view. He next tried developing all tested plates to infinity, and then found that the fast and the slow were, in the lower part of the exposure identical so far as detail was concerned. The plates tested had rates of speed from 1 to 5 to 1 to 8. A series of tests in the camera followed, which confirmed his previous observations, the slow plate also, for the reasons before stated, always giving the better negative. There was, however, a limit of speed for the latter, which should not drop much below 20 H. and D. Mr. Mees then showed on screen a series of negatives on half-tone and rapid plates, in all cases under-exposed for the fast plates, which amply bore out what he had advanced. Particularly noticeable were focal plane studies, exposed 1-500 second at F. 8, day dull, on Ilford half-tone plates, as against a special rapid plate. Normal snap-shot exposures on Thomas's lantern plates showed all detail, but the negatives were "ghosts," and unprintable. Mr. Mees concluded his lecture by a series of graphic demonstrations, showing the relationship between development, infinity, and rate of development, and the influence of bromide. In addition of the latter might be equivalent to dividing the speed of the plate by about 5. He also expressed a warm debt of gratitude to the president (Mr. S. H. Wratten, unfortunately absent through indisposition), for much valuable assistance and interest he had displayed. The vice-chairman (Mr. E. A. Salt) had also never spared criticism. A most hearty vote of thanks was accorded to Mr. Mees.

During the evening Mr. Dunmore kindly presented to the club his capital pictorial studies, handsomely framed, two of which had received medals at the R.P.S. The vice-chairman suitably acknowledged Mr. Dunmore's generous gift.

ULSTER AMATEUR PHOTOGRAPHIC SOCIETY.

DR. CECIL SHAW, M.A., one of the original founders of this Society, delivered a lecture on Monday last, before the members of the Society, at the Museum, College Square North, Belfast, entitled, "Some Recollections of Twenty-Four Years of Amateur Photography." The lecturer dealt in a lucid fashion with his photographic experience during that period, and conclusions from them as to different forms of photographic apparatus and processes, and concluded by giving some hints as to economy in working. Dr. Shaw's lecture, which was followed with attention by those present, occupied half the evening, giving time for an interesting lecturette by another of the members, Mr. J. Backhouse, on some of the "Early History of Photography in England, 1840-43." Through the kindness of a friend, a Mr. Henderson, of Reading, Berks, some of the first prints produced in England, about the year 1841, by Mr. Fox Talbot and his assistant, Mr. Henneman, were shown to those present. Mr. Henderson's father and a young fellow named Harrison, about 1840, were apprenticed to Mr. Lovejoy, a stationer and librarian in Reading, where Mr. Henneman used to purchase paper for experimenting with, and often gave the two lads copies of the prints he had taken. Harrison was a methodical young fellow, and pasted his photographs in a scrap-book, which at his death passed on to his son. The prints, with notes, are authenticated by Sir Benjamin Stone as a genuine work of the late Fox Talbot, which lends an additional interest to them. Mr. Lovejoy's library for fifty years was the resort of all the literary and scientific people who visited Reading, amongst others, Lord Brougham, Mary Russell Mitford, the authoress, was at the height of her popularity, and many brilliant conversations the young apprentices had the pleasure of hearing between her and such well-known people as Lord Brougham, Talfourd, Charles Dickens, Mrs. Trollope, the Howitts, and many others; hence it came about that everything new or interesting was generally known there so soon as it became public. When, on a visit to the Lake of Como in December, 1833, Fox Talbot made his first discovery of producing "sun pictures" through observing certain effects caused by passing clouds upon the shores of the lake. On returning home he carried out a series of experiments, which con-

ed him it would be possible to produce such pictures upon initially-prepared paper. By the year 1839 he had obtained a correct recognition of what he termed the Calotype process. Daguerre and Mr. Fox Talbot to make efforts for further research, and in 1840 or '41 he engaged a Dutchman, Mr. Nicholas Henneman, who took up his residence at Reading, as being a convenient place of call between Chippenham and London, on the newly-opened Great Western Railway, to make further experiments, and as far as possible perfect the process. Henneman was nothing like the typical Dutchman, but a lively volatile fellow, who had lived much in Paris, and was more of a Frenchman. Although at that time, knowing several foreign languages, he was rather deficient in English, and soon became known to him he was glad of my help in assisting with his growing correspondence (writes Mr. Henderson), being employed to copy Mr. Talbot's MSS. At first his visits to our shop all sorts of writing papers, and then going to a well-known chemist for various chemicals not in general use, soon aroused suspicion as to his vocation. He lived alone with an old housekeeper, a tolerably good house, which had been a school, where there was a large room without windows, but a skylight. This he used for his experiments, and always kept securely locked. Prying neighbours and others soon came to the conclusion that he was engaged forging foreign bank notes or some such nefarious pursuit. But for some time, Harrison, myself, and the chemist's assistant, Tom one, were invited by him to spend an evening with him, when he showed us all the nature of his occupation, and explained what he was engaged in endeavouring to accomplish. It was during this visit (1841-43) that all the specimens I have mentioned as being in existence were produced, and therefore there cannot be any doubt as to their genuineness. It was about this time Mr. Fox Talbot made it known that it was not his intention to take any steps to secure to himself any advantage he might make from his discovery, and one day meeting our county member, Mr. John Walter, chief proprietor of the "Times," who was a constant visitor at my shop, he explained the whole thing to him, and within a short time an article appeared in the "Times" making the process known, a free gift to the whole world. Years afterwards Henneman the operator for Sarny at Scarborough. Mr. Henderson, in connection writes:—"I much regret I did not make a study of photography to some extent. For forty-five years my business engagements necessitated my visiting almost every town in the United Kingdom. It has brought me into contact with people in all stations of life, of almost every caste or historical building, and every cathedral in our dear old land."

News and Notes.

YORKSHIRE Photographic Union.—The annual meeting and exhibition of prints will be held in the Church Institution, Westgate, Wakefield, on Saturday, April 23rd, 1904.

MESSRS. J. J. GRIFFIN AND SONS, LTD., write us that they have taken part in the forthcoming Northern Photographic Exhibition. They have a full range of their cameras and printing papers on view.

We have received a catalogue of second-hand and shop-soiled photographic apparatus from The City Sale and Exchange, 90-94, Fleet Street, London, E.C. It is full of good things, and should be in the hands of every amateur and professional desirous of picking up bargains for the coming season. The catalogue will be sent free on application.

The new paper, "London Opinion," which appeared on March 24th, under the control of Mr. A. Moreton Mandeville, should prove a successful journalistic venture. For the expenditure of the first penny reader obtains contributions from Mr. T. P. O'Connor, M.P.; Mr. George R. Sims, the Rev. R. J. Campbell, M.A.; Mr. A. G. Hales, and Mr. C. E. Humphry, Mr. T. Sharper Knowlson, Sir Henry Cotton, and others equally well-known to literature and art.

We have received a very complete illustrated price list from Messrs. Jones and Co., of Ealing, W. They specialise in bromide and carbon enlargements. Developing, printing, toning, retouching, etc., for

amateurs and professionals, they make a feature, and will undertake any kind of photographic work from picture postcard making to framing exhibition prints. The catalogue is a handsome production, and all interested should obtain a copy.

An exhibition of photographic portraits by Mr. William Crooke, of Edinburgh; Mr. Fredk. Hollyer, of London; and Mr. T. C. Turner, of Hull and London, was opened at the Royal Photographic Society's house, 66, Russell Square, on Tuesday last, the 22nd inst. The exhibition, which includes some fifteen examples by each of the above, will remain open for some six weeks at least, and may be seen between the hours of 11 a.m. and 6 p.m. Non-members are invited to view the exhibition.

To Architectural Workers.—At an instruction lecture given by Mr. S. H. Bentley, on the 16th March, before the members of the North Middlesex Photographic Society, an excellent suggestion was made whereby the difficulty of inserting the dark slide when working close up to a wall could be overcome. He recommended that the reversing back should be made to fit three ways instead of only two, as customary, and this will enable the worker to insert the slide either from the right or the left.

MR. RICHARDSON EVANS, hon. secretary of the National Society for Checking the Abuses of Public Advertising, has written to call our attention to the weakness of the English Municipal Law in regard to lack of initiative in dealing with some of the modern advertising eyesores that offend on every side in our cities, and more particularly in the country districts. He draws attention to the go-ahead policy adopted by the New Zealand Legislature in dealing with the matter, and quotes several acts which regulate the abuses of public advertising in that colony.

COXIN Competition.—Messrs. W. Butcher and Sons announce a monster competition of the picture-puzzle type now so popular. It has been inaugurated in connection with Coxin, the daylight system of developing plates and films. Sixty-eight prizes will be awarded, ranging in value from a Humber motor bicycle, and a Riley's combined billiard and dining table, to cameras at various prices. The dealers who supply the bottles or tins to the competitors who are successful in winning the first five prizes, will also receive duplicate prizes. Application for particulars should be made to Camera House, St. Bride Street, E.C.

ASTRONOMICAL Photography at Yerkes Observatory.—Mr. G. W. Ritchey of Yerkes Observatory, has surprised his astronomical friends by the fine photographic work he has been doing recently by the aid of the great 40-inch refractor, and the two-foot reflector. Some of the reproductions of photographs of prominent features of the Moon are themselves little less than perfect. "Mare Serenitatis Mare Tranquillitatis" and "Mare Nubium" are examples. If the reproductions from the original negatives, by a screen of 200 probably, produces as fine and natural effect, the negatives themselves must be better. Yerkes Observatory may well be proud of such photographic work, for we doubt if it is excelled anywhere.—"Popular Astronomy."

IPSWICH Camera Club.—A camera club has been formed at Ipswich. The following are the officers of the new society:—President, Mr. G. Calver Mason; vice-presidents, Messrs. W. P. Stericker, F. W. Goffin, C. F. Hunnibell, J. D. Sims, R. H. Sutton, and Dr. Ward; hon. treasurer, Mr. G. H. Hewetson; hon. secretary, Mr. R. H. Sutton; assistant hon. secretary, Mr. P. W. Elkington; hon. lanternist, Mr. John Wiggins; committee, Dr. F. Ward, Dr. Hossack, Mrs. Brogden, and Messrs. A. J. Leighton, J. C. Wiggins, F. W. Goffin, G. W. Horsfield, — Wright, and W. E. Harrison. The hon. secretary's address is 37, Henley Road, Ipswich, and he will be pleased to receive the names of ladies and gentlemen in the neighbourhood wishing to become members.

YORKSHIRE Photographic Union.—A meeting of the Council was held at the Vegetarian Restaurant, Bradford, on Friday evening, the 18th inst., Mr. Godfrey Bingley in the chair. The ballot resulted in the election of the following officers:—Mr. G. Bingley, president; Messrs. C. B. Howdill, Lieutenant-Colonel R. E. Johnson, V.B., Percy Lund and Percy Sheard, vice-presidents; Mr. Alexander Keighley, F.R.P.S., hon. treasurer; and Mr. Ezra Clough, hon. business secretary. The following gentlemen were elected as the official judges for the ensuing twelve months:—Messrs. G. Bingley, Gilbert Foster, R.B.A., Alexander Keighley, F.R.P.S., Percy Lund, Percy

Sheard, and Harry Wanless. A hearty vote of thanks was accorded to Mr. Lund for his kindness in providing tea for the delegates attending the meeting.

THE annual dinner of the North Middlesex Photographic Society was held on Saturday evening last, March 19th, at the Holborn Restaurant, when the President, Mr. Charles Beadle, who occupied the chair, was supported by a large number of members and visitors, amongst those present being Mr. Douglas English, Mr. J. C. S. Mummery, Mr. Thomas Bedding, F.R.P.S., Mr. R. Child Bayley, Mr. F. C. Tilney, Mr. George Scamell, Mr. J. W. Marchant, Mr. J. McIntosh, etc. The dinner was made the occasion of presenting to the late hon. secretary, Mr. Pring, a handsome clock and a pair of vases in recognition of his services to the Society. In distributing the certificates gained by members who competed at the last exhibition Mr. Mummery suggested that those gentlemen should send work to the open exhibitions. The toast of the Society was proposed by Mr. Douglas English, and in the course of an excellent speech by way of acknowledgment the President emphasised the value of photography as an agency for recording plain facts in contradiction to the use of hand control methods of producing prints—such as gum bichromite. Other toasts were the "Photographic Press," replied to by Messrs. Thomas Bedding, F.R.P.S. (Editor of THE BRITISH JOURNAL OF PHOTOGRAPHY), and R. Child Bayley, F.R.P.S. (Editor of "Photography"). Mr. George Scamell responded for the toast of "The Visitors," and the final toast was that of the musical artists and producers of the menu card, the latter being a most refined and artistic souvenir by Mr. H. Barnard. Musical and instrumental solos contributed to the enjoyment of those present, who united in agreeing that the dinner was one of the most successful of the series of North Middlesex festivals. We congratulate the Society on its prosperous position, and the markedly favourable influence it exerts on the progress of pictorial and technical photography.

NATIONAL PHYSICAL LABORATORY.—On the invitation of the President of the Royal Society and Lord Rayleigh, chairman of the General Board, several distinguished men of science visited the National Physical Laboratory, Bushey House, Teddington, on Friday afternoon (March 18th), for the annual inspection of the departments and apparatus. The visitors were received by Lord Rayleigh and Lord Kelvin. In the various departments there were many things of profound interest to the visitors. Two rooms devoted to electricity contained a Kelvin balance, a bridge for resistance measurements, an electric clock presented to the laboratory by Professor McLeod, an electro-magnet for watch testing, and illustrations of methods for measuring a small resistance. In the metallography department was a Compton one and a half horsepower motor, which drives a hack saw for cutting sections of metals, a Crowell rotary air-blower for various concentric jet furnaces, and a vertical drill. There was also in this room an open-scale potentiometer for differential cooling work and melting-point determinations, constructed by the department. In another room was a polishing apparatus in which three pieces of metal can be polished simultaneously. This was designed by Mr. J. E. Stead, and presented by him to the laboratory. The work of testing yard measures and their subdivisions was seen in operation as well as an apparatus for measuring surveying tapes in sections. Considerable interest was displayed in the tide predicting machine designed by Lord Kelvin and Mr. Edward Roberts and transferred by the Indian Government, whose property it is, to the care of the National Physical Laboratory. The machine has been used for twenty years for the prediction of the Indian tides, and the preparation of the tide tables for 1905 is now in progress. Thirty curves have been run off the machine, and the work of measuring these to obtain the heights and times of high and low water is proceeding. A start has also been made on the work for the riverain ports, in connection with which the machine can only be used to give the correction for the diurnal tides. The inspection of the various rooms proved exceedingly attractive, and did not conclude until after five o'clock.

PORTRAITURE at Home.—To make portraits at home is the ambition of nearly every amateur photographer, whether a beginner or of the more advanced type; in fact, says the "Bromide Monthly," some of the best portraits, from an artistic standpoint, that have ever been made, have been by amateurs. In order to make good portraits at home it is not necessary that we should have a great

amount of paraphernalia: a simple background or two that can be stretched tightly over a support of some kind, or perhaps some way fastened at the top of the picture moulding, and weight at the bottom with a wooden roller of sufficient weight to keep the background without wrinkles. The roller will also answer to stretch the background upon, so as to be easily put away and kept safe. It is well, if possible, to have a dark ground for heads and grow up people, and a white one especially for children, although this may be regulated at will and departed from in special cases. A portiere makes a very nice background, and in some instances lace curtain may be used for a white background; but, of course, the blind behind it must be pulled down. As a general thing, however, a dark background is more desirable, as softer results are obtained than with a light one, and the resulting prints are easier to handle. Of course, our light is the most important part of portraiture; a north light is the most preferred, and, possible, should be selected where it is not obstructed by buildings or trees, as this light will be stronger, and a quicker exposure can be made than where the light is interfered with, although in cases where it is impossible to avoid this the difference can be made up by lengthening the exposure. In making portraits in an ordinary room, we must select a room with as large a window as possible, and cover up the bottom sash, and a little way up the top sash, with some black material, so as to completely block out the light, and thus in a way obtain a top light to a degree. If we have been unable to select a window facing north, we must diffuse the light still more by tacking up white yellow cheese-cloth on the upper sash. Remember that a most important thing to avoid is any crossing of light. All our light must come from one source, or else we will get most disagreeable shadows and a result that will be very unnatural. So pull down the blind of the windows not to be used for lighting our subject. It will also be necessary for us to reflect some light on that side of our subject that is turned against the light, and this may be done by stretching a white sheet over an ordinary house screen; place the reflector slightly in front of the subject—as near as possible, as long as it is not photographed. The reflector may be moved around at different angles, so as to give the most pleasing results. A good plan for a window screen is to hang a dark-green blind upside down—that is, have the roller at the bottom of the window and the cord going over a ring or pulley at the top of the window casing. In this way we can exclude as much or as little light as we wish by simply lowering or raising the blind. In placing the side care must be taken to use a light that is best suited to give the necessary roundness to the face and avoids angles. The eyes should be in an easy, natural position, and not turned to either side, but let them follow the direction in which the nose points. Almost any kind of a double lens is useful in this style of photography, but, of course, good tools make good work, in portraits as well as in any other kind of photography, and especially is it necessary in home portraiture that our lens should work pretty fast—the shorter the exposure the more natural will be the expression of the face of the sitter. Do not try to make indoor portraits with a "single" lens. For if you do, you will lose the friendship of your subject by making him pose for so long a time as would be necessary; and, again, the result would probably haunt you as he does as well. The question of exposure is one that must be learned by experience only; perhaps an exposure meter, such as the Watkins will help you. It depends upon so many different conditions that it is almost impossible to give advice, but a few trials will give us the right idea in this respect, and help us along under any condition that may exist. In placing your sitter, put him, if possible, about 6 ft. away from your window and sideways to it, and about 2 ft. or 3 ft. back from the window, if you can, and do not forget to block out the lower part of the window used, and all of the windows not used. Another accessory that will be found useful is to have a white shade hung from the very top of the window and so that it may be unrolled and brought over the sitter's head on a slant downward from the roller. In this way, a very effective top reflector may be had. In fact, so many different results may be got by a simple manipulation of light by various means that almost any lighting that can be obtained in a regular studio may be had, and it is very much worth one's while to experiment along this line, and the enjoyment will more than compensate us for all the trouble.

Correspondence.

Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.

We do not undertake responsibility for the opinions expressed by our correspondents.

PATENTS IN AUSTRALIA.

To the Editors.

Gentlemen,—Your readers will probably be interested in hearing that the Governor-General in Council of Australia has decreed, in accordance with the new Federal law, that patent applications for Australia can now be formally made at the Custom House of the principal city of each State. Applications so filed will be marked with date, hour, and minute of receipt, and the applications will be subsequently recorded at the Patent Office as having been filed at that date. Applications thus filed will not be merely taken in order of date, but they will be held to be dated as far as regards novelty in the date of actually filing at the Custom House, unless dated otherwise by the convention. Under the convention nearly all the principal countries and colonies have agreed to grant the right to a patentee who has filed an application for a patent in one of the countries or colonies, to date any or all the other applications he may make for the same invention in other realms during the year, as of the date his original first application. The application in Australia can therefore be a provisional one, or a complete. The fees and stamp duties are just double those of an application for Great Britain and Ireland. Yours truly,

WM. P. THOMPSON AND Co.,
Chartered Patent Agents.

Lord Street, Liverpool.
March 22nd, 1904.

THE ELBOWED-OUT PROFESSIONAL.

To the Editors.

Gentlemen,—Yes; the elbowed-out professional. Is it true that the trend and pressure of the times has squeezed him up to a higher level, above the ordinary shop commercialism? Recently we have had advice tendered to us, and "B. H." has replied thereto. Both are articles have been a treat to read, but for widely different reasons, and I ask your permission, Mr. Editor, to make public a few of my comments thereon. First, "Amateur photographers are to date." What are we to understand by that? Does the "up-to-date" mean in quality, quantity, or cheapness? If the two latter are what the lay public desire, the writer must be satisfied, he gives instances of how rivals compete with each other at bankruptcy prices; but I consider that he has been well replied to by "B. H." Just one more comment: We are advised to take up the "up-to-date" papers. On this point I cannot do better than quote the writer on the same page, No. 195, in March 4th issue, where the following is printed as an "up-to-date" paper:—"The general public is nine unsatisfactory prints out of every ten, and the tenth is probably faded in a month. Better results were obtained in the old days of albumenised paper." No more need be said. On the whole, I agree with "B. H.'s" views until we reach this paragraph:—"The professionals' remissness in allowing the local chemist to capture the dealers' trade." I will put my comment in this form: What would you think of an R.A. who complained of the local colourman using tubes of pigment, brushes, varnishes, canvas, and stretchers, and robbing him of that trade? What presumption! True; but I can thin the analogy down to what degree you choose, the principal remains the same. I had also written some comments on assistants and "free portraits," but in your last issue, on page 222, where these matters were dealt with so ably by your trenchant pen, my humble effort were like skim milk in comparison. Please accept my thanks, in which I feel sure all professionals will join, and I ask them to read the pages again, and wish that all the world would do the same. I wish "B. H." had signed his name and address, I think he is a professional.—Yours faithfully,

W. BARRY.

The Studios, 7 and 8, Park Street, Hull.

"B. H." is a well-known professional photographer, and a member

of the P.P.A. Although always willing to allow our professional readers the opportunity of ventilating their grievances in our pages, we do not see that any good object can be served by the prolongation of a correspondence upon a subject which has so often been discussed in the JOURNAL.—Eds., B.J.P.]

THE NATIONAL PHOTOGRAPHIC RECORD ASSOCIATION.

To the Editors.

Gentlemen,—Would you be kind enough to inform your readers that at the annual meeting of the National Photographic Record Association some of our members undertook to make prints for our Association from any suitable negatives that might be lent to us for that purpose. The Council will therefore be much obliged to any one having such negatives for the loan of them for that purpose, and, in the first instance, would ask for lists of negatives proposed to be sent, so as to be able to make a selection. Every possible care will be taken of all negatives, but the Council cannot hold themselves responsible for any damage.—I remain, yours truly,

GEO. SCAMELL, Hon. Sec.

21, Avenue Road, Highgate, London, N.,
March 17th, 1904.

HOUGHTON, LIMITED.

To the Editors.

Gentlemen,—In your current issue you announce the amalgamation of four firms under the title, "Houghton, Limited." One of these happens to trade in London under the same name and style as ourselves, and we wish to intimate that we are in no way connected with the firm in question or with the combination. We should be glad if you would kindly draw attention to this fact.—Yours truly,

HOLMES BROS.

22, Oxford Street, Manchester.

BROMIDES FOR PLATINOTYPES.

To the Editors.

Gentlemen,—Referring to your article, "Fraudulent Photography," we beg to state that the substitution of silver and bromide prints for platinotype by unscrupulous photographers has been engaging our attention for some time past, and we are obtaining counsel's opinion as to the best means of putting an end to this fraud.

May we point out that you are mistaken in assuming that there are other makers of "Platinotype" papers besides ourselves, for such is not the case, as nobody but ourselves can use the term "Platinotype" for their manufactures.—We are, gentlemen, yours faithfully,

THE PLATINOTYPE CO.

22, Bloomsbury Street, New Oxford Street,
London, W.C.,

March 18th, 1904.

[We regret our inadvertent use of the term "Platinotype," which, we are aware, applies exclusively to the production of the Platinotype Company. There are, of course, other makers of platinum paper.—Eds., B. J. P.]

TRICHROMATIC PHOTOGRAPHY.

To the Editors.

Gentlemen,—I was very much interested indeed to read in your last issue Mr. E. J. Wall's valuable contribution on p. 228. Mr. Wall's translations from the German are always helpful to us dabblers in trichromatic work, whose misfortune it is not to be able to read the works of Dr. Eder and others. Why, I would like to ask, has two years been allowed to elapse before we English readers could get a translation of this article? No wonder we are a little behind in three-colour matters. I'll bet my boots our English articles on the subject are translated into German before two years have gone.

—Yours, etc.,

A. H. WHITE.

Stoke Newington Road, London, N.

March 19th, 1904.

INTERNAL REFLECTIONS IN THE CAMERA.

To the Editors.

Gentlemen,—Since Mr. Welborne Piper asks for some practical details as to the use of orange paper in the interior of cameras, I am happy to forward a few particulars. Having often had occasion to use the medium in question, in various kinds of temporary apparatus devised for scientific and experimental purposes, I have nothing

but praise for its behaviour as a cure for reflection. In the case of slow plates it is invariably satisfactory, and much to be preferred to a shiny or bad black. With rapid plates, however, it has not proved so suitable; at any rate, with long exposures. A good, dull black is to be preferred in all cases, although such a black is, unfortunately, not too common.

I fear we must agree to differ about the lens hood. A rectangular hood might possibly be better for a rectangular plate, if it were not for the disturbing factor of the lens being circular. The consequence is that the difficulty of accurately adjusting a rectangular hood is considerable, so that it shall not cut off certain necessary portions of the illumination. Then again, the plate is not square, but oblong; so that unless the hood is made square, thus admitting unnecessary light at the four corners, it will be requisite to shift it whenever it is desired to alter the plate from an upright to an horizontal position. A circular hood avoids this difficulty, admitting the maximum of needed light and the minimum of surplus illumination.—I am, gentlemen, yours very truly,

A. LOCKETT.

88, Brook Street, Kennington, S.E.,

March 18th, 1904.

YELLOW STAINS ON PLATES.

To the Editors.

Gentlemen,—There is a strange yellow stain, said (I think recently in the "Journal") to be ineradicable, that sometimes occurs in the fixing bath. Its position is wholly in the clear portions of the negative, disappearing entirely in the half-tones. Its colour varies, in different negatives, from very pale yellow to very deep orange. It is said to be a deposit of silver in some form, and experiments so far bear this out. Bleached with mercuria chloride and re-blackened, the stain becomes a grey deposit.

This stain occurs in several ways. One of the best known, with plates, is the use of an exhausted fixing bath. An old bath, *per se*, is no cause. But the stain, once visible, cannot be fixed out. The strongest and freshest hypo has no power upon it. The same kind of staining seems to occur frequently with films. The fixing of many films without special apparatus is somewhat of a trouble. Unless kept moving in the fixing bath they will stain where lying on one another.

The most brilliant staining I have come across arose in this wise. Four whole plates were developed in turn, each when developed placed in a bath of water which had originally been used for rinsing plates on leaving hypo tank. On placing the last of the four in the hypo-contaminated water the stain was noticed, and all four were immediately placed in fixing bath. The last one was, of course, quite clear, but the other three were respectively more and more coloured (in the transparent parts only) up to a deep orange.

A cure was suggested in the use of a Howard-Farmer reducer after it had turned green. Experiments with this showed that the stain was removed, if the bath was not too old, also that there was no apparent reduction in the negative. After removal of the stain, a plate was left partially immersed for two hours without apparent alteration, and after thirteen hours was simply toned to a brownish black. Suspecting the removal of the stain to be due to the solution being still a reducer, but in a weak condition, a fresh bath was made up of:—

Hypo.....	1 oz.
Water	20 oz.
1 per cent. Potass. Ferridcyanide.	A few drops.

Another plate was evenly exposed, and developed to a slight veil only, a slip of this being placed in the solution alongside a yellow-stained plate. The stain was removed after a few minutes, the plates apparently being unredduced; but the test strip showed that a very slight reduction had taken place. This reduction is, however, of such slight moment that it may be neglected in practical working.—I am, yours, etc.,

Johannesburg, S. Africa.

C. HAROLD SMITH.

THE DECIMAL AND METRIC SYSTEM.

To the Editors.

Gentlemen,—The discussion between Messrs. Gotz and Piper on this subject has, at any rate on the latter's part, become mere hair-splitting, and waste of ink and paper.

Here is an example. Mr. Piper states that a litre of water weighs 997.8066 grammes instead of 1,000, the error is therefore 2.1934

grammes, or, as Mr. Piper prefers the duodecimal and English weights 33 ¹/₁₀₀₀₀₀ in. grammes.

As photographers, we are not accustomed to make up our solutions except hypo in litre lots, but smaller quantities. Will Mr. Piper kindly tell us what the percentage of error, or the error per ounce, taking into consideration, as he ought to, barometric pressure, reduced to sea level, for, say, Blackheath, at 15 deg. centigrade, instead of making up a 10 per cent. solution of chloride of gold in the ounce I prefer to use the metric system?

When he has worked this out, duodecimally and by grains, will he condescend to tell us what effect the error found will have if tone ten sheets of paper, 24 by 17½ in. each, with 200 cc., or l'Anglaise and à la Piper, 3,079 7-10ths fluid grains, or 7 39-1000ths fluid ounces, or 7 ozs. 18 8-10ths minims, or 3,378 8-10ths minims?

Can Mr. Piper measure out 7 ozs. 18 8-10ths minims accurately, and, if not, what is the probable error in 35 ozs. 94 1-10th minims, and what will be the final result on every quarter-plate print cut from the above-sized sheet of paper toned in his erroneously-measured gold bath?

I do not know either Mr. Gotz or Mr. Piper, but obviously the latter is not a chemist, nor accustomed, as I am, to make three or four analyses of waters and their solutions every day of his life, otherwise he would not talk as he does.—Yours faithfully,

AN OLD CHEMIST.

March 21st, 1904.

P.S.—I am a brewers' chemist, will you allow me to discuss with Mr. Piper the question of the arbitrary abolition of licenses by magistrates? If not, why not?

To the Editors.

Gentlemen,—I am unable to determine whether Messrs. Gotz and Tennant cannot or will not understand my reference to our duodecimal system. Both persist in running their heads against duodecimal notation, which, as I have already explained, forms no part of the system. The notation is decimal, and the introduction of any other notation upsets its use altogether. Though Mr. Tennant says, "even if a duodecimal system were demonstrably preferable; in fact, nowhere exists, certainly not in the British Islands"; still, this duodecimal system not only exists, but is in constant use by architects, surveyors, builders, timber merchants, shippers, and many others. Mr. Tennant's irrelevant tale of a table may be referred to to point out that while it is perfectly easy to measure the height of the table by any scale of dimensions you please, the area of the table-top or the cubic quantity of wood in the table can be more quickly arrived at by duodecimals than by decimals. As this kind of work is not paid for by time, it is obvious that speed is of the greatest importance.

Mr. Gotz's remarks as to replacing the decimal system by the duodecimal system, and as to using duodecimals as a "fundamental principle out of which a harmonious system of weights and measures can be evolved," simply show that he has not yet grasped what duodecimals really mean in English measures. Their use is only a time saving device, and I have at no time suggested that they could form the basis of a complete system of measures. The point is, that if the foot and inch be abolished, then the quick method goes too, so that the man who has mastered it loses both time and money.

Mr. Tennant is much more reasonable than Mr. Gotz in regard to the use of fractions. The latter gentleman said: "I can prove that for all purposes it requires less figures to write a quantity in decimal figures than in vulgar fractions, and that calculations such as multiplication and division are infinitely shorter and simpler." Naturally, he has not proved it, and it is interesting to note that Mr. A. J. Martin, who is an even greater metrical enthusiast than Mr. Gotz, states: "Decimalists do not uphold the exclusive use of decimal fractions, but employ vulgar fractions if they see that under certain circumstances these would be quicker or more accurate; in fact, neither decimal or vulgar fractions are best under all circumstances." Thirds, sixths, and sevenths may be an abomination to Mr. Gotz, but he cannot get away from them. Presumably, the angle of an equilateral triangle ought not to be two-thirds of a right angle, but it is; hence the decimalisation of the circle has proved a failure, and for very similar reasons other undesirable fractions persist in appearing, however much they may annoy Mr. Gotz. I sup-

the use of $.7\frac{1}{2}$ instead of $.725$ would illustrate what Mr. Gotz is a "half-hearted" use of decimals, but he must surely be aware that this is one of the devices employed by decimalists whenever able. Unfortunately, with a decimal system of measures or weights this short method is so seldom available, whereas non-decimal systems afford numberless short cuts. Nothing shows this more clearly than our monetary system, which even such an ardent decimalist as Mr. Sonnenschein declares "is the best in existence, should be copied in toto by all the other nations." It is curious that he should be of this opinion, considering that his own method is not by any means as short as those usually adopted by Englishmen.

With reference to the metrical problem I submitted, it is remarkable that neither of your correspondents suggest the use of the avoirdupois and fluid ounce for making up the solution, though their use is clearly indicated. It is even more striking that neither of them refers to the conventional litre containing 1,000 gs. of water at a temperature of 15.5°C. , or 60°F. , which is commonly used for similar purposes. A litre graduated at a normal temperature is obviously desirable that the inconvenient standard metric units have been supplemented by the conventional litre, which fact was not mentioned at all in Mr. Gotz's paper.

The figures 997.8066 given in my last letter are incorrect owing to my use of tables that gave approximate values without indicating fact. The true figures, as near as I can get them are 997.7904, and Mr. Gotz will no doubt at once recognise as representing the weight in grammes of a standard litre of water at a normal temperature of 62°F. , according to the Board of Trade equivalents. It appears that the standard litre at 62°F. is about two grammes less than its theoretical weight, while, according to Professor Mendel's cubic decimetre at the same temperature is about one gramme less weight. Hence, the cubic decimetre is larger than the standard litre at equal temperatures, though smaller than the conventional litre graduated at 60°F. Neither of your correspondents can be aware of the confusion that has arisen through these complications, or of the mistakes that have been made through blindly trusting the theoretical arrangement described by Mr. Gotz. If the metric system is to be used intelligently it is certainly necessary to emphasise the fact that the litre and cubic decimetre, or the millilitre and cubic centimetre are not simple interchangeable measures of capacity.

With your correspondents kindly assume that I am discussing a matter of measurement that I am not practically acquainted with. On the contrary, I use the metric system myself whenever circumstances indicate that it will be most suitable, but practical experience of the art of measurement, which plays a great part in my profession, has forced me to recognise that it is not by any means so simple as it is often represented to be. The metric system is at its best for scientific work, but at its worst for ordinary every-day work in the real world. A unit such as the millimetre, which is much too small to be a "fine" dimension, and too small to be subdivided without a micrometer, is utterly useless for much of my work; hence, like many people, I discard it in favour of the decimally divided inch, which I can read down to the hundredth part with perfect accuracy and without any optical or mechanical assistance. Further, I am well acquainted with the numerous short methods used by decimalists, and use them pretty frequently, but then I also know that English business men employ very much shorter methods when dealing with English coinage and measures, and generally avoid decimals as productive of a waste of time and figures. For example, it is easier to find $3\frac{1}{2}$ per cent. on £67 than $3\frac{1}{2}$ per cent. on 67 dollars and cents, owing to the fact that the decimal coinage necessitates multiplication by two figures and the use of two or three working figures, whereas with the £67 there is only one multiplier and not a working figure is required by even the slowest witted youth. A glance at the sum shows the answer in pounds, shillings, and decimal parts of a penny. The inconvenience is due solely to the decimal division of the coinage, and, however you abbreviate the working, there is nearly always a shorter method available for non-decimal money than with any decimal coinage in use. It does not apply so fully to measures, where I admit a decimal can be to be often convenient, but it applies with sufficient frequency to show that a purely decimal system of measures is defective in principle and not conducive to efficiency. The metric system, in

particular, is unsuitable to our general requirements, because, while it is purely decimal throughout, it cannot be used in unison with any part of ours. We want a decimal system, but not one that contains no single unit in any way comparable with one of our existing units. If the metre agreed with the yard the whole matter would be on a different footing; we could retain such of our present units as have a distinct value, and at the same time reduce from one system to the other with perfect ease. Such a system as that would be adopted at once without hesitation, but to adopt a system that is well recognised as imperfect, and cannot in any way be reconciled with either existing systems or records, is only to add to the present confusion; for it must be remembered that no Act of Parliament can abolish and obliterate the present measures, which will remain in use probably for centuries. Other countries have failed to get rid of their old measures, though such a change can be far more easily carried out in any country rather than this one.

A point often neglected is the fact that our trade with metrical countries is small and unimportant compared with our trade with non-metrical people. It appears that only about two-fifths of our overseas trade is with the former, and that is steadily diminishing, while the other three-fifths is with non-metrical countries, and is steadily increasing. The adoption of the metric system would thus inconvenience our best customers, and our home trade, while it would undoubtedly be a greater benefit to our metrical rivals than to us. At present we hold the whip-hand, for our measures trouble our metrical rivals much more than they do us or our non-metrical friends, and, of the two alternatives, it would pay us far better, and be much easier, to introduce a new system suitable to our requirements than to adopt one that we know to be inconvenient. Interested parties are very anxious that we should adopt the metric system as it stands, for the very simple reason that they would then be able at once to compete with us in our own markets with greater profit than they can at present. Think of the certain result of our adjusting all photographic apparatus to metrical gauges. We should immediately be flooded with Continental plates and cameras, and a severe competition would very soon be supplemented by the gentle agency of "dumping." Other trades are considering this point very carefully, and photographic manufacturers would do well to follow suit; possibly they have as yet hardly realised the extent to which they are "protected" by the fact that we do not use plates of Continental sizes.—Yours, etc.,
C. WELBORNE PIPER.

March 22nd, 1904.

"THE PHOTO-TICKER," published by Mr. W. P. Buchanan, of Philadelphia, thus advertises the introduction of a new flash-powder:—The Greasy Dutchman is dead. We are happy to chronicle the end of trouble as far as "Prof. Schumann," alias "The Greasy Dutchman," is concerned. He dropped dead in Pittsburgh on April 27th, and the coroner notified us that his grave is No. 264. (It seems hardly the right way to publish an obituary notice—to say "we are happy to chronicle, etc.," but when an individual becomes a nuisance and a dangerous element he is better dead than alive. We forgive him, and if you are one of his many victims we hope you will do likewise. Poor fellow, he has no doubt gone where flash powder would be unsafe to handle—his troubles on earth are ended, and the world is better off. *Deo Gratias!*)

* * NOTICE TO ADVERTISERS.—Blocks and copy are received subject to the approval of the Publishers, and advertisements are inserted absolutely without condition, expressed or implied, as to what appears in the text portion of the paper.

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It may also be obtained from all Booksellers, Photographic Dealers and Railway Bookstalls.

Answers to Correspondents.

- * * * All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.
- * * * Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.
- * * * Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & Co., 24, Wellington-street, Strand, London, W.C.
- * * * For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

- I. Ratcliffe, 8, Wharf Street, Sowerby Bridge. Photograph of Rawdon Collinson.
- J. Jackson, Elder Bank, Blackley, Manchester. Photograph of Thirteen Original Members of the Rochdale Equitable Pioneers' Society.
- L. Anthony, 2, High Street, Kilarney. Photograph of Irishman in Donkey Car. Photograph of Irish Colleen on Donkey Car. Four Photographs of a Kerry Colleen.

JOHN TERRAS.—It might realise a few shillings if advertised.

BISCUITS.—The specimen sent shows that the medium used renders the paper very transparent and suitable for its purpose. We are pleased to learn we have been of assistance to you, and wish you success.

C. E. MANNALL.—Do you not mean Crystoleum Painting? Barnard's Complete Crystoleum Outfit for the process, and full instructions can be obtained from Jonathan Fallowfield, 146, Charing Cross Road, London, W.

E. G. HARCOURT TYRRELL (Pietermaritzburg, S.A.).—If you address Mr. Ives, care of the Franklin Institute, Philadelphia, you will no doubt obtain the information of which you are in need. We cannot possibly answer letters by post.

SINOP COLLOTYPE PLATES.—F. RUTTINGER writes: "In the volume for 1902, page 893, the 'Sinop' Collotype plates are reviewed. I should be much obliged if you would tell me where they may be bought?" In reply: Address, Messrs. Penrose and Co., Farringdon Road, London, E.C.

PATENT INFORMATION.—CONRAD asks: "Will you inform me of the best means of acquiring a knowledge of the rules relating to patents, so that I should know how to proceed in the event of my wishing to take out a patent?" In reply: You may obtain a form at any post office, price eightpence, which will probably meet your requirements.

C. L. HARTE asks: "Could you kindly tell me a recipe for renovating the leather covering of my camera, which has got rather shabby?" In reply: Either the "Bertha" Leather Reviver, sold by the Vanguard Manufacturing Co., Maidenhead, or Tylar's Leathesvas Finish, both of which are obtainable in 6d. and 1s. bottles at most photographic dealers, will do what you require.

A. W. EMARY.—The technique of the work submitted is chiefly open to criticism by reason of the occasional harshness of the lighting. Otherwise it is very good, and should entitle you to a salary of from £2 to £3 a week. A study of the portrait work at the principal London exhibitions would no doubt suggest directions in which the work is capable of improvement.

CARBON TISSUE.—C. M. says: "I shall be greatly indebted to you if you can instruct me how to destroy the latent image in carbon tissue. Is it possible to undo the work done by light action on gelatine sensitised in bi-chromate of potash without destroying the gelatine? That is to say, can it be used again like fresh tissue?" In reply: There is no practical method of doing this. If there were, the thing would not be worth the trouble.

UNINFLAMMABLE CALICO.—"Uninflamable" asks: Could you, please, inform me, where I could buy uninflamable calico, and if not sold commercially, how could I prepare same?" In reply:

So far as we are aware, there is no such thing as uninflamable calico on the market. Ordinary calico, however, is rendered uninflamable by simply immersing it in a solution of tungstate of soda and then drying it. In place of tungstate of soda, common alum may be employed, but the tungstate is the better.

JESS MITCHELL asks: "How can I obtain a sepia tone on P.O.P." In reply: There are many excellent formulæ for obtaining sepia tones on various brands of P.O.P. given in the "B. Almanac" every year. We can, however, recommend the following:—

A.—Potassium chloro-platinite, 15 grains in 15 ounces water, to which have been previously added 5 minims of hydrochloric acid.

B.—Citric acid, 160 grains; Chloride sodium (common salt), 160 grains; Water, 8 ounces.

Take 2 ozs. from A and 1 oz. from B, and make up to pints with water. This is sufficient for toning about 30 plate prints. Matt surface paper looks best toned in bath.

COLOURING—RETOUCHING.—READER says: "I should be very pleased if you could answer me the following questions:—First, a tinting photos with water colours on a polished surface, paint shows very dull if you hold it sideways. Can you use any varnish or medium that would take off the dullness? I have tried burnishing them, but have not found it to answer. Second, will you kindly inform me what is the real meaning of 'clever with the knife?' I often see this in the vacuum column where a retoucher is required. Of course, I can move any part of a negative that is not required by scraping etc." In reply: 1. The only thing we can suggest is that you use more gum with the colours; they will dry with more gloss. 2. By clever with the knife is meant cleverness in removing certain portions in a negative, when it is required to do so without the work showing in the print.

PHOTO RELIEFS.—H. DU F. (Johannesburg).—Where could I find the instructions and formulæ for producing negatives in high relief suitable for making plaster moulds, etc. In reply: A book dealing with the Woodbury-type process, such as Burton's "Photographic and Photo Mechanical Process," will tell you how to make gelatine reliefs. But for plaster moulds, if high relief is required, the "swelled gelatine" process will be better than the Woodbury one. Apply a thick coating of swollen gelatine to a glass plate, and allow to set and dry. Then immerse in a 5 per cent. solution of bichromate of potash until the film is thoroughly permeated. This will take some minutes. Dry, and then expose behind a strong negative. Put into cold water, when the portions not acted upon by light will swell up in high relief. In place of coating the glass with plain gelatine, the bichromate may be added to it if you have means of quickly drying it.

WRONG CREDIT GIVEN.—PHOTOGRAPHER says: "I wish to have your advice on the following difficulty:—Some time back, during 1903, a traveller of a well-known firm in England called on my studio and invited me to supply him with some views of London to reproduce in an album which his firm was about to publish. I declined to do so on the ground that I had already placed my order with another firm for the publication of an album with views of this town photographed by myself. I therefore desisted from his demand, and bought one only view of a certain place. Soon after, the publication of his firm's album took place. I was surprised to see among the collection that very view reproduced bearing another photographer's name. It so happens that the view in question taken by me surpassed in detail any one taken by other competitors, and the publishing firm have acknowledged this fact by reproducing my view, failing, however, to put my name to it. Will you please advise me what action should I take against the firm for having put another photographer's name to a view taken by me? I may add that my view is not registered." In reply: The matter is certainly very annoying to you, and not at all creditable to the firm in question. We are afraid, however, that you have no remedy, particularly as the copyright in the picture was not registered.

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EX CATHEDRA.

Photographic Survey for Kent. We are asked to announce that the Committee of the South-Eastern Union of Scientific Societies is anxious for the formation of a Photographic Record and Survey Association for the County of Kent. Surrey already has such an association, which has just completed a most successful first year's work, and it is hoped that the organisation in Sussex may follow that of Kent. The Kentish survey will probably form its principal deposits of records in a county museum at Maidstone, and will also contribute to the collection of the National Photographic Record Association in the British Museum. A meeting of persons interested in the proposal, and of delegates from photographic, archaeological, and other societies, is to be held in Maidstone on April 16th, for the purpose of forming a provisional committee to draw up rules and to submit a working scheme to the Congress of the S.E. Union, which will meet in Maidstone on June 9th, 10th, and 11th. The exhibition in connection with the Congress will have a section devoted to photographic record and survey work. Societies and individuals interested in the movement are asked to communicate with Mr. H. Snowden Parnell, Hadlow, Kent, who has undertaken the preliminary organisation.

Abuses of Public Advertising. In the JOURNAL last week we published a letter from the hon. sec. of the society formed for attempting to place some restrictions on the glaring advertisements that at the present time disfigure alike both town and country.

If this body proves successful in their efforts, no persons should be more thankful to them than photographers. It is quite true that, at the present time, the hoardings let for advertising purposes are quite different from what they were, even a decade ago. Many of the posters now seen have quite pictorial merit, and some hoardings may almost be classed as al-fresco picture galleries. But photographers do not always look upon them as such, particularly when they have to depict a street scene, or, may be, some public building, and have necessarily to include some, in this case hideous, advertisements in their pictures, as there is no possibility of avoiding them. Again in the country a landscape that would form an excellent picture is marred by some obnoxious advertisement of somebody's pills or other quack nostrum. It must be included in the picture, or the picture foregone. Painters are here in a better position than photographers. They can paint their picture with all the beauty of the landscape, and leave out the obnoxious advertisement; whereas the photographer has, perforce, to include it in all its obtrusiveness. Still this is an utilitarian age, and so long as there is no law to prevent it, one can scarcely blame anyone who has space, and the opportunity, for turning it to profitable account for advertising, or any other purpose, without considering the subject from an æsthetic point of view.

Shutter Speeds and Shutters.

Every hand camera of the present day is provided with an "instantaneous" shutter of some kind or other with an index marked in fractions of a second. Pictures taken with them are shown with the stated speed of the index inscribed upon them, but how many of the producers have verified the index to prove whether it is correct or not? If they were to do so they would, in very many cases, find that the speeds marked were very much at variance with the actual speeds at which they work, particularly with those on the cheaper forms of cameras. We happen to have in our possession some half-a-dozen shutters of different forms, with indexes, and when they are all set at, say, 1-10 second, there is a wide difference in their speeds, as can be seen by the eye. If this discrepancy is so palpable with the slow speeds, one may well surmise that it exists also in the higher ones. Again, if the speeds marked on the indexes were correct when the shutters were issued by the makers, how long would they remain so under the conditions which they are subjected to? For example, it is no uncommon thing for a shutter, we will say, depending upon a spiral spring for its action, to be used at its highest speed, and for the apparatus to be nut away, possibly, with the full tension of the spring on for weeks. It is easy to see that this continued tension has a tendency to weaken the spring and render the shutter slower in action when next used. Again, those

shutters that depend upon pneumatic action as governing the exposure, if a small particle of grit, which, on a windy day is impossible to avoid, gets in the cylinder the action is at once slowed by the friction produced. But what matters it, in practice, whether the speed marked on the index is correct or not so long as it is constant when set at any of the speeds on the indicator, whatever they may be? The user knows that when the shutter is set at any particular speed he gets a certain exposure, and it is of little concern to him whether it be the fifteenth or the twenty-fifth of a second in actual time, so long as he gets the result he wants. In our own practice, and with the view of having our shutters as constant as possible, we make it a practice to always release the spring and let it run down after the day's work is done. This tends to keep the spring of whatever form it may be in practically an uniform condition.

Miniature Painting and Photographic Miniatures.

In "Ex Cathedra" last week reference was made to the miniature painting of a generation or two ago, and the probability of its being revived in the near future. During the past week the art world has been greatly interested in the auction sale, at Christie's, of one of the most remarkable collections of miniatures and snuff-boxes that has probably been held, and the prices realised for some of the works. Four days' sale realised no less than £54,000. This unique collection was got together by the late Mr. C. H. T. Hawkins, and forms but a portion of the works that have since come under the hammer of the auctioneers. It may be explained to those who may not be aware of the fact that many of the snuff-boxes are embellished with fine miniature paintings in enamel, and are works of art in themselves. On box alone, so embellished, fetched the sum of £1,550. Some of the miniatures brought almost fabulous prices. For example, one of "A Lady," by Englehart, made £435; another "A Lady," by Cosway in 1788, fetched £340; and a Louis XVI. gold tablet case, with panels of purple transparent enamel, and miniatures of Louis XVI. and Marie Antoinette, were knocked down for no less than £510. One small panel picture, "The Guitar Player Surprised," measuring $13\frac{1}{2} \times 10\frac{1}{2}$, by Watteau, realised the sum of 2,400 guineas. As we mentioned, last week, there is at present a tendency towards the revival of miniature painting, and some of the leading photographers are fully aware of the fact, and are making a feature of it in their business. But it must not be surmised that a coloured miniature on a photographic base, however skilfully done, will ever equal the work of such men as Cosway and others of the old school. The surface of a platinum print is excellent for colouring upon, but the old miniatures were upon ivory, which is undoubtedly the best material for the artist to colour upon. Photographs on ivory are produced by the carbon process, but here the painter has not as of old, the bare surface to work upon, but one of insoluble gelatine. The pictures are made by the double transfer method, and the ivory has to be prepared with a substratum of gelatine in order to secure the image to it, and the picture itself is gelatine. Hence the conditions are different from what they are when the artist has the bare surface of the ivory to begin upon. A large number of the works sold at the Hawkins sale were enamels, and photographers would do well to give attention to coloured miniatures on enamel. Photo-enamels are very beautiful in monochrome, but they would be still more beautiful if they were skilfully coloured, and we have seen some that, although they could not compare with the work of Essex and others, were very good. Really good coloured photo-enamels can never be done at a cheap rate, and so they

are never likely to become common. They must always be confined to the wealthy alone. This will be understood when it is explained to those who are not aware of the fact that every colour—or nearly every colour—has to be fired in separately. The most refractory colours have to be fired in first, then follow the next refractory ones, and so on, a dozen or more firings being sometimes necessary.

DIAGRAM LANTERN SLIDES.

THOSE familiar with lantern exhibitions know how often a good lecture is marred by poor diagrams—defective by reason either of imperfect copying or good copying of an imperfect original. We do not refer, of course, to diagrams built up during the progress of the lecture, and shown on the screen after the fashion of a drawing of a plan done on the blackboard in front of the audience, the method being, as we need scarcely remind our readers, easily carried out by a special arrangement of the lantern, the drawing being made on a horizontally placed surface such as perhaps is best made by the smoke of burning camphor received upon a glass surface slightly paraffined over by warming, rubbing with the end of a paraffin candle, and then almost wiping it off again. The slides we speak of are those photographed from plans or sketches specially drawn or selected for the lecture, and from which negatives have been made. Naturally, the roughness and want of pluck in such slides is not always the fault of the photographer. If a poor drawing or plan is brought to him, nothing but a poor slide can, as a rule, be made from it; but instances too often occur where a little skill and thought brought to bear will enable excellent results to be obtained from unpromising materials. For example, a newspaper cutting, possibly crumpled, brought to be copied. If pinned up in the studio and straightened out as much as possible, a dirty looking slide, with the crease marks and the grain of the paper plainly visible, and the printing at the back showing through, will be the result. Let, however, the cutting be pasted upon a piece of wetted paper, and the whole, while damp, strained on a smooth piece of board by pasting the edges and all the marks will disappear when dry. The grain will be lost by illuminating the print from both sides, which can be done by the aid of a mirror if a front light is impossible. The printing at the back will still show through, but will be entirely eliminated if the precaution be taken of pasting the cutting on black instead of white paper, and, if the cutting is valuable, and may not be tampered with, almost equally good results may be obtained, as far as eliminating the effect of the back printing is concerned, by placing the cutting in a printing frame, and backing it dry with black paper.

A difficult class of subject to photograph without loss of time is a diagram in a book, as it cannot be removed without injuring the work. The best procedure is to lay the book on a board, open it at the required place, tip the diagram or picture is quite vertical, then, placing a sheet of glass—preferably plate glass—against it, and, if possible, tied with two pieces of twine at top and bottom to ensure flatness, to keep the print vertical by some easily-devised temporary expedient, such, for example, as a number of books piled up. There then remains only further precaution to take; the open page of the book that lies horizontally in front of the print, must be covered over with a piece of black velvet, or even dead black paper. If this be not done, a foggy negative will be obtained, owing to the open page being reflected from the plate glass and superposed upon the image proper. Some lecturers prefer diagrams in white upon a black ground. These, of course, are simply made by supplying

the negatives itself without the medium of a transparency. The objection to such slides is that the lecturer cannot use a pointer to explain his diagrams. A much more elegant plan is to keep the negative on the thin side and convert it into a blue or green by a well-known process. Such slides are so far not common; if introduced, they will be much admired, and a slight extra charge would be willingly paid.

Returning now to the ordinary clear slide with black lines it will be advantageous to make the transparency unnecessarily dense, and then clear the whites by the Howard-Farmer reducer. It is astonishing what a great help this is to the obtaining of absolutely clear whites. Nothing looks worse on the sheet than a good diagram showing on a dirty, or patchy, white ground. A dense negative is essential for obtaining direct the best results, and to this end it is far better to obtain density by intensifying with mercury rather than by protracted development, which tends to fog the faint lines. Our recent remarks upon pinholes may be read in this connection, mercurial intensification having a tendency to induce this defect.

At a recent meeting of the Physical Society, Dr. W. Watson gave some "Hints on the Preparation of Diagrams" that will be found useful to those of our readers who take up this class of work. He stated that many of the diagrams and curves accompanying papers submitted to scientific societies have to be re-drawn on Bristol board before they are suitable to be photographed, and he pointed out the usefulness of drawing these on blue-line section paper. By slightly over-exposing the plate the lines, he said, were quite invisible on the negative. One non-photographic hint he gave is well worth recording. The difficulty of, and the time lost over, lettering diagrams is well known, and he recommends the use of indiarubber-faced type, using Binfield's Persian black with glycerine as the ink. He referred to the usefulness of the larger size of type of the well-known "Easy Sign-makers," which are also supplied with rods to ensure alignment and circular arcs for arranging the lettering in a circle. The suggestion is most valuable, for the time involved in lettering a diagram, or printing a description upon it, can only be known by those who do such work.

We have by no means exhausted the possibilities, photographic and non-photographic, of diagram making for lantern slides, and we may possibly return to the subject on some future occasion.

BEYOND OUR GRASP.

THERE are very few things in the world which cannot be photographed, and the word "world" must be taken to include the recesses of the deepest mine as well as the attenuated atmosphere far above the sea-level, which is only known to the most daring of balloonists, and in a modified degree to mountain climbers. As for the more properly terrestrial things the camera pokes its nose, or rather its lens, into all the affairs of men, and whereas a few years ago it might be regarded by many only in the light of a fashionable toy, it now is to be found in every laboratory, ready on the instant to record things which are so rapid in their happening that no human eye is capable of detecting their movements.

Atmospheric phenomena of various kinds have been photographed, and the modern study of meteorology is doubtless much helped by the beautiful pictures of cloud-land which have been produced. They are necessarily beautiful, but their handsome looks do not recommend them to the man of science as much as the evidence they

afford of direction of air currents, of altitude (when simultaneous pictures are taken from two separated stations for after comparison), and the opportunity they give of making a more reliable classification of appearances which are so ephemeral, that at the best they form a most difficult subject of study. Photographs of lightning are always attractive, and it is known to meteorologists that such pictures show peculiarities of form which were never seen before the camera was used as recorder. As to pictures of star-land, the photographic dry plate has, by the wonderful things it has achieved, caused quite a revolution in astronomy. One of the foremost workers in this splendid field of scientific work has stated his opinion that the wedding of the telescope with the photographic dry plate has helped astronomy as much as did the discovery of the telescope itself. Stars so inconceivably distant that no eye has ever seen them, even with the help of the most powerful instruments, have, by the cumulative action of their lights exerted over a period of some hours, recorded their presence on the dry plate, and it has been calculated that by the help of photography a map of the universe would be possible, showing about 160 millions of orbs. A map, indeed, is now in progress, but by common consent among the observatories of the world, each of which will contribute to it, the mighty chart is to contain only two million of the brighter stars of the firmament.

It would seem, then, that the title of this article is a misnomer, and that there can be nothing beyond the grasp of the ubiquitous camera. There is no rule without its exception, and the exception in this case seems to be that beautiful appearance in the heavens known as the Aurora Borealis, or Australis, according to whether it is seen from the Northern or Southern Polar regions of the earth. As far as we can gather, this beautiful thing has never been photographed, and we may regard it as an apparition which, with our present appliances, cannot be pictured by the camera.

The Aurora Borealis is very seldom seen in a latitude as low as that of London, and we can recall but two instances in which it was bright enough to excite general remark. The first was as long ago as October, 1870, when the sky seemed to be lighted up in patches of rosy light not only in the North, but all round the horizon. That the light given was pretty bright may be judged from the circumstance that the fire-engines turned out from various districts. But it should be mentioned that possibly the electric alarms may have been caused to ring up the firemen by the automatic acting of the apparatus owing to the disturbance set up by the Aurora itself. It is placed on record that in 1859, on two different dates, brilliant Aurora Borealis acted so powerfully on the electric telegraph in France and other countries, that for a time communication was altogether stopped. It will be remembered, too, that only a short time back induced currents from a magnetic storm played havoc with telegraphic messages over the greater part of Europe.

The other instance of an Aurora seen in the Metropolitan district occurred about five years ago, and we happened to observe it under exceptionally favourable circumstances from a boat on the upper Thames. This Aurora was not quite unexpected, for some big sunspots had been seen, and it is not uncommon for Auroral phenomena to accompany such appearances. In this case it came, first as ghostly columns of white light in various parts of the sky, and soon afterwards as a fan of rays in the North, through which the horses and wheels of King Charles's wain could be plainly seen, as through a diaphanous veil. Although in this case, the light was, as we have said, perfectly white, and although the rays

were strong enough to attract the attention of everybody, they were, we felt convinced, too faint for any record on a photographic plate, and they did not keep still. At one moment one of the rays would elongate, at another it would shrink, and attention was diverted from it to one of its fellows which, for the time, attained great prominence.

But if anyone wished to see Auroræ at their best, he must betake himself to either the Arctic or Antarctic regions. Probably one extremity of the earth would be as good for this purpose as the other, but the quest of the North Pole has been such a constant story of endeavour since the childhood of most of us, that the Northern Aurora has been more generally spoken of in our hearing, and it seems to be more within our reach than the Southern one. The Aurora Borealis is generally pictured as a series of vertical curtains, with folds in them just like the crinkled paper of which table-lamp shades are made, and the most extravagant language has been employed to describe their brilliant colouring. But they have never been photographed, so far as we can learn, although many attempts have been made to picture them by the camera.

There is no doubt at all that there has been a good deal of exaggeration concerning the amount of light given out by the Aurora, even when seen at its best. We have before us, as we write, a very interesting book by Sophus Tromholt, "Under the Rays of the Aurora Borealis" (1885), which gives a full account of the land of the Lapps, and which touches in a brief manner on this matter of photographing "the Northern lights." The author says that the idea that this light in any way compensates for sunlight is a mere fable, and that it assists travellers in their journeyings is a gross exaggeration. It must be of unusual brilliancy to be seen at all when the moon is full, and the sky clear. Sometimes the Aurora will give flashes of extra brightness, but these are so brief that "the light emitted is of no practical value whatever to the inhabitants of the polar regions." The author further intimates that the Aurora at its best does not give a light equal to the full moon, and that on rare occasions he could read by its aid type about $\frac{1}{2}$ in. high.

But the most interesting part of his account of the Aurora is his story of the attempts which he made to photograph it, which we will give in his own words:—"Every attempt I made to photograph the Aurora Borealis failed. The result was the same at the stations at Bossekop and Sodankylä. In spite of using the most sensitive dry plates, and exposing them from four to seven minutes, I did not succeed in obtaining even the very faintest trace of an image. The reason is, I am convinced, the small strength of light, and its limited chemical action."

Mr. Tromholt devotes a great many pages to a description of the Aurora, and he speaks of masses of luminous matter suddenly appearing in the sky, wave-like motion, wave-like flaming, quick motion—all his expressions giving an idea of something in constant movement. And we are therefore led to believe from this description and also from what we have ourselves witnessed in a modified degree in this country, that the difficulty of photographings is caused by the unrest of the Aurora rather than by its want of brightness. If the Aurora would "keep still" as well as "look pleasant," to use the old studio formula, it could be photographed, provided the camera were connected with an astronomical clock movement so as to counteract the movement of the earth, and provided that a sufficient exposure were given. For we may surely assume that if invisible stars can be photographed, a thing which covers a far greater area and which gives

enough light for the reading of type, should also be photographable.

The light is comparable with that given by a Geissler tube through which an electric current is being projected by a coil, and such a tube we have been able to photograph by its own light in a room otherwise dark, by means of a few minutes' exposure of a rapid plate, and although the tube, by reason of its proximity to the camera, gives a much greater light than the Aurora, we may look upon both as being of the same kind of luminosity, we may, indeed, regard the interior an exhausted Geissler tube as being in the same state as the region above the atmosphere of the earth where the Auroræ are believed to occur.

It is a matter of interest just now to turn to Sir W. Ramsay's recent explanation of the Aurora Borealis. We have lately heard, in connection with the wonders of radium, so much about those hypothetical particles of electrified matter called electrons, that they are becoming quite familiar. Sir W. Ramsay believes that the sun is sending out swarms of these particles and that, acting on krypton, the recently-discovered element, in our atmosphere, they produce the Auroral light. This new view of the Aurora is endorsed by Dr. Johnstone Stoney, who, in a letter to "Nature," points out that this action of the outpour of particles from the sun on krypton produces the green Auroral line seen in the spectroscope. He further believes that this same outpour "presumably with equal, and perhaps increased, vigour, imparts energy to the molecules of helium, which range to still greater altitudes."

There is no reason to suppose that the most rapid plates now made are the most rapid possible. The difficulty of the plate maker is not in the increase of rapidity, but in finding a safe light to work by. It is quite possible that in the future mechanical means will be contrived for making emulsion and coating plates and films in absolute darkness. We already have appliances for changing and developing under like conditions. With such super-sensitive surfaces, a photographic image of the Aurora Borealis should not be impossible.

SOME SPECTROSCOPIC STUDIES ON TRICHROMATIC PHOTOGRAPHY.

III.

DR. EDER now commences his notes on light filters, and lays down at the commencement the important axiom "that it is by no means permissible to come to a conclusion as to the suitability of a colour filter, from the commencement or end of its absorption spectrum, or from its absorption minimum. For there are many dyes which are not sufficiently transparent and which even in the zone of the greatest transparency measurably dampen the light." As an example of this he quotes acid violet 4 B. (Bayer), which is a brilliant violet dye, similar to methyl violet, but much more stable to light, and with which an excellent violet filter may be prepared in a strength of 1:2,000, and which corresponds in colour absorption to a methyl violet solution of 1:10,000, but the acid violet filter requires a much longer exposure than the methyl violet one, and this is shown from Fig. 4. This is due to the acid violet damping the light, which cannot be visually detected, but which the more sensitive silver salts can prove.

The author uses his filters in liquid form and of 1 cm. thickness, and he lays stress on the fact that commercial dyes vary enormously, although bearing the same name, so he is careful to give makers and signalise the particular sorts as far as he can.

Not content with photo-spectroscopic tests of his filters, he

gives the luminosity and extinction-coefficient of his filters and various dyes for every ten wave-lengths throughout the spectrum, but as these are rather of more theoretical than practical interest they are omitted. There is, however, just a short abstract which is of interest; a methyl violet screen 1 : 10,000 when freshly prepared transmits from λ 694— λ 625 from 0.88—0.18 luminosity (1.0 being perfect transparency or full luminosity), after some weeks' exposure to light it shows in this region perfect transparency to these rays; again, the freshly-prepared solution gives from λ 618— λ 483 complete absorption, after exposure to light it transmits 0.13—0.03 light, and, whilst a freshly-prepared solution is absolutely transparent from λ 440, a stale solution shows a strong absorption band in the green from λ 597—517, its complete transparency does not commence till after λ 465. These few figures carry a powerful lesson to users of liquid filters.

Bromiodide collodion plates require no violet filter for the yellow printing plate, and for half-tone blocks the best formula is—

Cadmium iodide ...	...	...	7 g.
Ammonium iodide ...	...	...	3.2 g.
Ammonium bromide ...	...	...	1.2 g.
Alcohol ...	...	...	175 ccm.

Dissolve and filter

Add one volume of the above iodiser to three volumes of per cent. raw collodion, sensitise in a 10 per cent. silver solution, and develop with acetic sulphate of iron solution.

For the red printing plate the author used erythrosine plates, either bathed or commercial plates; the latter, he states, show a better gradation than the bathed plates; these plates require very strong correction filters, and their orange and yellow sensitiveness must be considerably dampened and the maximum action shifted to the bluegreen, which the author effects by the use of a filter of Janus green and auramine, the absorption of which is shown in Fig. 5, the upper curve being the sensitiveness of an erythrosine plate, and it will be seen that the maximum transparency of the filter coincides with the minimum of the sensitiveness.

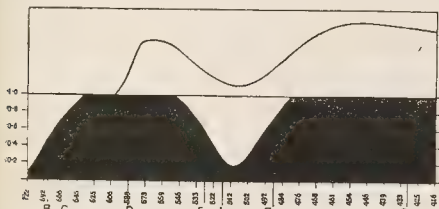


Fig. 5.—The upper curve shows the sensitiveness of an erythrosine plate; the lower curves the absorption of Eder's Auramine and Janusgreen filter.

Janus green G is an azo dye prepared from diethylsaffranine and β -naphthylamine; the composition of the actual filter is—

Water ...	...	...	100 cc.
Janus green solution 1 : 1,000 ...	...	...	10 cc.
Auramine solution 1 : 1,000 ...	...	...	10 cc.

a 1 cm. thickness. Whilst perfectly efficient, this filter is not anywhere absolutely transparent, and therefore it prolongs exposure and further auramine in solution, both in the dark and light, deposits a yellow crystalline precipitate, and therefore the author prefers a filter of new patent blue and ammonium picrate.

Baron Hübl's filter of acid green and potassium bichromate is—

Acid green solution 1 : 10,000 ...	...	...	10 cc.
Potassium bichromate solution 1 : 100 ...	...	...	10 cc.
Water ...	...	...	25 cc.

Cell thickness 1 cm., is very bright, and for some purposes, where only a moderate damping with the yellow screen is required, it is satisfactory, but it is hardly sufficient for an erythrosine plate, and the suppression near F reaches too far into the blue-green. The characteristic absorption is shown in Fig. 6.

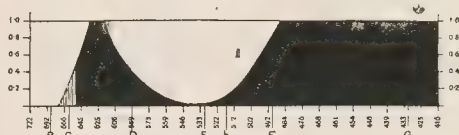


Fig. 6.—Hübl's acid green and bichromate filter absorption curve.

The best green filter for erythrosine plates is a mixture of ammonium picrate and new patent blue; this dye is Neu-patent blau 4 B, made by Bayer and Co., Elberfeld. Fig. 7 shows the absorption curves of three different concentrations of the blue dye, with approximately constant strength of the picrate. The best filter is—

Water ...	...	...	85 ccm.
Ammonium picrate solution 1 : 200 ...	...	...	30 ccm.
New patent blue solution 1 : 1,000 ...	...	...	15 ccm.

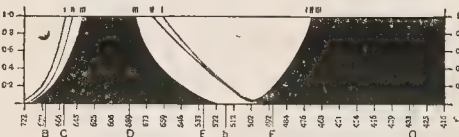


Fig. 7.—Curves of Eder's ammonium picrate and patent blue.

I. Shows the absorption of:—

Ammonium picrate 1 : 200 ...	...	...	30 cc.
New patent blue 1 : 1000 ...	...	...	15 cc.
Water ...	...	...	85 cc.

II. Shows the absorption of:—

Ammonium picrate 1 : 200 ...	...	...	30 cc.
New patent blue 1 : 1000 ...	...	...	10 cc.
Water ...	...	...	85 cc.

III. Shows the absorption of:—

Ammonium picrate 1 : 200 ...	...	...	30 cc.
New patent blue 1 : 1000 ...	...	...	5 cc.
Water ...	...	...	85 cc.

for erythrosine bath plates, whilst for many commercial plates, such as Lumière yellow and green sensitive, in which the maximum is not so near the yellow, the patent blue solution may be reduced to 10 cc., whilst for monobromofluorescine collodion plates it may be still further reduced to 5 cc., though frequently this is too strong, and excellent results are obtainable with a filter filled with plain water or with a little eosine dissolved.

The absorption curves of potassium bichromate, naphthol orange, and ammonium bichromate are shown in Figs. 8 and

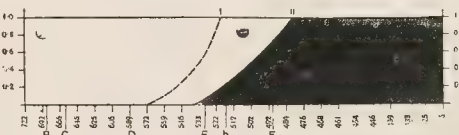


Fig. 8.—Absorption curves of potassium bichromate.

I. Solution 1 : 100. II. Solution 1 : 1000.

9; that of auramine in Fig. 10. Tables of wave-length absorptions are given of the above, but are hardly worth reprinting. It is as well, however, to translate Dr Eder's comment on the bichromate filters: "One per cent. solution of potas-

sium bichromate dampens the blue and blue-green very strongly and with a tolerably steep curve (see No. 1, Fig. 8). More dilute solutions 1 : 1,000 give a gradually ascending absorption curve from the green to the blue, and dampen the blue-violet light when erythrosine plates are used, so that with these satisfactory

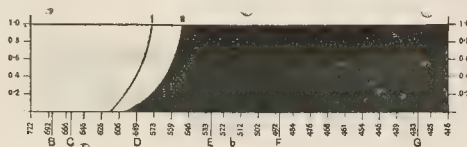


Fig. 9.

- I. The absorption curve of naphthol orange ... 1 : 500
II. The absorption curve of ammonium bichromate 200 : 1000

'colour correct' monochrome landscapes or copies of pictures may be made." Eder then states that the 1 : 1,000 solution is a very good correct damping solution for erythrosine plates and corresponds to the bright yellow glass screens, whilst the 1 : 100 solution is a deep screen, and these may be adopted as standards.

Ammonium bichromate solution, 20 per cent., is a very powerful absorbent, and may even be used 1 cm. thick as a selection filter, for trichromatic work, but it is not correct. A correct and practical filter is naphthol orange 1 : 500, the absorption of which is shown in Fig. 9. The naphthol orange used by Eder is "Orange II." of the Badische Anilin u. Sodafabrik, a tropaeoline, the soda salt of sulphanilic acid-azo- β -naphthol. Tolan red is not a satisfactory filter, but it makes in the stronger solution an excellent dark-room light filter.

For three-colour collotype the negatives must, of course, be reversed by one of the well-known methods.

In the half-tone block process the correct adjustment of the stops and exposure, as well as the suitable shape and variation of the stops are all-important, and therefore Dr. Eder gives the following data of the process used in the KK. Lehr- u. Versuchsanstalt, Vienna, with electric light and Voigtländer's apochromat collinear or Steinheil's orthoscope of 40 cm. focus

I. YELLOW PRINTING PLATE.

Filter = Plain water.

Plate = Wet bromo-iodide collodion.

Preliminary exposure on white paper = Circular stop F/50, 40 seconds.

Exposure on subject = F/25—F/18 circular stop, 2—3 minutes.*

Exposure on subject = Square stop () F/12, 40 seconds.

II. RED PRINTING PLATE.

Filter = Ammonium picrate solution 1 : 200 ... 30 cc.

Water ... 85 cc.

New patent blue solution 1 : 1,000... 5 cc.

Plate = Albert's emulsion with monobromofluoresceine.

Preliminary exposure on white paper = Circular stop F/50, 30 seconds.

Exposure on subject = Circular stop F/25, 2 minutes.

Exposure on subject — Square stop, as above, F/18, 1 minute.

(If harder or more contrasted negatives are desired, a third exposure, with square stop, F/18, of 20 seconds, should be given.)

III. BLUE PRINTING PLATE.

Filter = Naphthol orange 1 : 500

Plate = Collodion emulsion with ethyl violet monobromofluoresceine, as described above.

* The smaller stop F/25 is used for great reduction of size up to one half. The larger stop for smaller reduction up to equal size.

Preliminary exposure on white paper = Circular stop, F/50, 40 seconds.

Exposure on subject = Circular stop, F/25, 1½—2 minutes

Exposure on subject = Square stop, above shape, F/18, 50 seconds.

The collodion emulsion negatives should be developed with hydroquinone developer, fixed with hypo, and treated as ordinary half-tone negatives, iodised to a yellow colour with iodine-iodide solution, reduced with cyanide, and blackened with sodium sulphide. The dried negatives should be coated with 5 per cent. gelatine solution, and then varnished.

Although of minor interest, the following curves are included:

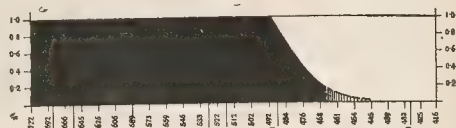


Fig. 11.—Absorption curve of ammoniacal copper solution (CuSO_4 , 30, water 1,000, NH_3 q. s.)

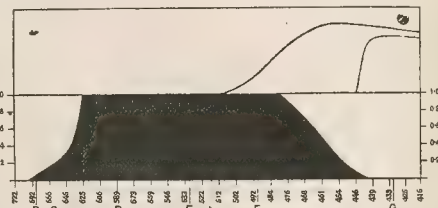


Fig. 12.

The upper and longer curve shows the spectrum sensitiveness of gelatino-bromide of silver, the lower and shorter curve that of iodised collodion. The absorption curve of methyl violet 1 : 10,000 is shown in the black curve above, Fig. 12.

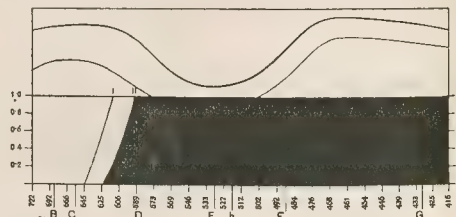


Fig. 13.

The uppermost and complete curve shows the sensitiveness of a red sensitive gelatino-bromide plate with a generous exposure; the middle curve the same with a shorter exposure. The lowest figure shows (1) the absorption of Tolan red 1 : 1,000, and (2) Tolan red 1 : 4,000, Fig. 13.

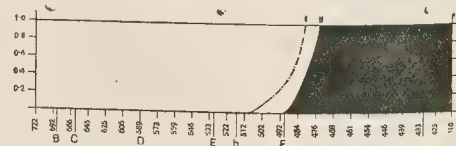


Fig. 14.—Absorption curves of auramine I. auramine 1 : 15,000. II. auramine 1 : 800.

In all the above absorption curves the wave lengths and Fraunhofer lines are shown below, and the extinction coefficients right and left of each curve.

CRYSTALLISATION UNDER THE MICROSCOPE.
I.

In a previous issue of this journal, the writer reproduced some photo-micrographs of pyrogallic acid crystals. The growth and formation of these crystals when observed under the microscope affords a very interesting and curious spectacle, as the accumulation of crystals from the first visible speck till the complete evaporation of the solvent in the field of view, can, with the expenditure of a little time and trouble, be readily followed. A low power objective should be used, a $\frac{3}{4}$ in. or $\frac{1}{2}$ in. glass being the most suitable for the purpose.

For observing the formation of crystals, pyrogallic acid dissolved in acetone makes a very convenient solution. With water as the solvent, evaporation takes place very slowly, except the solution is placed on a glass that has been previously warmed. Ether evaporates too quickly, and the crystals begin to form almost immediately the solution is placed on the glass. Methylated spirits give good results, but is not equal to acetone. The crystals are more varied in character when acetone is used than

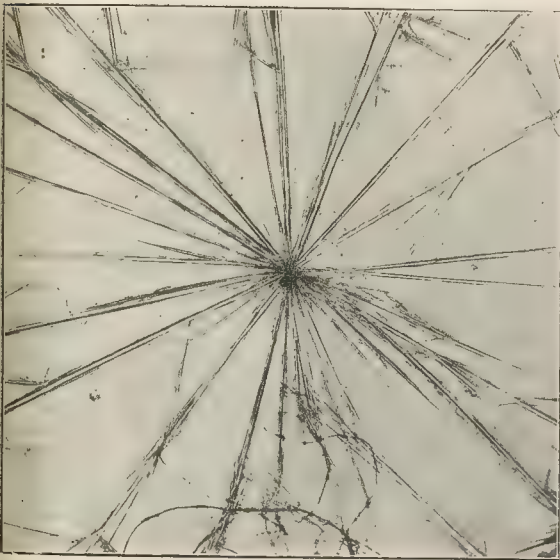


Photo-micrograph of pyro-crystals with straight radiating lines. 2" obj.

those obtained with pyro or methylated spirit, and very beautiful results are obtained by the use of this solvent.

A few drops of a fairly strong solution should be placed on a clean glass slip and spread evenly over the surface; it is then placed on the microscope stage, and the objective is focussed on any specks that may be in the solution, so that no time will be wasted in obtaining the focus when crystallisation begins.

When a crystal is formed, that part of the slide is moved into the field, and the glass is kept moving to follow the course of evaporation. The crystals form very rapidly, and shoot out into straight lines across the field of view. It will be found, as a rule, that the deposits are formed in a series of shell-like designs, the lines of each shell radiating from a common centre. The most remarkable feature of these crystalline deposits, is the wonderful evenness and regularity of the radiations. This regularity is shown in a striking manner in the illustration given here from a photograph of pyro-crystals, taken with a two inch objective. Straight lines radiate in all directions from the centre of the plate, and are arranged in regular intervals

like the spokes of a wheel. This photograph was taken from a solution of pyro in water. With spirituous solutions, the radiations are not quite so regular, and are generally curved towards the centre.

The crystals will sometimes be observed to form in patches over various portions of the glass, at other times crystallisation begins near the edge of the solution, and from a single point spreads rapidly and evenly over the whole plate.

A curious feature of crystallisation is that a specially rapid action can be set up in one part of the glass which effects a complete deposit of crystals in a very short space of time. This rapid crystallisation often overtakes another isolated and slower moving deposition, and the more powerful force immediately surrounds and passes beyond the weaker, leaving the latter with its distinct markings as a kind of island in its wake. The lines of the more rapid deposit will not be deflected or altered by the obstacle, but continue till they meet another equally vigorous action, or the whole space of the plate is crystallised. This curious effect of the power of crystals to cause a rapid deposition of others is one of the most interesting features of the phenomenon of crystallisation, and will often be noticed when the deposition is being observed under the microscope. The observer will find considerable difficulty in seeing the first crystal form, but if a few dozen prepared glasses are carefully watched, deposition will commence in the field of view of two or three of them. For the purpose of observing the first crystal form, the glass slip must be kept in one position, as moving the solution would prevent accurate observation. The initial crystal is usually first visible as an oblong speck, and immediately becomes the centre round which other crystals rapidly form.

Straight lines are formed, and these move quickly across the field of view; when followed, they are generally found to keep their directions and shape till a similar deposit is encountered, or the edge of the solution is reached.

When the crystals are being formed in straight lines, like those in the reproduction, it would be thought that a speck of insoluble matter on the glass slip would attract the crystals, and deflect them from their course, but this does not occur, and even a large obstacle in their track does not impede progress, except it lies directly in the path.

In the foregoing paragraphs the only substance referred to is pyrogallic acid, this is specially mentioned because it will be found in every photographers dark room, and is besides soluble in all spirits or water. There are, however, any number of chemicals that will give beautiful effects of crystallisation, and most of them will form with some characteristic tracery. All kinds of sugar solutions, for example, form splendid designs in crystallising, but with sugar the polarising apparatus should be used.

No satisfactory explanation, or even working hypothesis, has yet been given as to the cause of the phenomena of crystallisation and the reason why some substances crystallise in elaborate and delicate structures, while other, in many respects similar, bodies are deposited from solution in an amorphous mass, with no definite arrangement of particles.

J. I. Pigg, F.R.P.S.

THE Röntgen Society's next ordinary general meeting will be held on Thursday, April 7th, 1904, at 20, Hanover Square. A large and varied exhibition of novel apparatus is promised by different makers. Tea and coffee will be provided. Smoking will be permitted. Members are especially invited to send skiagrams, tubes, or any original apparatus that has been used in connection with the work of the Society. Members living at a distance and unable to attend are invited to forward anything they have of interest to the Society's Room, 19, Hanover Square, addressed to J. H. Gardiner, Esq., who has kindly undertaken to see that they be exhibited, and returned to the owners within fourteen days of the meeting.

INTENSIFICATION WITHOUT METALLIC SALTS.

[A paper read before the London and Provincial Photographic Association.]

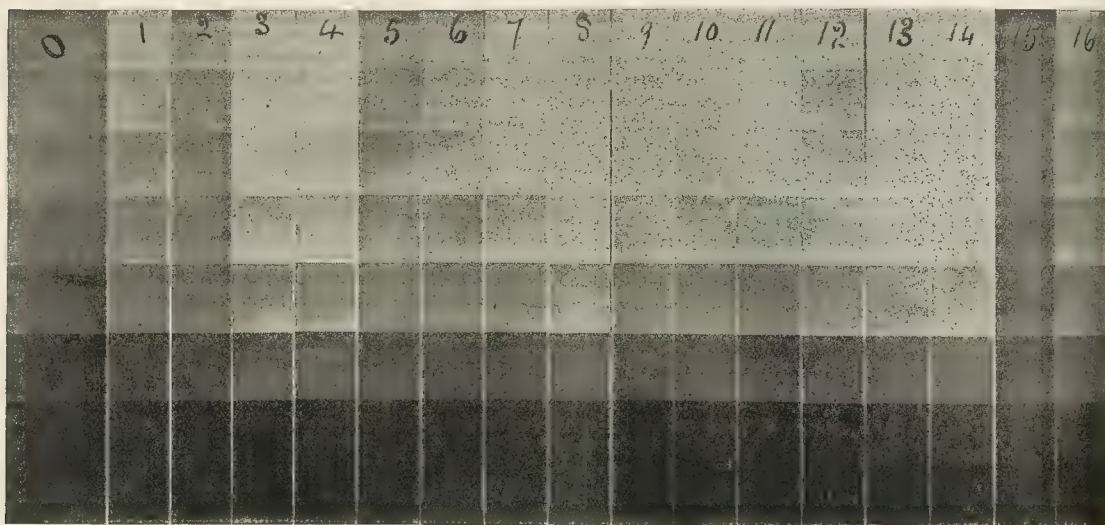
My subject, I must acknowledge, is not one calculated to inspire you with much enthusiasm or eagerness to listen to my humble remarks upon it. But this time there is just one saving clause, and that is, that it is to be done without the deposit of any metal upon the silver image in the film. With this qualification you may bear with me.

I have heard the idea that we should think of intensifying our negatives ridiculed with great energy. Still, I believe that there are reasons to expect that the photographer who desires a certain effect in his print will occasionally resort to intensification. There has been for a long time past a preference for soft and full-toned images, and most photographers aim to get thin and delicate negatives. Striving with all his means to avoid harshness, he will sometimes find the result too thin a negative to give the print he wants, and so must use some method of intensification. I find that as a rule the careful worker does not require a very great amount of increase in density; but an increase is necessary at times to give that

use of this process by me was during the year 1890 or a little earlier. I then used to intensify the image on bromide paper, and I have here some strips of a print intensified by this means, which have not faded in the least. These were shown at a meeting of this society at the time I mention. You will see there is one strip which was intensified with Wellington's silver formula; this has faded very much.

These pieces form a valuable proof of the permanence of this process, which is carried out by rehalogenising the silver in the film, and redeveloping with various developers, and the amount of increase of density with some developers is truly astonishing.

My attention was directed to the suitability of this process for the intensifying of negatives about eighteen months ago, when I used it for the removal of some stains from a negative brought here by Mr. A. L. Henderson. I did not tell you at the time how I accomplished this, but I tell you now. The film was chlorised, washed, and redeveloped, when it was found that the stains had disappeared, this proving pretty clearly that they were not silver spots and stains.



fullness of image which the weak negative cannot. There are, of course, as you know, many causes which tend to the production of negatives which are too thin to give a presentable print. The greater the variation in subject and conditions, if one has the desire for softness in the result, the greater are the chances for the necessity of intensification. Now that we have arrived at the conclusion that we sometimes require it, I will talk of the means of producing an increase of density.

The methods in use, I believe, all involve the deposit of either more silver or some other metal upon the image. Many of them are very unstable. Two of the negatives which I shall show you this evening I found in a most terrible condition, caused by being intensified with the ferricyanide and uranium method. The surfaces of them were covered with dense iridescence. This I removed by friction with a rag pad and methylated spirit. Then I removed the intensification by soaking in ammonia and water.

I have now intensified them by the method which I shall describe to you. This process I believe I can safely say is quite permanent, as nothing is added to the image which can fade. I have some evidence to show you in this direction. The first

The image may be chlorised or bromised. The following formulae have given satisfactory results:—

TO CHLORISE.

Bichromate pot.	5 grains.
Chloride pot.	10 grains.
Hydrochloric acid	4 minims.
Water	1 ounce.

TO BROMISE.

Bichromate pot.	5 grains.
Bromide pot.	10 grains.
Hydrochloric acid	4 minims.
Water	1 ounce.

The bichromate may be kept ready by dissolving $\frac{1}{2}$ oz. in 5 oz. of water. Take 50m. of this to each ounce of solution you require. This might be used stronger, but the result would be the same, only it would act a little quicker. The negative is soaked in water, or put direct into the solution. I advise that it is kept for a little time after it is bleached right through. The plate is then thoroughly washed; I have found thirty minutes ample. I then choose the developer accord-

g to the amount of increase I require. I will now call your attention to the strip negative of graduated exposures, which I have made for the purpose of showing you the effect of chlorising or bromising, and of several developers. The whole of this series is one exposure, and, of course, developed at the same time (see illustration). The exposures and development (metol) were worked to produce a poor negative, which would not give a presentable print. You will see by the strip marked O that it will not do so, this piece having received no treatment. I must tell you that No. 7 has been intensified with mercury followed by ammonia and water. This I made as mark for comparison as at the present time, I dare say, it is used more than any other intensifier. No. 2, redeveloped adurol, gives very high increase; this was chlorised. But No. 12, which was omitted and redeveloped adurol, gives a very considerable increase—in fact, not far away from mercury. Nos. 5 and 6 were chlorised, washed, and No. 6 was exposed to light for the period of three tints of a Wynne's meter, developer metol; the one exposed to light is the denser. I have since doing this found that by prolonging the development for an hour more the same effect may be obtained as by the exposure. I must tell you that all these experiments have been carried out in the presence of a gas flame in a room where weak daylight enters when the door is open. Nos. 10 and 11 were bromised, washed, developed with metol, after No. 11 had been exposed three tints of Wynne's meter. These are up to mercury, No. 11 showing slightly more than No. 10. No. 1 chlorised, No. 9 bromised, and both developed with hydrokinone, show considerable increase, No. 9 slightly more than No. 1. No. 13 chlorised, No. 14 bromised, both exposed to three tints Wynne, developer pyro 2 gr., soda 4 gr., sulphite 4 gr. This gives great density; No. 14 much more than mercury. No. 4 chlorised, No. 8 bromised, both developed with pyro 2 gr., ammonia 2m., sulphite 4 gr.; these are up to mercury. No. 4 a trifle less of the two. No. 3 is chlorised, developed pyro soda as Nos. 13 and 14. Nos. 15 and 16 were iodised, compared with a 2½ per cent. solution of sulphite of soda, or 10 gr. 1 oz. of water, washed. This would not develop after any amount of exposure to light. This fact, I believe, is generally known—that you cannot develop an image on iodide of silver gelatine. This I have found a way of doing, but am debarred by the use of my paper. In No. 16 I reduced the silver by a weak solution of sulphide of ammonium. You will see there is very high increase of density. Temperature plays its part in these as in other chemical operations. If the temperature is below 60 F. the redevelopment is very slow—in fact, sometimes will be as much as ten minutes in starting; but if it is above this the development completed in from two to ten minutes. If you wish only to intensify the delicate tones you can do so by soaking the plate in water, then slightly chlorise the surface of the plate, then wash and redevelop. In this case you must have plenty of solution so that it will act all over the plate at once. The results by this process almost smack of a little photographic legerdemain, as we get, or appear to get, something out of nothing. In some cases the brown-coloured image consists of greater printing value; but where this is not the case, as with hydrokinone, there is great increase in density. In one negative I show you the image was a weak brown, and it was developed hydrokinone and you will see by that portion it is black. I must remind you that none of these prints from negatives have been shaded in the printing. You might be led to think so by the effects they show.

REDUCTION OF DENSITY.

With a very slight variation in the process it can very actually be used for reducing density, perhaps most parti-

cularly in the reduction of contrasts. By this method you can reduce contrasts to any extent you please. To proceed, you chlorise the image, wash, then redevelop; it must be carried much further than the density you require; then rinse with water, and put in a hypo bath. The peculiarity of this process is that you do not only reduce the densest parts, but you increase the density of your delicate tones according to the developer you use. This is what is very frequently required, but I know of no other process that will do this. In the use of persulphate of ammonium, a trifle is lost in the shadows. If it is desired to take a thin coat off the image, slightly chlorise, wash, and fix. All the portraits I show you treated by this method are very old, and I think they will mark a record for their superlative badness. The improvement in them is better seen than described. J. S. TEAPE.

PRINTING, AND OTHER MATTERS.

By THE AMATEUR OPTICIAN.

I AM inclined to the view that matt surface printing out paper is somewhat neglected by our amateurs. Why this should be so I have no idea. The paper is tough and fairly strong—certainly makes more so than others; it is easy to work, prints quickly, keeps in good condition a reasonable time, is susceptible to all the recognised baths, and has a delightful surface, which takes the colour and spotting brush readily. If treated with an alum, or formalin, bath—after washing, and before the final washing—it may be dried neatly and handily between folds of blotting paper, and kept flat. It is not troublesome to mount, and, as I have said, takes the usual spotting mediums with no trouble whatever. Any amateur of the reasonable order who likes a nice clean print, with detail and pleasant colour, should go in for the matt P.O.P.

I agree all the way with "Free Lance" on the matter of residues. For many years I have never ceased the recovery of silver. Toning baths, in amateur use, are perhaps not much worth, but "fixings" from plates and paper, always in my practice, are put into a tub and treated in the orthodox way, so as to yield, in course of time, a fair crop of sulphide. Anyone who can do so may make more out of his residues than he would, quite naturally, otherwise do through a refiner—if he is able to turn the recovered silver to some purpose in his own practice. The chemist, for instance, will use the residue—which may be easily and quickly turned into oxalate or nitrate of silver—for making marking ink or hair dye, the former having by far the best sale. A very good formula is the following:—

Silver oxalate	1 oz.
Ammonia solution, .880	1½oz.
Mix, and add	
Archil	2 oz.
Gum acacia powder	1½oz.
Water to make	8 oz.
A dye which has had a very fair sale for many years may be made from the formula appended:—	
Nitrate of silver	grs. xx.
Sulphate of copper	grs. vj.
Ammonia solution, .880	q.s.
Rose water to	6 drs.

Dissolve salts in water (½oz.), add the ammonia a few drops at a time until solution is quite clear and bright, then make up to six drams. In addition to the above I have turned the residue into caustic pencils, using what is known as a "bougie" mould. They were not, I confess, so slightly as the usual commercial article, but they were saleable and effective.

I fear I have said some hard words about bromide prints in these columns at various times, but my readers will have noticed no doubt that I draw a distinction between the bromide print *per se*—the bromide of the professional photographer and of the

amateur who is wishful to attain to a similar standard of technical work—and the art photo, chemico bromide, which is, happily, seen nowhere out of the exhibition rooms. Quite naturally I take an interest in the matter, because the process has been used by me from the earliest days, when the enthusiast got sample sheets at one and sixpence a time from Greenwich; when demonstrations were widely advertised and attended by crowds of photographers from near and far, anxious to see enlargements made so easily with the new paper, when moreover, it was a bold thing, and somewhat risky, to do your exhibition prints on the new paper—and show them! I write from experience, because up to three years ago I had a frame for bromide prints which were shown in a certain exhibition eighteen years ago, or thereabouts, and were the only bromides therein. The frame and contents unfortunately came to grief in a fire, but at the time were very clean, and of good colour. I am ashamed to confess that they were printed without clouds—as indeed were many other photographs—otherwise they were technically good. What effect they had on the judges was, however, quite negative. Whether they quite knew and understood what the prints were is doubtful. Anyway, no one, so far as I heard, went into ecstasies over the artistic tone and surface, and for all that, with the one single, but important, incident of the clouds, they were, I repeat, when last I saw them, a very good average print.

No one disputes the fact that bromides may be toned in a great variety of colours, more interesting than beautiful, perhaps, and doubtfully permanent. But, after all, is there anything more effective in this way than the rich, velvety, engraving black, which may invariably be got when the exposure has been accurately timed. In the course of his address to the R.P.S., Mr. Winthrop Somerville made use of the following sentence, which puts into a very compact space what has made columns of printed hints on bromide work:—"Development may be either rapid or slow—the latter easily obtained by diluting the bath—but however the developer may be slowed down, development should be carried to the farthest limit of the bath." Very briefly, I may tell the young bromide printer that he has only to follow up this hint and he will have no need of intensification or toning baths. How easily things go wrong with bromide prints. Lantern slides are bad enough; they are never off one's mind until dry. Bromide prints are in the same category. Only a few weeks ago I lost half-a-dozen first-rate prints in the simplest way. They had been placed, from the washing water, on sheets of clean blotting paper, and set down for a few minutes upon a bench in the work-room preparatory to being removed to a safe drying cupboard. An assistant started to make some fresh amidol developer, weighing out the chemical only a few feet distant from the prints. Long before the latter were dry several dark brown spots came out on each, and, needless to say, the prints were as good as waste paper. Minute particles of the fine light powder would be, no doubt, conveyed by the slightest movement in the air, and would settle upon anything damp in the vicinity. The moist surface of the bromides would, of course, receive their share and suffer accordingly.

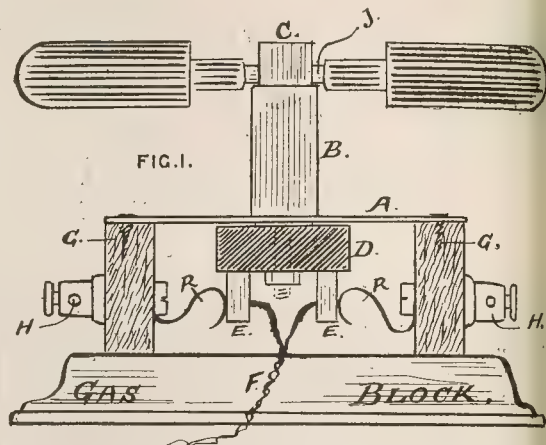
ROYAL Photographic Society of Great Britain.—Ordinary meeting, Tuesday, April 12th, 1904, at 66, Russell Square, at 8 p.m. "Demonstration of the Author's Method of Determining the Focal Length and the Aberrations of a Photographic Objective," by Reg. S. Clay, D.Sc.

MESSRS. Charles Smith, Sons, and Co., Limited, Deritend Bridge, Works, Birmingham, the well-known manufacturers of gas and electric fittings, send us a useful diary and blotting pad for the editorial table. In addition to a diary interleaved with thin blotting, there are special spaces for engagements, and a large pad for writing upon. The book forms a handsome addendum to one's office requisites. A catalogue of the company's specialities is also to hand. This is a beautifully-illustrated production, in which the half-tone process is lavishly employed.

A SIMPLE CURRENT REVERSER FOR SPARK COILS.

A SPARK coil is very incomplete without a commutator. One of a very simple kind, and much easier to make than the usual variety fixed to coils, is figured below. This is a modification of one illustrated in Mr. Hare's book on large induction coils, and on all fours with a reversing switch fitted by Carlisle and Watson of New York (I think) to their model motors and electric cars.

A. is a piece of stout sheet brass, about 1in. by 3in.; in the

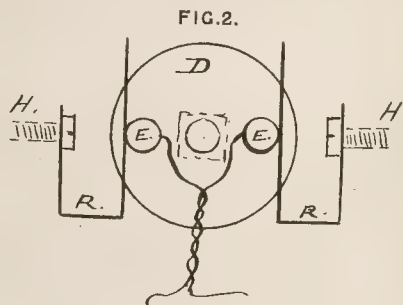


centre of this a hole is made to exactly fit a piece of brass tubing B. (triblet tubing used by makers of fishing rods will do for this).

B. is about an inch in length, and should be soldered to A. and fixed upright.

C. a piece of brass tubing half an inch longer than B, through which it passes; it should make rather a tight fit in B. In one end of C. fix, by soldering, a small brass bolt, the head of which should just go in the end of tube, and may there be fixed. At the other end of C. drill two holes exactly opposite each other, and large enough to take a piece of stout brass rod, J. (about two inches); this also may be soldered.

D. is a thick disc of ebonite. This is secured to the bottom end of C. by, having drilled a hole, passing it over the brass



screw and securing it with the nut. It follows that if the handle or T-piece be turned, the ebonite disc is revolved, anything mounted upon it being quite insulated. The T-piece should be fitted so that the ebonite disc is kept close to the plate A., and works without shake.

E.E. are two brass studs securely inserted at opposite sides in the under side of the ebonite disc; securely soldered to each is one strand of the best silk and rubber-covered twin flexible

ire. The best way I think to do this is to get two pieces of the smallest gauge copper or brass tubing, 3-16th, say; drill a small eye near one end, and having bared a strand of the wire pass through the hole and out at the end. Then plug this end with a piece of brass rod, and make a perfect joint with solder. The two studs, or short tubes, being done in this way, may then be securely fixed to the disc as shown. They are, of course, perfectly insulated one from the other by the rubber and silk covering.

The brass platform, A., is mounted on two wood (mahogany) blocks, G.G.; these again glued to a gas block. Two terminals are then attached, as shown, H.H., and hard brass or German silver springs adjusted, R.R., so as to make perfect contact with the studs E.E. See here the plan, Fig. 2, where is shown the under side of the ebonite disc, the two studs, and the two springs pressing against them.

Ebonite or wood handles are fitted to the T-piece, and the protruding end of C. may be covered with a little ebonite cap.

The twin wire is attached one strand to the contact pillar and the other to one of the primary wires on the coil. The wires from the battery are then brought to the two terminals, H.H. The handles being in a line with the base, as in the figure, a current passes, which current is reversed if the handles are turned the reverse way. With the handle set at right-angles to the base the current, of course, is switched off.

Mr. Hare's remarks accompanying his design of switch may be quoted:—"In the ordinary commutator there are four points where resistance may be found, viz., at the two bearings of the cylinder, and at the two springs. These may be reduced to two, and the contact much improved."

Exhibitions.

THE NORTHERN PHOTOGRAPHIC EXHIBITION.

THE intention to hold a Northern Photographic Exhibition annually in succession at Liverpool, Leeds, and Manchester, and organised by the photographic society of each city, respectively, in turn, is a good idea, the matter from whence derived. It has fallen to the lot of Liverpool to start the ball rolling, and nothing but congratulations can be offered to the energetic Amateur Photographic Association of the city on the energy for the thoroughness with which they have entered on their task, and the unqualified success they have achieved in accomplishing it. Whether it was the avowed intention of the Liverpool Society to rival the exhibitions of the Royal at the New Gallery we cannot say, but an exhibition of nearly 800 selected works by the foremost photographers of the day; admirably hung in a suite of rooms acknowledged to be the best in the kingdom for the display of pictures; about 1,000 first-class competition lantern slides displayed in a novel manner that can only call for admiration; a fine collection of trade exhibits, a series of instructive and interesting lectures during the run of the show, and the whole officially opened with great éclat by the Lord Mayor of Liverpool giving a fashionable soiree, stage managed with every ability—offers such material for comparison. That the Liverpool Society was fortunate in securing such magnificent quarters for their exhibition at the Walker Art Gallery there can be no denying, and to their credit be said they have endeavoured to make their show worthy of its environment.

The exhibition rooms of this spacious institute are peculiarly well lit and commodious, and, moreover, the civic gallery is the one, if not the only, place in Liverpool to which the public will come readily to look at pictures. During the winter the committee has worked hard to make the exhibition a success, under the chairmanship of Dr. Llewellyn Morgan, and with the indefatigable Mr. C. F. Inston as honorary secretary. It was decided that the prize awards should be in the form of a decorative plaque, and in order to secure a new and original design for this, a special prize was offered to the students of Mr. C. J. Allen

at the School of Architecture and Applied Arts. This was won by Miss Phoebe McLeish, with a clever composition very reminiscent of the poster designed for the Southsea Exhibition three years ago.

Of the four vice-presidents, Mr. E. Rembault Dibdin, took in hand the production of the catalogue—a splendid book, worthy of the exhibition. Among its attractions a specially designed cover, a photogravure frontispiece, a colour reproduction in facsimile of Lord Leighton's "Bath of Psyche," and numerous full-page half-tone blocks reproducing pictures on the walls. Dr. C. Thurstan Holland was chief of the Hanging Committee, and right well has he accomplished his task—the pictures being hung with commendable taste. Mr. Fred. A. Schierwater has charge of the finance, and to Dr. John W. Ellis fell the task of presiding over the Lantern Slide Section. There is little doubt that the original and attractive form in which the collection is displayed is one of the features of the show. One of the smaller rooms has been completely darkened, and the slides, securely fixed in perpendicular frames around the walls, are illuminated by electrically lit reflectors placed at an angle behind. The slides can thus be viewed by transmitted light, with comfort and dispatch, while a comparison of the competitive sets is made easy. It is a capital idea well carried out. Needless to say, Mr. C. F. Inston has been practically omnipresent throughout the whole period of organisation, and his capable management of the entire affair has undoubtedly secured the complete success of the venture. We understand that all pictures entered passed before the judges, who were themselves the selecting committee, and about 250 were rejected. In the pictorial sections twelve copies of the prize plaque were awarded to competitors by the judges, who were Messrs. Harold Baker, A. Horsley Hinton, and Alexander Keighley. Mr. Thomas Huson, R.I., R.F., who was to have acted with them, was unfortunately prevented by illness. In the scientific section the judges were Mr. Douglas English, B.A., and Dr. Charles A. Kohn.

We wonder why it is that at most exhibitions, particularly those with more or less ambitious intent, as in the present instance, there is always one prominent award that does not meet with approval.

When a picture is dubbed "the best picture in the show" and receives the premier award as such, one certainly looks for something above the average. Whether the visitor will be disappointed at Liverpool will depend much on the individual. No. 235, "Storm Breaking," by J. H. Canevali (Hon. Treasurer of the Exhibition), receives this distinction (silver gilt plaque), and in consequence emerges from a comparative obscurity to a somewhat unenviable notoriety. We say comparative obscurity, because a small print mounted on a broad glaring white mount in a frame with a gilt slip, can never be altogether obscure in the company of a collection of tastefully framed pictures. We wonder what its effect will be on this earnest body of workers, who after strenuous effort, have not only brought together a fine and representative collection of the best pictorial work by photography, but have penetrated into the very stronghold of art in one of the greatest art-loving cities of the north? The artistic patrons and habitués of the Walker Art Gallery who come to see the show naturally turn for information and inspiration to the "best picture in the exhibition," as representing the best that this claimant for entry to the Temple of Art can produce. They are shown No. 235. The moral is obvious.

Three silver plaques are awarded, the first of which goes to Dr. Llewellyn Morgan (Chairman of the Exhibition Committee), for No. 341, "The Font, York Minster," which has good quality, but is otherwise quite ordinary in conception, especially in comparison with some of the adjacent masterly architectural studies by Fredk. H. Evans. It is a curious fact worth noting that this print is also mounted on a white mount, which somewhat "kills" it. Is this the first sign of a return to the type of mounting popular twelve or fourteen years ago at exhibitions, before the vogue of the closely framed photographic print? We wonder.

No. 157, "In Pensive Mood," by J. Spark, secures the second silver plaque. It is an unconventional figure study, but nevertheless good straightforward work. The sitting figure does not strike us as taking its proper place in the frame. The third silver plaque goes to J. C. Coultas for No. 199, "The River Aire at Leeds," a charming picture, broadly and poetically treated, containing good composition and effective technique. W. T. Greatbatch takes the first bronze plaque with his well-known picture, "The Orchard" (No. 151). This picture received the R.P.S. medal a year or two ago, and has a charm of its own that could not be overlooked.

Another R.P.S. medallist, C. F. Inston, deservedly scores with his equally well-known "Whence, and Whither?" (No. 173). An excellent reproduction of this veteran appears in the catalogue. Mrs. G. A. Barton's "Village Belle," a good example of this worker's charming figure studies, secured the third bronze plaque, while the fourth is awarded to T. Lee Syms for "A Portrait" (No. 357). This is one of the best portraits in the room, and is, moreover, straightforward photography. It has an academic touch about it that removes it far beyond some of the efforts in gum in its vicinity.

Looking round the exhibition we note many good things deserving of notice. C. F. Inston's fine sea- and shipping studies attract at once, and leave a lasting impression of good sound work, (No. 9) "After Rain," (191) "The Storm Lifting," (464) "The Sea Shone Glorious as a Silver Shield," and (345) "A Study," are, in addition to his medalled picture, very fine indeed. The last is a particularly happy portrait. The fine works lent by Messrs. A. Horsley Hinton and Alexander Keighley, of course, call for immediate attention, and represent landscape photography at its best. Charles Job is also represented by three of his charming pictures that call for nothing but praise.

William Crooke's dignified portraits, too, teach a lesson in good, clean photography that ought to be taken to heart by some of the slipshod workers in gum, whose portrait work will be found on the walls.

Many other well-known workers have contributed specimens of their work to the exhibition, and it is difficult to imagine what the award list would have been had all the non-competitive work entered the lists for an award. One of the finest pictures in the exhibition is undoubtedly (No. 10) "Winter," by Thos. Wright. The quality of this snowscape is superb, while the composition is beyond reproach. Why, also, the judges overlooked Percy Lewis's masterpieces will probably excite considerable speculation. No. 122, "A Venetian Waterway," (148) "An Italian Fruit Stall," (352) "A Misty Morning," (131) "An Old Archway," are each perfect specimens of camera craft, the last being probably the best thing Mr. Lewis has done, which is saying a good deal. Notable work by W. R. Bland, Ralph Robinson, Harold Baker, Fredk. H. Evans, F. M. Sutcliffe, J. Craig Annan, and David Blount, also calls for notice, while among other well-known contributors are J. Page Croft, J. C. Warburg, Miss Agnes Warburg, J. M. Whitehead, W. A. Clark, W. A. I. Hensler, Arthur Marshall, Dr. C. Grindrod, J. Appleby, and F. J. Mortimer. We missed the latter's well-known "Wind Sea" from the walls, and wonder why it was not sent.

Space forbids mention of many other pictures in the collection that call for notice. In Section II. (Scientific and Technical Prints), some fine examples of X-ray work is shown by Dr. Thurstan Holland. Realistic photographs of live snakes and lizards by Frederick Graves; bird pictures by O. G. Pike; dainty photographs of "Mouse and Marten," by Douglas English, and a clever series of X-ray work by W. M. Martin, the latter being awarded bronze plaque for a series illustrating the development of the frog.

Section III. (Lantern Slides, Pictorial), includes, as we have mentioned previously, a very fine collection of slides indeed, both in regard to numbers and quality. The silver gilt plaque goes to James Shaw for an excellent set of great merit. Silver plaque to H. J. Houghton for a fine set of snow scenes; and bronze plaque to Ellis Kelsey for a series of figure studies at night. In the section for Scientific and Technical Slides, the awards are silver gilt plaque, Fred. W. Saxby for three sets of "Polycistins (fossil radiolaria)" by dark field illumination; silver plaque, B. H. Bentley, for studies in the "Pollination of Flowers."

In Section III.—Stereoscopic Slides—a bronze plaque goes to F. G. Tryhorn for a set of six.

The trade exhibitors make a goodly show and their stalls occupy the whole of the "Marlborough" room and part of the large water-colour room. At night the "Marlborough" room presents a remarkably effective appearance—the stalls being illuminated by electric light, and the scene is a busy one. The Brooks-Watson Camera Co., Ltd., of Great Homer Street, Liverpool, in particular has a very elaborate stall surmounted by a gilded cupola and graceful hangings. On the occasion of our visit the energetic and genial manager, Mr. Bynoe, was exploiting the firm's wares, which include the Rajar changer, the new Rajar

camera, and the Clerion films. Messrs. Sharp and Hitchmough have a central stand, and display a very fine range of the Aptsu specialties including hand cameras, enlarging lanterns, backgrounds, lantern sheets, and, in fact, everything that the photographer can possibly desire. Mr. Hitchmough will attend to him personally at the stall at the factories, 101 and 103, Dale Street, Liverpool.

Messrs. J. Griffin and Sons, Ltd., of Sardinia Street, London, fortunate in having secured a stall in the exhibition room itself. Being thus isolated, their representative is likely to come in for a full share of attention, and which he is sure to take advantage of to demonstrate the various grades of velox and carbona paper on view, and of specialties of this well-known firm, including cameras, printing frames and the new bromide linen. In Room 2, Messrs. Evans, Sons, Lesch and Webb, Ltd., of 56, Hanover Street, Liverpool, also have a stall and show the "Barts," "Hanover," and other cameras, developments, etc. On the wall in Room 2 are collections of professional work by Julius A. Kay, of Bold Street, Liverpool; Richard Brown, 35, Bold Street, Liverpool, who shows carbon reproductions from the permanent collection of pictures in the Walker Art Gallery (by permission of the Liverpool Corporation), and Messrs. Brown, Barnes, and Bell, Bold Street, Liverpool, who show enlarged and direct portraits.

In Room 4 the trade stands include, in addition to those already mentioned, attractive displays by Messrs. J. Lizars, 71, Bold Street, Liverpool ("Challenge" cameras and all "Challenge" manufactures); F. V. A. Lloyd, 17, Lord Street, Liverpool (Sanderson hand and stand Mirals and Reflex cameras and general apparatus); W. H. Tomkinson, 81, Dale Street, Liverpool (half-plate outfits, hand cameras, etc.); Messrs. W. L. Parkinson, Ltd., 62, Dale Street, Liverpool (all photographic materials, etc.); Messrs. Archer and Sons, 73, Lord Street, Liverpool (their well-known hand and stand cameras, lanterns, etc.); Julius A. Kay, 66a, Bold Street, Liverpool, and at Southport (direct and enlarged portraits and miniatures on ivory); Messrs. Mowll and Morrison, The Arcade, Lord Street, and 45, Hardman Street, Liverpool (examples of portraiture, etc., etc.); the Autotype Company, London (display of Autotype reproductions of pictures, etc.); F. J. Cooper, 32, Hamilton Square, Birkenhead (examples of portraiture, etc.).

WOLVERHAMPTON PHOTOGRAPHIC SOCIETY.

THE Wolverhampton Photographic Society's third annual exhibition was opened by the Mayor of Wolverhampton (Ald. Levi Johnson) at the Y.M.C.A. Rooms, Darlington Street, on March 24th.

As the exhibition is a local one, perhaps the Classes I. and II. for members will be first sought by visitors. The first-named is open to beginners who have never taken an award, and Class II. is open to all members. Some of the pictures have been shown in the principal exhibitions in London. Amongst them are examples by Messrs. Reade, Cox, Gale, H. M. Painter, and Murray. Mr. C. J. Reade is represented by some very fine work, the most notable being "The Playground of the Winds," a picture of a windy, blustering day on the sand dunes, with the coarse grass rudely beaten down by the breezes. Mr. Murray gained a certificate at Birmingham with "On Cannon Chase." It is a finely graded picture, and was hung at the Royal Exhibition last year, as was also "George Phoenix," a portrait also by Mr. Murray. Mr. Gale has very good work in the gum process, his Royal Exhibition pictures being particularly striking. Mr. T. Henry Cox shows "the interior of a ruined mill," a difficult subject well treated, and "The Fisherman at the Ford," by the same worker, is a delightful study, although the light and shade are unhappily balanced. Miss Highfield-Jones, a new member, has several capable studies, and her work promises considerable artistic development. "Rhuddlan Castle," by H. M. Painter, and Dr. Turtton's "Bridgnorth," are worth special mention. Mr. E. George, Mr. Vincent Knight, and Mr. H. Lee also show excellent pictures.

In the loan collection, Mr. Harold Holcroft, M.A. (president of the Society), shows 19 pictures by the very finest exponents of photographic art. They include studies from all parts of the world, and were purchased at the leading exhibitions. "Peace," by Alexander Keighley, suggested repose, and, in reality, it is the very essence of restfulness, whilst the treatment is wonderful. "Wind from the West," Mr. A. Horsley Hinton, is a grand specimen of this master worker's art, and whose unique method of construction sweeps aside

of the technical difficulties of the photographer. The loan collection is exceedingly rich in artistic photography, and we may mention the pictures include examples by Mr. Smedley Aston, the late P. Robinson (one of the earliest of pictorial workers), Robert Why, J. Page Croft, the late W. J. Warren, Harold Baker, C. Abbott, Mrs. Barton, David Blount, C. Puyo (Paris), and Bland.

Judges, Mr. W. T. Greatbatch and Mr. A. C. C. Jahn, made the following awards:—Class I. (open to members who have never taken a medal): Silver medal, "A Study," Miss R. Highfield Jones; bronze medal, "A Pool on the Severn," Mr. Fred. R. Turton; hon. mention, "Moorland Farm," Mr. Frederick Turton. Class II., silver medal, "The Mirror," Mr. James Gale; bronze medal, "Geo. Phoenix," Mr. D. Murray; extra bronze, "In an Old Scotch Fishing Boat," Mr. D. Murray; hon. mention, "The Fisherman at the Mill," Mr. T. Henry Cox.

STIRLING AND DISTRICT PHOTOGRAPHIC CLUB EXHIBITION.

On Saturday last the Stirling and District Photographic Club opened its second annual exhibition in the Corn Exchange, Stirling. The exhibition was presided over by a good attendance, and introduced Sir Alan Stuart, Bart., of Touch, who declared the exhibition open. In all, 45 pictures are shown, including 40 non-competitive, 45 members, and 1 open. The exhibition contains much good work, strong competition being evident, especially in the open classes. The judges were Mr. Wm. Rodger, Stirling, and R. E. Rennie, Kirkcaldy, two well-known professionals. The following are the awards:—Open Classes (sculpture): 1, "Sunset, Whitby," Robert Milne, Paisley; 2, "Evening on the Sand Dunes," W. J. Croall, Edinburgh. Portraiture, etc.: 1, "Solving the Puzzle," P. D. Nairn, Perth; 2, "Auld Struth," John MacLachlan, Blairgowrie. Any Other Subject: 1, "Crypt, Aquilon," P. W. Crane, Heavor; 2, "Roses," Robert Burnie, Glasgow.

A collective exhibit by any Scottish Photographic Federation, Glasgow Eastern Amateur Photographic Association. Memorable (Landscape, etc.): A. Mathers. Any Other Subject: J. R. Lantern Slides (sets of four): 1, S. Goudie; 2, J. Littlejohn.

FORTHCOMING EXHIBITIONS.

April 6-13.—Croydon Camera Club. Hon. Exhibition Secretary, Mr. King, Hurst Bank, Selsdon Road, Sanderstead.

April 8-9.—West London Photographic Society. Hon. Secretaries, Mr. Cockerell, 107, Hammersmith Road, W.; F. C. Hart, 37, Tottenham Road, Acton Hill, W.

April 20-26.—Swansea Photographic Club. Hon. Secretary, W. R. Jones, 14 and 15, Temple Street, Swansea.

April 11-18.—Plymouth Photographic Society. Hon. Secretary, Mr. Grist, 105, Old Town Street, Plymouth.

April 16-23.—Photographic Society of Ireland. Hon. Secretary, Mr. Webb-Smith, care of Royal Dublin Society, Kildare Street, Dublin.

April 24-28.—Devonport Camera Club. Hon. Secretary, A. J. Jones, 78, Charlotte Street, Devonport.

PHOTOGRAPHY in the North of England has suffered a serious loss with the death of Mr. William Thompson, of the well-known firm of Thompson and Lee, of Newcastle-upon-Tyne. Like so many of our great photographic workers, Mr. Thompson began his career as an artist, drifting gradually from a solicitor's office into the ranks of professional photographers. Gifted with indomitable perseverance and energy, he founded a large and successful business devoted to artistic and mechanical photography, specialising in the difficult art of collotype printing, in which he excelled. For many years he was the life and soul of the Newcastle and Northern Counties' Photographic Association, fulfilling the duties of honorary secretary with extraordinary vigour and ability. Combining, as he did, ripe judgment and sound taste in artistic matters, with unusual technical and scientific attainments, a brilliant career seemed assured for him when at the age of thirty-four he passed away on March 27th.

AN INTERESTING EXHIBITION.

To commemorate the foundation of the firm of Burroughs, Wellcome, and Co., a quarter of a century ago, an historical exhibition of rare and curious objects relating to medicine, chemistry, pharmacy. We learn that it will be strictly professional, and scientific in character, and designed to illustrate the development of the art and science of healing throughout the ages. The following is the

CLASSIFICATION OF EXHIBITS.

Section 1.—Paintings, drawings, engravings, photographs, medallions, and sculptures of historical interest of—(a) Distinguished physicians, surgeons, alchemists, apothecaries, chemists, nurses, etc.; (b) Antient British and foreign medical, chemical, and pharmaceutical institutions; (c) Important events of medical, chemical, and pharmaceutical interest.

Section 2.—Rare and curious manuscripts, books, periodicals, pamphlets, and book-plates on, and connected with, medical, chemical, pharmaceutical, and allied scientific subjects.

Section 3.—Letters, prescriptions, autographs, records of experiments, diplomas, licenses, instruments, apparatus, and other personal relics of medical, pharmaceutical, and chemical interest. Apparatus associated with important discoveries in medicine, chemistry, and pharmacy.

Section 4.—Curiosities of medicine—(a) Materia medica of all ages (specimens of antient medicines in all forms). (b) Formulae of all ages. (c) Antient and modern medicine chests—civil, military, and naval. (d) Votive offerings for health, antient and modern amulets, medals, seals, emblems, charms, and talismans. Medical relics of savage and primitive peoples. (e) Corporate insignia and diplomas of British and foreign colleges of physicians. (f) Rare and curious memorials of medical practice. (g) Memorials of medication by animal substances. (h) Memorials of the influence of astrology on medicine.

Section 5.—Curiosities of Surgery—(a) Relics of antient and mediæval surgery, dentistry, and veterinary surgery. (b) Antient and mediæval hospital equipment. (c) Curious anatomical models. (d) Historical surgical instruments, appliances, etc. (e) Corporate insignia and diplomas of British and foreign colleges of surgeons.

Section 6.—Curiosities of pharmacy—(a) Quaint pharmaceutical recipes. (b) Scales, weights, and measures of all ages. (c) Antient stills, mortars, and pharmaceutical implements. (d) Curious bottles, carboys, alembics, ointment jars, drug jars, ewers, mills, etc. (e) Curious laboratory apparatus. (f) Antient prescription books and price lists. (g) Antient counter bills, labels, curious advertisements. (h) Antient pharmacy signs, early shop fittings, and appliances. (i) Early pharmaceutical specialities and specimens of obsolete and curious medical combinations. (j) Old travellers' advice books, curious orders, etc.

Section 7.—Curiosities of allied sciences—(a) Antient herbaria. Abnormal plant forms. (b) Curious magnetic and electrical appliances. (c) Early photographic prints and apparatus. (d) Historical chemical apparatus. (e) Anatomical exhibit. (f) Anthropological exhibit. (g) Microscopical exhibit. (h) Bacteriological exhibit. (i) Biological exhibit. (j) Physiological exhibit. (k) Geographical exhibit.

Mr. Henry S. Wellcome, of Snow Hill Buildings, London, E.C., who is organising the exhibition, invites the co-operation of those possessing any of the articles mentioned in the classifications. Great care will be taken of all objects sent on loan, and packing and carriage will be paid both ways by Mr. Wellcome.

THE Selborne Society's annual meeting and conversazione will be held on Friday, 27th May, at Burlington Gardens (by kind permission of the Civil Service Commissioners) in the Theatre and Halls lately occupied by the University of London. The Committee would be glad of the loan of any series of photographs illustrating the objects of the Society, which are, amongst others, the promotion of the study of natural history, the preservation from needless destruction of such animals and plants as are harmless, beautiful, or rare, and the protection of places and objects of natural beauty or antiquarian interest. Letters should be addressed to the Secretary, Selborne Society, 20, Hanover Square, London, W.

PHOTOGRAPHIC SURVEY AND RECORD OF SURREY.

THE annual meeting of the members who are compiling a photographic survey and record of Surrey was held in the Council Chamber at the Town Hall, Croydon, on Saturday, the 12th inst. The Right Hon. Viscount Midleton (Lord-Lieutenant of Surrey), the President, presided, and was supported by Sir Frederick Edridge (Deputy-Lieutenant), there being also present Lady Edridge, Mr. W. Whitaker, F.R.S., Coun. Keatley Moore, Mr. H. Maclean, Dr. J. M. Hobson, Mr. L. Stanley Jast, Mr. H. D. Gower, the hon. general secretary, Mr. W. W. Topley, the hon. treasurer, and others.

The reports of the various sections showed that during the past year 561 photographs had been added to the collection, making a total of 621. The largest contributors were Dr. J. M. Hobson, who had sent 226, and the Croydon Camera Club, who by means of a competition had forwarded 121 prints. The sections include art and literature, anthropology, geology, natural history and scenery, and passing events.

Viscount Midleton, in moving the adoption of the report and balance sheet, said he would like to say a few words about the scope and object of the Survey. The scope had widened as the workers widened. Substantial progress had been made during the past year, and he found on looking at the report that the number of photographs on the books was now over 600, instead of about 60 last year. They ranged over a very wide field, and combined a number of different objects, each important in their way, and each forming, if it might be so called, a different department. He would deal with them one after another. The earliest of all must, of course, be geology. He did not know that the county afforded any wide field for the study of this particular branch of the work. The strata was well defined and pretty well known. The county might be sub-divided into the area of London clay, which adjoined the Metropolis, with that one ridge of chalk Downs, which, beginning at Tenterden, in Kent, was carried throughout the whole of Surrey, broken only by the valleys of the Mole and the Wey, rising beyond Guildford into that curious prolongation known as the Hogs Back, falling, as it approaches Farnham, and rising again as it leaves the county into the Hampshire Downs. Then they got the Weald Valley, which divided the wealds, and which, he believed, geologists had come to contend must have been an old estuary, for nothing else could account for the appearance of the rounded lumps of chalk as they succeeded each other in front of the Weald, both on its northern boundary in Surrey, and on the southern boundary in Sussex. Beyond that again, came the ledge of green sand, which, he had heard, was upheaved by volcanic eruption in the centre of the Weald Valley, and it broadened out further as it approached the west until the weald of clay was almost obliterated. That tract of county was of considerable interest to the photographer, and there were certain places where the chalk had been exposed, forming a fruitful field for the study of anthropology, the study of the habits and the life of primeval man. A very interesting light had been thrown upon this subject by a recent publication, which had just been issued, and was reported upon by the Anthropological Society of Surrey, which emanated from that immediate neighbourhood. He trusted every one of the objects there mentioned would be subjected to the photographic process, not only to be preserved, but to reach a larger circle of individuals than could ever be expected to see the original specimens. They now came to that section which dealt with art, art in its various phases, and here he very much doubted whether those who, in giving some attention to the subject, were not aware of the wealth of objects which might still be found in Surrey. The Weald, as they probably once knew, was the home of the iron manufacture in Britain. There were two things necessary to make the industry a success, the iron ore and the oakwood trees, which were at that time the only fuel available by which iron ore could be melted. Of course, when in the North of England the iron and the coal were discovered together it became far more cheaper to work with that fuel than to work the iron ore in Surrey and Sussex. One of the best examples, he believed, which remained of the great Surrey Weald iron was to be found in the railings round St. Paul's Cathedral. There were, however, all sorts of reminiscences scattered over the Weald, in the old farmhouses and cottages, of what was then accomplished by Britons, who were really the iron workers of the district, the Saxons never penetrating, but groping round by the seaboard, and until

the siege of Pevensey Castle, in which those Britons who did not in the assault were executed, those upon the Weald were left in disturbed possession of the iron works. There were distributed the farmhouses curious firebricks and firebricks, implements of different coins, some of which he believed had been already taken up by the Society, many of which, however, remained to be taken up. He himself possessed two very striking examples of iron with the Royal Arms, and on asking the late Mr. Godwin Ainslie who was by far the best authority on this subject, he told him it was very little doubt they were old Weald castings, intended for the old Palace of Nonsuch, but there was a considerable surplus left over, and when the requirements of the palace were satisfied these first found their way into the farmhouses and cottages, which they gradually drifted until they were dispersed over the valleys of the Southern Counties. This was only one instance of the numerous objects of art which were still more or less preserved by their owners and which required to be looked up and reproduced by photography. Then there were two other departments—architecture and scenery. He observed with regret that the western part of the county, with which he was more intimately connected, did not seem to have quite its duty in reproducing its objects of interest. He was sorry for it because a cursory review of what was to be found there would show how much there was still to be accomplished. The stately old houses near Farnham presented many examples in shade and sunshine worth reproducing by the photographer—the old keep, the banqueting hall, indeed there was hardly an inch of the old castle which would not repay a visit. At the opposite end of the county they found the palace of the Archbishops at Lambeth, with all its architectural and historical associations. Then there were two examples of Elizabethan houses in Surrey, in Molesley Castle, near Guildford, and Sutton Place on the other side. Both had been to a certain extent modernised, but care had been taken by the owners to keep to the original design and ornamentation as far as possible. Then there were old timbered houses and cottages, some of which, he was sorry to say, were gradually disappearing in and around Godalming and Guildford. Any one had only to walk through the main streets of either of these towns to see how much there was that they could not expect to last for ever, and of which some trace ought to be left behind for those who came after us. There was one old Elizabethan shop, which was famous for its use as Judges' lodging in Guildford, absolutely unique in its design. Godalming was full of old timbered houses, gradually, he was sorry to say, being replaced by modern elevations, but still worth preserving before they were doomed. Guildford Castle was very well worth a visit, and also what remained of Reigate Castle. Then there were the Surrey abbeys. The abbey of Chertsey was said to have occupied three acres, but unfortunately little of that remained except mounds of earth, but there was an abbey between Guildford and Woking, a smaller one, which would well repay the photographer, and also the ruins of Waverley used, he regretted to say, too much as a quarry for the neighbouring houses, but still retaining part of their architectural glories. He had merely touched the fringe of the subject. It was hardly a Surrey locality in which a person well acquainted with the county was not bound to find some objects of interest. Any one went about reproducing ancient architecture—of course, there were some fine examples of modern architecture in the county—would find that certain of the churches would well repay a visit. The difficulty with regard to the churches was that they had almost all been restored, some at one time and some at another, and sufficient care had not been taken to preserve as far as possible the outlines of the original. Still there were a great many churches which were well worth a visit from the photographer, either in whole or in part, and it would be of interest to issue these prints with those in a volume published in the last century, in which a full description of all the different churches in the county was given. Then they turned from architecture to scenery. The scenery in Surrey was unexampled in England. Take the quiet scenery all along the North Downs from Guildford to Titsey Hill, overlooking Limpsfield and the valley. It would repay any amount of trouble taken in reproducing it, particularly in the spring and early summer. There was also the view from Leith Hill, extending over four counties, embracing all the valleys of the Weald. After mentioning one or two other famous hills, Lord Midleton proceeded to mention other famous objects, as the King's Oak at Tilford, the tree under which Wycliffe was

ve preached; the Silent Pool, which had been restored by the rains to its former beauty, and which many people feared was to dry up in the early part of last summer. He believed the tree was still in existence, under the branches of which King VIII. courted the ill-fated Anne Boleyn, that would be an well worth preserving for posterity. Then, again, there was found in the grounds of the palace at Richmond, from which it said Henry watched for the upward flight of the rocket which announced to him that her head had fallen upon the block, and he was free to marry again. In Kingston-on-Thames there were very ancient examples of early architecture, which were being ably developed by a former Mayor, a great authority upon every- of that kind. He was extremely glad to see that the work of survey was gradually widening, and that very little jealousy of work of the Society seemed to be entertained by the professional graphers, some of whom had lent very valuable assistance, for he was sure the members were heartily grateful. The Archae- al Society at Guildford possessed a very interesting collection, h he was sure would be open to inspection, and probably to graphy, and would bring before those in different parts of the y the really good work which this Society, which celebrated its e in April, was doing. He felt most strongly that this Society the Photographic Survey ought to go hand in hand, for they both engaged in a work which was not a selfish work. They ed to hand down to those of the future the things of the past rved so far as they now might be by the men of the present; wished to quicken the intellects of those who had not now an tunity of seeing in all their freshness scenes which were passing e their eyes, and they wished not to live for this generation alone, or the generation which would follow, so that they might see abits and customs of their ancestors, and it might be that they would still hand down a fruitful record of the times that were e times which were to come. That could only be carried out me society such as that, and he was really glad to see that a r branch was to be formed in an adjoining county, which, he d, would join hands with them, so that they might emulate and then each other's position. He was sure no one who put his into that work would regret having done so, for he would earn ratitude of those amongst whom he lived, and, what was still ndeed, those of the posterity he was not destined to see.

e report and balance sheet having been unanimously adopted, unt Midleton was re-elected president, the vice-presidents were ected, as also were the officers.

an. Moore proposed a vote of thanks to Lord Midleton for pre- g, and said that those who had heard his eloquent speech must t that in their president they had the best possible man they ave for the post, and they all felt grateful to him for coming that evening. Lord Midleton had shown them avenues which d afford food for reflection, showing them the work before them, a mply justified the existence of such a society. He wished to r to their notice some lectures which were to be delivered by ssor Malden in connection with the University Extension lec- and which would prove of special interest to them.

Frederk. Edridge, in seconding, said he need not say he was tly in accord with the work. Lord Midleton had, he thought, ed the highest heights and given them greater encouragement e work which lay before them. They had done a wise thing in ntling him president, for he took a great interest in the county, o one knew more about the county than Lord Midleton.

e vote of thanks having been carried with acclamation, count Midleton, in response, thought the vote of thanks was ue due to those who had borne the burden and heat of the day— ecretary and officers of the Society—to whom they really owed success achieved. He referred to the fact that more than forty ago he had contributed an article to a periodical on the history antiquities of Surrey, and he then came across a great deal of olklore of the county and many bits of history which were quite o him. Recently an admirable volume—a history of Surrey—een edited by Professor Malden, which threw a most extra- rinary light on what had really taken place in Surrey from the est times down to the present day. He had no idea that the y possessed such a wealth of ancient reminiscences, or that the s of primeval man could be traced so clearly in Surrey. Every

public library in the county, he thought, should possess a copy of the work. It had been, he could assure them, a real labour of love to come there that evening; nothing gave him greater pleasure than to find himself once again in Croydon among many of the descendants of those whom he knew long ago, and who, he had no doubt, would worthily hand down to others the traditions they received from their fathers.

Mr. Whitaker proposed, and Lord Midleton seconded, a vote of thanks to the Mayor for the use of the Town Hall, and the meeting concluded with a vote of thanks to the Libraries Committee for the use of the lecture-room in which to hold the exhibition, proposed by Mr. Maclean, and seconded by Dr. J. M. Hobson.

Patent News.

The following applications for patents were made between March 14th and March 19th, 1904:—

Transparent Photographs.—No. 6395. "To render unmounted photo- graphs transparent for decorative purposes." Kate Osborne.
Printing Frames.—No. 6483. "Improvements in photographic printing frames." William Lawrence Parkinson.
Shutter.—No. 6717. "Automatic shutter for photographic cameras." Complete specification. Otto Peppel and Alfred Lippert.

THOMAS VANDERBILT, photographer, 12, James Street, was sum- moned at the Liverpool Police Court last week for employing three women after 8 p.m. on December 23rd, and also for employing three women on Sunday, December 20th. Mr. P. J. Taylor, for the defence, pleaded that there was a pressure of business at the time, and Mr. Vanderbilt got them to work a little late. The women were well treated by their employer. A fine of 20s. and costs was imposed in each of six informations.

A TAX that Hits Chemists Hard.—Few realise the enormous im- portance of alcohol in the arts. It has been said that a nation's pros- perity can be gauged by the amount of sulphuric acid it consumes. In many industries the amount of work done can be approximately estimated by the spirit duty paid. There are many alcohols known to chemists, but the one of prime importance to manufacturers is that which is more exactly called ethylic alcohol, the product of the fermentation of sugar, and the chief ingredient of all intoxicating liquors; and it is this alcohol which, from the days of Queen Eliza- beth to those of the seventh Edward, has been considered a never- failing source of revenue by successive Chancellors of the Exchequer, until it is to-day taxed at the rate of over 2,000 per cent. "The greatest danger to British industries," wrote Lord George Hamilton a few months ago, "arises from the economical and scientific methods of production which our foreign rivals are introducing in the manu- facture of articles in which we were formerly superior. Anything that tends to raise generally the price of production in this country is injurious to our trade." Exactly! but in the case in point the British Government has made the cost of production to the British manufacturer seven times that of his more fortunate German com- petitor, and no belated attempts at improved technical training nor despairing resort to Protection can make up such leeway. Professor Green has recently stated that the ethylic alcohol used as a solvent in four or five of the principal aniline dyes imported into this country is equal to no less than £90,000 per annum, and the aggregate value may be placed at some £285,000 upon which the Customs could have claimed duty. Such figures are some measure of the disability of manufacturers in this country, competing against manufacturers work- ing in other countries with practically duty-free alcohol. The official reply to manufacturers' complaints is that the Government will allow the use of duty-free alcohol for purposes of research and illustration to recognised bodies formed for the advancement of science or sci- entific education, and for industries of such magnitude and importance as to be of public interest in their bearing upon national trade. But, again, it is obviously idle to allow privileges to research chemists, if similar advantages are not to be given to manufacturers, who would be able to make use of the results of the researches. One might as well teach a child to walk, and then refuse to supply him with boots!—Mr. Wippell Gadd, in "The World's Work" for April.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

April.	Name of Society.	Subject.
2.....	Aberdeen Photographic Assoc.	<i>The Physical Geology of Deeside.</i> Illustrated. M. Alex. Bremner, M.A., B.Sc.
4.....	Burton-on-Trent Photo. Soc. ...	<i>How to Make a Daylight Enlarger.</i> Mr. Glasscock.
4.....	Bowes Pk. and District Ph. Soc.	Competition. Portraiture or Figure Study, &c.
4.....	South London Photo. Society.	Annual General Meeting.
5.....	Rotherham Photo. Society	<i>Principles of Composition and Selection of Subject.</i> Mr. W. E. Tindall.
5.....	Glasgow Southern Photo. Assoc.	<i>Photographic News' Prize Slides.</i> Close of Exhibition.
6.....	Cricklewood Photo. Society....	Lantern Night.
6.....	Everton Camera Club	Members' Lantern Slides.
7.....	Richmond Camera Club	Lantern Night.
7.....	Liverpool Amateur Photo. Assoc.	Open Meeting.
7.....	Watford Photographic Union	Exhibition.
7.....	Woolwich Photo. Society	<i>Colour Sensitive Plates.</i> Mr. E. Human.
7.....	Hull Photographic Society	Annual General Meeting.
7.....	Dundee & E. of Scotland P.A.S.	<i>Elementary Photographic Optics.</i> Mr. John M. Thomson.
7.....	Southport Photo. Society	<i>A Winter's Travel.</i> Illustrated. Mr. J. Noton.

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

MARCH 24TH.—Mr. A. Bedding in the chair. Mr. Teape brought forward examples to show that negatives, chlorised or bromised, could be redeveloped to full density without preliminary exposure to light, the only difference being in the time taken. Mr. Rapson exhibited the results of some experiments in toning, and showed that double toning was caused by the use of too much gold. He advocated the use of silicate of soda, and gave the following formulæ:—

Soda silicate.....	20 grains.
Soda acetate	25 grains.
Gold chloride	$\frac{1}{2}$ grain.
Water	10 ounces.
Soda silicate	20 grains.
Soda formate	8 grains.
Gold chloride	$\frac{1}{2}$ grain.
Water	10 ounces.

Both baths were free from double tones, and worked better when old than when new.

The members all remarked upon the good surface of the prints, which had been squeezed and then mounted all over without any loss of gloss. This Mr. Rapson attributed to the hardening effect of the silicate, and suggested that such prints would be more permanent than the ordinary P.O.P. Mr. Teape, Mr. Becket, and Mr. Brown said that all new baths gave double tones, but that baths previously used did not do so. At the next meeting of the Association Mr. H. W. Bennett will read a paper upon "Some of the Fallacies of Factorial Development."

BURTON-ON-TRENT AND Y.M.C.A. PHOTOGRAPHIC SOCIETY.

A LARGE audience was attracted to the meeting of this society held on Monday, March 21st, 1904, in response to the invitations given, to hear Mr. Fred W. Edwards' lecture on "Radium and Radio-activity." Councillor C. M. Livens presided. The Lecturer, in introducing his subject, said that the mystery and interest of the wonderful product he had to demonstrate was continually increasing, until the theme has become the most absorbing topic of the scientific world. To photographers the subject of radio-activity should strongly appeal, as the discovery was due to the efforts of one of the fraternity. In order to make the subject as clear and simple as possible it would be necessary to divide the lecture into three distinct headings—first, radio-activity, including phosphorescence and the X-rays; secondly, the chemical and physical properties of radium; and lastly, its possibilities and applications. Under the first heading the lecturer gave an explanation of the phenomena of phosphorescence and an account of the discovery of the X-rays, showing them to be a product of electricity, and comparing them with emanations of radium; and, in giving an account of the discovery of radium, a very high tribute was paid to Madame Curie, for the laborious efforts made by her in extracting this most wonderful metal from what had hitherto been looked upon as worthless slag. In considering the chemical and physical properties of radium, the lecturer

stated that it was now regarded as a metal quite independent of all other known element. In colour, shape, and general chemical properties it bears a close resemblance to barium, inasmuch as neither exist very long in a metallic state, and is generally mixed with chlorine which forms radium or barium chloride. Three kinds of rays are given off by radium simultaneously, and it is still a matter of conjecture as to the cause of its activity, but it could not be due to spontaneous combustion or phosphorescence. Several theories had been advanced but each in its turn had been thought infeasible, and the most favoured now was atomic integration. By means of burning different metals in the Bunsen flame it was shown how the problem came to be regarded as a metal, and it was explained that the colour of the flame when radium is burnt differs from that obtained when rays are passed through the flame. An illustration of the conversion of radium into helium brought this section of the lecture to a close. Dealing with the possibilities of radium, Mr. Edwards stated that it superseded the X-rays, and had been applied with some success to the destruction of the germs of cancer and other diseases, but as the quantity available was so small and the subject was only as yet in infancy, it was impossible to foretell what wonders may be wrought in the future, when the cost of production had been brought down as scientists were in a position to make a deeper investigation of this marvellous product and its uses. During the lecture a minute sample of radium was exhibited in an instrument specially devised for the purpose by Sir William Crookes, and evoked the wonder and admiration of the audience. Dr. A. L. Stern, in proposing a vote of thanks to Mr. Edwards for his valuable paper, made a few remarks on the theories regarding the cause of the activity of radium.

CRICKLEWOOD PHOTOGRAPHIC SOCIETY.

At an ordinary meeting of this society, on the 23rd inst., Mr. Wilfrid Emery gave a very interesting and instructive demonstration of "Portraiture by Artificial Light," using to illustrate his lecture, Bayer's Flash-light Powder, Flash-bags, and the Weiss Lamp, with Argento Powder fired behind a screen of white tissue paper.

Mr. Emery took several groups of members of the society, who were developed by Mr. F. Carter, the results being very satisfactory, the negatives showing very soft gradation, being full of detail and good printing density. It was noticed that the smoke from the explosion of Bayer's Flash-light Powder was not so thick, and that it dispersed much quicker than the smoke from the usual magnesium chloride mixtures.

CATFORD AND FOREST HILL PHOTOGRAPHIC SOCIETY.

THE last open lantern evening of the season was held last Wednesday at the Society's headquarters, when Mr. Norman Walters delivered his long-promised lecture on the Continental tour taken last August under his direction, and followed this up by a short description of Belgium and the Ardennes, taking the same route that the members and friends will follow under his leadership later in the season.

Some 150 slides were shown during the evening to probably the largest audience that has ever met in the Society's lecture room.

The next technical meeting is fixed for Monday, April 11th, and the bi-annual conversazione and dance for Wednesday, April 20th, at George's Hall, Catford.

RICHMOND CAMERA CLUB.

MARCH 24TH.—Under the title "Lumbricus, an old developer," an interesting lecture upon the earthworm (*Lumbricus*) was given by Mr. Oetzmann, in which he described the habits and workings of the animals. Mr. Oetzmann explained the work done by worms in pulverising and fertilising the soil, and the great assistance they afford in rendering it suitable for agricultural and gardening operations. The amount of soil worked up and distributed over the surface of fields in the form of worm castings frequently amounts to many tons per acre, and at the same time the burrows aid in the drainage of the ground. The removal of such quantities of soil frequently causes stones, etc., to sink into the ground, and in the course of time to be covered up. In old ruins floors are at times entirely covered by worm castings, and finally lost to sight. Mr. Oetzmann gave an interesting description of the worm itself. The animal is blind but is sensitive to light, probably through its skin; it is deaf but extremely sensitive

trations of the earth; it appears to have a sense of taste, as it makes some selection in the choice of its food, preferring a green to a cabbage leaf, and selecting the green in preference to any dried part of any leaf. Mr. Oetzmann also described their method of growing—the head is first inserted into the soil, the body swelled to the size of the opening produced, and then if the soil is hard it is pushed up and passed through the body, being discharged at the other end in the form of the well-known castings. Worms protect themselves from rain, etc., by closing them up with leaves and matter, which they drag in, and failing vegetable matter, they close the entrance.

HULL PHOTOGRAPHIC SOCIETY.

MR. HOLLINGWORTH, M.R.C.S., gave a most interesting and instructive lecture upon "Alpine Photography" on Thursday last. The Society's room was full, which proved the popularity of both the lecturer and subject.

Mr. Hollingworth made a special study of Switzerland for several years past, photographically and from a lecture point of view, and for the benefit of the members, he expressed the hope that others would take a similar course during their summer vacation, and with the varied results in different directions, quite a number of admirable displays might be given next winter by each, and prove of extreme interest, pleasure, and a delightful reminiscence of perhaps many a summer's hour, with profit to all concerned.

It must be aware of the delicate nature of Swiss scenery, with its verdant mountains against a blue sky and extremely deep shadows, the hundred odd slides produced from the lecturer's negatives, taken in the best manner, were of exceptionally high merit. Each one had been made by the method of quarter-plate roll films. Much time had been spent in developing them, and those present were advised to perform this important step, with care, and to keep down the pyro so as to get contrast and detail. Slow development is the secret of success, far more certain.

It is the best month to make a trip for two reasons, first because it can be done much cheaper, and thus do away with the idea of it being expensive, and secondly, because one has a clear way and not impeded at every turn with visitors, as in the season, which commences in July. It was also recommended that for a photographic excursion one should avoid the party system, but simply start off each day on their own responsibility, leisurely pressing onward, and pictures are secured at almost every turn. The camera must be ever ready for any subjects which would be lost if the focussing camera were set down. All the backward and forward movements employed. There is no need to be little need for a tripod, but a light one would not be a disadvantage if by chance it should be required. The inference is that a hot or hand-stand camera is the ideal for such a mission.

News and Notes.

The opening ceremony of the Northern Photographic Exhibition was held in the Fountain Room of the Walker Art Gallery on Friday evening last (March 25th) in the presence of a large and fashionable gathering. The Chairman (Dr. L. Morgan), in asking the Lord Mayor (Mr. R. Alfred Hampson, J.P.) to perform the opening ceremony, referred to the efforts made by the photographic societies of Liverpool, Manchester, and Leeds in the promotion of the exhibition, the result of which had been a display unexcelled in any part of the country. Referring to the great advance made in pictorial photography in the last few years, Dr. Morgan commented on the high quality of the photographs displayed, and said they made a bold claim that photography itself should rank, if not as a fine art, at any rate as one of the graphic arts, and he thought the time was not far distant when it would be so recognised even by their fellow-artists of the brush as the graving tool. The Lord Mayor, after referring to the co-operative character of the exhibition and mentioning the Liverpool Photographic Society as the oldest in the country, cordially welcomed the exhibition to the city, and congratulated the promoting societies upon its successful issue, and the high character of the work shown, which he said evidenced a great advance. Photography had made giant strides during the last few years, and had not merely advanced in popularity, but as an art, becoming more and more pictorial in its highest forms. He hoped this inaugural exhibition and those to follow it every possible year. Mr. Fred A. Schierwater, president of the Liverpool Photo-

graphic Society, moved, and Mr. E. R. Dibdin seconded, a vote of thanks to the Lord Mayor and Lady Mayoress, and acknowledged the generosity of the Corporation Arts Committee in granting the rooms in the Art Gallery for the exhibition. Subsequently Dr. C. Thurstan Holland and Dr. D. Morgan gave X-ray demonstrations in one of the rooms, and during the evening Mr. L. Rubinstein's orchestra provided music. Refreshments were served in the rooms on the ground floor. The exhibition will remain open until April 9th.

LORD RAYLEIGH on Sir George Stokes.—In the concluding lecture of his course on the life and work of Sir George Stokes, delivered at the Royal Institution on Saturday, Lord Rayleigh began by describing Stokes's work on the conditions of achromatism in lenses. Passing from optical matters, he next considered the paper of 1857, in which Stokes explained why sounds were usually heard badly up-wind. His explanation depended on the fact that the wind tended to be retarded near the ground, and hence blew less strongly at the ground than higher up. The result of this was that a sound-wave travelling against the wind was retarded in velocity, but was not retarded equally at different heights from the ground; its upper parts continually lost on its lower ones, and thus its direction of propagation was tilted upwards, with the result that it passed over the observer placed up-wind from its source, who stood in a sort of sound shadow. A more elaborate memoir dealt with the communication to the air of the sound from a solid vibrating body. A bell, for instance, behaved pretty much as if it were incompressible, neither expanding nor contracting as a whole during vibration, but only expanding and contracting at a series of particular points. These points might be regarded as sources of sound, some positive, some negative, and these being equal ought to compensate each other, no result being produced. But in fact there was incomplete interference of the waves from the different sources, depending on their different situations and distances from the perceptive ear, and what was heard was a residue. The fact that a bell placed in a chamber exhausted of air to such a degree that its sound was faint, though audible, became quite inaudible if hydrogen was admitted into the vacuum, seemed very mysterious till it was explained by Stokes, who saw that the sound-waves were changed in length in the hydrogen, and so also the interference was altered. Lord Rayleigh next described Stokes's method of expressing the conditions in which two or three substances, such as ether, water, and alcohol, could be made to associate in a homogeneous mixture and those in which they separated into two distinct portions. In conclusion, Lord Rayleigh referred to some of Stokes's personal characteristics—his quietness and silentness, which, however, were coupled with a dislike to being alone, the modest appliances with which he worked, his tendency to procrastination, and the earnestness of his religious life. He worked in many subjects, but in optics and hydrodynamics we owed to him fundamental advances, and he scarcely ever failed to lead in the right direction.

PHOTOGRAPHY in Alaska.—You ask me to outline some of the troubles, etc., attendant on taking pictures in Alaska. Troubles are few. Sometimes, writes Mr. F. Callarman, in the "Professional and Amateur Photographer," the water freezes up in the winter; there is very little light here during about five or six months out of the year, and these two things, added to the sometimes more or less emaciated wallet, just about constitutes the sum of our troubles. We have scenery that has no equal; mountains, lakes, rivers, waterfalls, land and sea-scapes, woods, glaciers, and a variety of people, and curious things. Alaska is not, as is supposed by a great many people, a land of continual snow and ice. At Skagway the coldest weather in three years has been 18 degrees below zero, Fahrenheit, and that only for a few hours. The weather is not, as a whole, as cold as that of some of the Northern States. Of course, this does not exactly apply to the interior, where the thermometer goes down to 75 to 80 degrees below zero for days at a time, but there even will be found a time for three or four months in the summer when there is not snow or ice, and, in fact, the weather is at Dawson and other interior points often disagreeably warm in summer, the thermometer reaching 90 to 95 degrees above zero. A word about the Indians here may be of interest. There are many good subjects among them, but nearly all are imbued with a superstitious fear of the camera, and unless taken completely by surprise the great majority of them will not permit their "tookchers" to be taken. However, a piece of silver is in most cases as effectual in banishing their fears as it would be with a whiter and more civilised people, but as this is only to be used as a last resort, I have found the plan by which I captured the basket venders at Kilisnoo quite a help. I turned my camera in the opposite direction from the subjects desired, and after focus was secured on an object about the same distance from me that they were, the plate holder inserted, slide withdrawn, shutter set, and all necessary preparations made, I (with my back still toward them) slowly turned the camera on the tripod until the lens pointed to my breast, then I suddenly stepped to one side and sprang the shutter, giving a half-second exposure before they knew what was up. The silver process would not have been desirable at that time, as there were about 200 Indians present, and bribery would have been too expensive.

Correspondence.

- * * * *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*
- * * * *We do not undertake responsibility for the opinions expressed by our correspondents.*

THE METRIC SYSTEM.

To the Editors.

Gentlemen,—I should hardly care to make any rejoinder to Mr. Piper's letter in your last issue, but that those who read it may think that what is put forward is unanswerable.

I am sorry that the purpose of my little story is not understood; its object was to show how much the reply to a problem depends on the way in which it is put. I will now, however, try to give another instance, taken, indeed, from Mr. Piper's example. I have taken a half-plate and measured it; of course, it is what is called $6\frac{1}{2}$ by $4\frac{3}{4}$, but I find that it measures as nearly as I can see 16.4 by 12 c.m., and to me the obtaining of its area (196.2 sq. c.m.) is much more easy than the calculation of the area in inches, and it would have been still more difficult if I had taken the dimensions as accurately in English measure as in metric, whether I had used inches, lines, and fractions, or taken refuge in decimals of an inch like Mr. Piper; and here, I may note, that it is not so easy to get a common rule divided into inches and tenths, for all I come across have one-eighths and one-sixteenths.

Next, it is stated that a liter of water weighs 997.7,904 grammes, and that this is at a temperature of 62 deg. F. Now the definition of a liter is that, at 0 deg. C., it contains one kilogram of pure water at its greatest density, and there are good reasons for this definition, which can be found in the discussions of the matter, but which would take up much of your space. Of course, as water, like most other things, expands, the choice of a different temperature leads to a less weight; virtually, the allegation is that the liter does not agree with a definition which is either Mr. Piper's own, or that heretical one which has been invented by the Royal College of Physicians, and repudiated by all men of science, as well as the International Committee.

Mr. Piper says that it is easier to calculate the interest on £67 at $\frac{3}{4}$ per cent, than on 67 dollars or 67 francs. I deny this. But the question is just one of those which I have before called unfair. Two-thirds of £100 is £66 13s. 4d., and the interest on this at the assumed rate is evidently £2 6s. 8d., while that on the small balance of 6s. 8d. is 2½d., making altogether £2 6s. 10½d. Every one knows that some dimensions are more easily expressed in one notation than another; for instance, it is easier to ask for an ounce of tobacco than for its equivalent in metric weight; but then no one (in a country using metric weights) would ask for this equivalent; he would ask for 25 or 30 grammes in all probability, and pay accordingly. Lastly, why should the introduction of metric measures involve a dumping of foreign-made cameras on us, and a consequent injury to our makers' business? I understand that, when price is no object, English-made cameras are preferred on the Continent, and that but for the heavy duties they would be more exported than they are now. Plate-makers make plates of the foreign sizes, and, if camera-makers do not now, they no doubt would make cameras to these sizes, if there were seen to be a demand for them. The law will not prescribe the size of cameras, the question will be solely one of convenience and price. Foreign makers do not find any difficulty in supplying many things made to English weight and measure *when it is worth while*, nor do English engineers and others under the same conditions.—I am, Sir, yours faithfully,

J. F. TENNANT

March 27th, 1904.

THE METROPOLITAN CAMERA CLUB, NEW YORK.

To the Editors.

Gentlemen,—I wish to announce to you the merger of the smaller camera clubs of New York City into an organisation known as the Metropolitan Camera Club of New York, with a membership of 125, and quarters covering 6,000 square feet in a modern building, located in the social centre of the city, equipped with up-to-date apparatus

for all photographic purposes, including a large studio, fitted with new Cooper-Hewitt electrical light for portraiture.

We are also pleased to inform you that announcement will be issued of the first American Photographic Salon at New York City to be held under the auspices of the Metropolitan Camera Club, the Salon Club of America, which will be held on a grand scale, of the foremost American painters having consented to act as jury of selection, and 100 of the most distinguished men in America being numbered among the patrons. We hope for a splendid representation of the work of the great British masters of pictorial photography. The Salon is to be held in December of this year, and announcements will go forward at an early date.—Yours very truly,

CURTIS BELL, President

Metropolitan Camera Club Incorporated of New York,
102-104, West 101st Street.

"PHOTOGRAPHED GHOSTS."

To the Editors.

Gentlemen,—Under the above heading you comment upon photographs exhibited under the auspices of this society, and I should be glad if you will allow me the opportunity to correct one or two misconceptions. First, it was not a "one-man show" of pictures, as evidenced by the fact that it embraced a small collection, none of which either belonged to Mr. Blackwell, nor presented him as a sitter. In one of these Professor Alfred Russell Wallace was the sitter, the spirit, or as it has been termed "ghost," appearing beside his sister. Another represents a table with a photograph standing on it, and in this case two "dim but definite" portraits are to be seen, while others represent French subjects taken by photographers in Paris. The photographers in the case of this collection are not the same as in the case of the majority exhibited by Mr. Blackwell. I state "when works of any kind are thus exhibited in public they run the gauntlet of criticism;" with this I am in entire agreement; acquaintance with the details as to how and under what conditions they were taken, you will admit, is the only way to know whether they have reason to question the bona-fides of anyone concerned with the production. Mr. Blackwell's bona-fides I, personally, cannot impugn, and of the photographer Mr. Blackwell refers to I have also no reason to be suspicious. With regard to the "significance of the promised sittings," I would merely say that at present there is no evidence of the supposition either of collusion between the photographer and the medium, or that the promises were made known, before the photographs were taken, to other than the one to whom they were given. Yours obediently,

PERCY SMYTH, President

Chiswick Spiritualist Society,
300, High Road, Chiswick, W.,
March 28th, 1904.

THE PERMANENCE OF VELOX PRINTS.

To the Editors.

Gentlemen,—We observe from an article which appears on page 6 of your issue of March 18th that you cast some doubt on the permanency of prints produced on Velox papers. This impression, however, is entirely erroneous. We claim that correctly made Velox prints are permanent, and evidence of the truth of this statement may be obtained by examining the prints of theatrical people, which are shown at the entrances of many theatres. Some of these, we know, have been exposed to all kinds of weather for several years, and to-day they retain the same purity in the whites and blacks as on the day they were produced. Furthermore, we may add that numbers of the foremost professional photographers are using Velox paper, and we venture to remark this would not be the case if it had not proved for themselves the undoubted permanence of results.

Trusting you will be able to find space for this explanation in the columns of your esteemed journal, we are, yours faithfully,

JOHN J. GRIFFIN AND SONS, Ltd.

20-26, Sardinia Street, Lincoln's Inn Fields, London, W.C.
March 29th, 1904.

[We gladly insert Messrs. Griffin's explanation, although our reference to the impermanence of "silver" prints was not intended to be a particular application to Velox. With regard to the latter process we have in our own possession prints produced in the year 1896, when Velox was first brought to the notice of British photographers, which are as pure and brilliant as the day on which they were developed. Eds. "B. J. P."]

THE DERBY CONVENTION PROGRAMME.

To the Editors.

Gentlemen,—From a remark in last week's "Jottings," it would appear that our 'good' friend "Cosmos" has not read the Derby programme with his usual care. If he will kindly refer to the *BRITISH JOURNAL OF PHOTOGRAPHY* for March 18 (page 225)—where it is stated in extenso—he will find, Thursday, at 8.30, "A Paper on Demonstration," followed by, etc., etc.; again Friday, at 8.30, "Papers on Demonstrations."

I am pleased to be able to announce that on one of these evenings Thomas R. Dallmeyer will give a paper on "Telephotography." I also promised a paper (subject to be announced) by Mr. Thomas Harding, F.R.P.S., and expect during the next few days to obtain my paper from some equally distinguished source. Let us hope these, coupled with the presidential address, will provide sufficient "solid fare" in our "annual menu" to correct the "picnic" sentiment.—Yours truly,

F. A. BRIDGE,

Hon. Sec. and Treasurer.

East Lodge, Dalston Lane, London, N.E.

TRICHROMATIC PHOTOGRAPHY.

To the Editors.

Gentlemen,—I am in doubt as to whether I am to consider Mr. Eder's letter in your last issue as a whole-hearted compliment or a whole-hearted one, with the full complement of a slap in the face. However, I thank him for his kindly expressions towards myself and my translations. I take it that the reason why no earlier translation appeared is that the paper has never yet been published in any German paper, except the official journal of the Imperial Academy of Sciences of Vienna, before which body it was read. The paper was read in July, 1902, and a brief note about it appeared in one of the German papers about that date, and although I ordered it, I found it impossible to purchase a copy, and, being then "cribbed, cabined, confined" to bed, I did not trouble further. Having occasion early this year to write to Messrs. Penrose, I mentioned this paper, and they immediately offered to get me a copy, and did so. The "B. J." is thus the first photographic journal to publish the paper or a digest of it. Eder himself merely states his conclusions and not his actual experiments in the latest edition of his "Handbuch."

I hope Mr. White and others interested in the subject will grasp the fact, which I have already pointed out, namely, that I have sent them a mere digest of the paper, and that I have suppressed many tables and figures, which, whilst valuable, are useless without the full text. Dr. Eder's coloured chart, which is rendered the more valuable by his spectroscopic analysis of the pigments employed in printing it. Whilst on this subject I might draw attention to the fact that Baron Hübl published a spectroscopic analysis of the chart issued with valuable work on "Trichromatic Photography" in the "Photographische Correspondenz," of 1893, I think, but as I have lent my copy to you I am unable to state definitely the date. Von Hübl's chart is doubtless more valuable even than that of Dr. Eder, because it comes in more colours, or, in other words, whilst Dr. Eder's chart gives the fundamental colours, von Hübl's gives us the intermediate ones, and it might be possible to adjust a plate and filter by Eder's chart, which, when tested on von Hübl's, would prove unsatisfactory. I cannot help thinking that Dr. Eder's chart has more saturated colours than the other—that is, that there is less admixture of white.

—Yours faithfully,

E. J. WALL.

Foot's Cray. March 26th, 1904.

PHOTOGRAPHY IN SOUTH AFRICA.

To the Editors.

Gentlemen,—Having read from time to time in your ever interesting journal queries asked, and opinions offered, on photography in South Africa, I think a little advice from a man on the spot would be acceptable to some of your readers.

The general outlook is not particularly bright at present, and the market, being at such a low ebb, is causing a general depression, which is likely to remain until the importation of Chinese labour becomes an accomplished fact, and the miners are in full swing again. The assistant wanting a berth in South Africa I have no hesitation in telling him to stay where he is, unless he is engaged under an agreement with a first-class firm, of which there are not too many. I may

say here that it is only thoroughly competent men who are wanted in South Africa; "rotters" applying and engaged will soon find themselves in a hole. A case in point. A young fellow from London arrived in Natal four months ago as a printer to a certain firm under a three years' agreement. His work, which was very unsatisfactory, resulted in a three months' notice to quit. He has now to pay back his passage money, £20 odd, off £12 per month salary, and will have to scour the country for a living. To add to his miserable existence, he is down with fever and a doctor attending him. I mention this as a warning.

The salaries paid by the best firms are, of course, according to agreement, but approximately as follows:—A first-class assistant may receive from £15 to £25 per month; a retoucher from £15 to £20 per month (although the retoucher in the firm the writer is with receives £30 per month, which is the highest wage for a retoucher in Natal, if not in South Africa); and a printer (Plat. and P.O.P.) from £12 to £15 per month. To many at home these salaries may look very tempting, but there are not many cribs in the market, and, as I have said before, unless you are with a first-class firm, "the game is not worth the candle."

To the man who is thinking of coming out to start business for himself, my advice would also be to stay where he is, unless he has some knowledge of the country, or is well advised as to place of starting, and even then he would require considerable capital. But circumstances alter cases, and here is one which has come under my notice. An up-to-date young fellow from London arrived here (Maritzburg) six months ago, bringing with him several cases of outfit, with the intention of starting for himself. My governor advised him to try Pretoria, a Dutch centre in the Transvaal, which he accordingly did. A few weeks ago he wrote to the effect that he had built a studio, and had asked the Mayor of that township to open it to the public, with a little ceremony, to which I believe he readily assented. At the time of writing he said: "Although not officially opened, I have plenty of work on hand, and hope to have a good run."

In Natal there are several openings for good men. For instance, in Ladysmith, where I spent a week lately, there is only one tumble-down, sort-of-a-kind of a studio, which has been closed for some time, and many of the better class come specially to Maritzburg to be photographed. There is another good opening at Harrismith, a Dutch centre in the Orange River Colony. I do not know much about Cape Colony; but, if my memory serves me aright, there are more than enough photographers in Cape Town. It is better for the man with limited capital to start in a small rising township, where there are plenty of farmers in the district, than to set up amidst keen competition in the larger towns, where living is high and rents are exorbitant.

That which has surprised me more than anything else since my arrival in the colony is the colossal ignorance displayed by Colonials in their taste photographically. Without doubt this is owing to the want of education in things artistic, and accounts for the little carbon and platinum work which is attempted, and further, I think I am correct in saying there is not a single carbon print turned out in Natal at the present day, and there are only one or two firms in Johannesburg and Pretoria who do anything in carbon. It has been before the public in Durban and Maritzburg, but with little success, necessitating the withdrawal of this most beautiful process. What the public (Colonials and Dutch) want is a good commercial photograph, highly retouched, and still more highly polished. I mention this incidentally to give you an idea of the class of work which is being done, even among the best photographers in the country.

The producer of photographic "freaks" would have a rough time of it, and would possibly finish up by enriching a few yards of soil; but there are a few of the newer Colonists who can appreciate a good sepia plat. on a vellum mount, and I firmly believe there is a fortune awaiting the man who, if he can afford to wait and educate the public, starts in a really good way and sends out artistic work in almost any of the large towns. This remark may seem contradictory to a former, but it applies only to men with big capital. With regard to the prices obtained, they naturally vary, according to the standard of work. The following, however, are a few quotations from our own price list, which are perhaps a little above the average charge:—Cabinets, per dozen, in P.O.P., glossy, 45s.; in matt (P.O.P.), 50s. Imperials, per dozen, in P.O.P., 65s.; in matt (P.O.P.), 75s. Either size, in

carbon or platinum, one-half extra. The above are for one position only; an extra charge of 5s. and 7s. 6d., cabinets and imperials respectively, for each extra position chosen. Carbon and platinum enlargements are, of course, sent home, so we do not get much profit off this line.

In the foregoing I have endeavoured to bring before you briefly what I think is a fairly accurate statement on "Photography in South Africa," and hope at least some part of it will be helpful to intending emigrants. I trust, Gentlemen, I have not encroached too much upon your valuable space, and I thank you in anticipation of insertion.—I am, Gentlemen, yours, etc.,

A SCOTCHMAN IN NATAL.

Pietermaritzburg, Natal, South Africa.
February 4th, 1904.

At the Southwark Police Court, on March 24th, a young woman asked Mr. Paul Taylor for assistance in recovering possession of her mother's photograph, which she said was detained by a certain firm. They had promised to supply her free of cost with a "large crayon enlargement," but they now demanded payment of 15s. 6d., which she could not afford. She was willing to dispense with the copy, but earnestly desired to get back the original. The Magistrate: But did you really believe they were going to do this work for nothing? The Applicant: I did, because the lady canvasser told me so. If it had been a man I might not have believed it. (Laughter.) Inspector Spencer, L Division, said several cases of the kind had been reported to the police. The picture was ostensibly free, but people were required to pay for the frame. The Magistrate: Oh, I know the system, of course. It has often been the subject of adverse comment in the Press. A summons was granted.

The Scottish Photographic Federation.—The Council met at Perth on Saturday, Mr. Coates, President, in the chair. The secretary reported that Muirkirk A.P.A. and Carnoustie A.P.A. had federated since last meeting; two associates were elected. The various features of the yearbook to be issued this season were discussed and approved; these include a gazetteer, local reporters to give information to intending tourists, and a railway insurance of £200. The Salon secretary, Mr. Mackenzie, reported that he expected accounts for the recent Salon would square; this, when it is considered that admission to the Salon was free, was considered very satisfactory. Messrs. Eadie (convener), Horn, Frame, and Milne were elected as the 1905 Salon Committee with full powers. The Salon is to be held in Glasgow, and it was considered that a guarantee fund would be necessary. A start was given to this by each councillor present guaranteeing £2. The Excursion Committee reported progress and the matter was remitted back to them with full powers. The excursion takes place on June 11th, to Calander, when there is expected to be a large attendance. The secretary read a communication he had received from the Portfolio Secretary of the Yorkshire Photographic Union, who very kindly gave full details as to the working of a circulating portfolio. It was agreed to institute such a portfolio in connection with the Federation, and Mr. S. Stewart, Kirkcaldy, was appointed Portfolio Secretary. It was agreed to ask Mr. Arch. Cochrane, one of the Federation judges, to select the prints for inclusion in the portfolio, which will circulate amongst the federated societies next winter. The Secretary was empowered to issue to the associates a monthly magazine dealing with Federation matters. An invitation was received from the Kirkcaldy Society to hold the next Council meeting there; it was agreed that the next meeting be held at Kirkcaldy on May 7th. Mr. Coates entertained the Council to tea.

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Answers to Correspondents.

- * * All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.
- * * Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.
- * * Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO. 24, Wellington-street, Strand, London, W.C.
- * * For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPH REGISTERED:—

A. Sachs, 8, Manningham Lane, Bradford. Photograph of Opening Ceremony Eastbrook Mission Hall, Bradford.

J. ROBERTSON asks: "Can you kindly recommend me a book on the colouring of photographs? I want to know how to make water colour flow evenly on the shiny surface of P.O.P. prints." I reply: We can recommend "How to Paint Photographs in Oil and Water-Colours," by Alice Baker, price 1s., and No. 44 of the Photo-Miniature Series, "Colouring Photographs," price 6d. Both are obtainable from any bookstall or photo-dealer.

RULED SCREENS.—GLADYS asks: "Will you, please, give me the address of firms that supply the ruled screens for use in halftone work; also about the cost of same (½-plate size)? I am rather perplexed. A friend of mine in the trade gives me the price as between £25 and £40, whilst in a text-book I have I learn they can be obtained at a very moderate cost." I reply: Messrs. Penrose and Co., Farringdon Road, E.C. supply the screens. They will quote you prices if you write to them.

SPECTACLE LENSES.—A. J. PRENTICE writes: "In Sir Wm. Abney's speech on colour photography (page 111, February 7th, 1902), the fourth paragraph he mentions that a 6 in. planoconvex and a 3 in. plano-convex lens will make a good combination. I should like to get some of these lenses, but do not know what to ask for at an optician's. Do they speak of spectacle lenses as being so many inches focus, or do they speak of them as being lens No.?" Merely ask for lenses of the focus desired, and any optician will supply them.

STUDIO QUERIES.—H. COLLINS says: "Will you oblige by answering the following? Having erected a studio with a direct north light, all glass in the north except 4 feet blocked at sitting end, inside covered with match-boards sized and varnished—(1) What colour blinds would you suggest for same? (2) Would an ½-plate R.R. lens working at f8 be quick enough for portraits in studio? (3) What colour should a balustrade and pedestal be painted? (4) Could you give me address of makers of cardboard dark slides? Should like to say have only had experience with out-door photographing, and any advice will be gratefully received." I reply: (1) Either pale green or blue will be suitable. (2) The lens can be used, but it will require about four times the exposure that a portrait lens would do. (3) The dark stone colour. (4) The slides may be had through any of the dealers.

* * OWING to the necessity of our going to press one day earlier this week, a number of answers to correspondents are unavoidably held over.

BRIGHTON intends to follow the lead of other large towns. The Fine Arts Committee of the Corporation has resolved to hold an invitation exhibition of pictorial photographs in the new Corporation Art Galleries in April, and May, 1905. The Committee has secured the co-operation of the Hove Camera Club.

THE BRITISH JOURNAL OF PHOTOGRAPHY.

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FRIDAY, APRIL 8, 1904.

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EX CATHEDRA.

Amendment the Patent Laws. This is a topic of perennial interest, and the grievances—legitimate grievances—in connection with it that have been brought before the scientific world, and, need, the public generally, would fill countless volumes. Theoretically perfect patent would be one that, once granted, would entitle its holder to complete protection without the possibility of its being overthrown by a verdict in an action at law. We can see no possibility of its being anything more than a Utopian dream. Quite apart from the possibility, after, even, a most rigid search of patent records by trained experts, of an injustice being knowingly done to some forgotten inventor, the labour involved would be enormous, and the grumbling that is heard loudly in some quarters as to the cost of taking out a patent, would be increased tenfold if the cost of such searches were to be paid by the would-be patentee. There is an improvement in the present English Patent Law over that in existence at a later period than the middle of the last century—a period when a patent could be taken out for anything, new or old, and, if valuable, usually had to be fought for afterwards. There is now to be prima facie evidence of novelty, though the strictness of search before granting the patent is not so great in this country as in Germany, for instance. These, though grave, may be termed incidental troubles. A grievance that ought to be remedied at once does exist, and we were pleased to see that the annual meeting of the Association of Chambers of Commerce, recently held, devoted their attention to the subject. It can be briefly

described as the "dumping" of foreign patents in this country, and the resolution passed at the meeting was that "this association, while welcoming the instalment of reform secured by the Patent Law Amendment Act of 1902, is of opinion that further amendment is needed to ensure the forfeiture of all foreign-owned patents for inventions and designs workable in this country which are not so worked within a reasonable limit of time."

* * *

The Metric System. At the same meeting a topic of a more disputatious nature was handled—the compulsory use of metric weights and measures throughout the United Kingdom—yet it was resolved that the Government should be urged to grant early facilities for the passage of the Bill for this compulsory adoption. There are one or two facts in connection with this matter which, without initiating a polemic, may be here referred to. The first is, that it was only so recently as 1878 that an Act of Parliament was passed which rendered all old local or customary weights and measures illegal. Secondly, there is a great tendency to confuse scientifically accurate weighing and measuring and that in commercial or popular use. We should very much like to ask what photographer has in his possession measuring glasses, for example, correct to one per cent., or, having them, is, in their ordinary use, careful to, say, two or three per cent. of a required measure? That means, if he has to measure, say, half an ounce of a liquid, is he certain to 5 or 7 minims that he has poured out the correct quantity, or if ten ounces have to be measured out, can he assert that he has not two or three drachms above or below that bulk? In this connection we will quote a pregnant sentence from Professor Perry's six lectures on practical mathematics, delivered to an audience of working men at Jermyn Street: "When calculating from observed quantities it is dishonest to use more figures than we are certain of." Yet how often do we find in photographic formulæ fractions of a minim, or of a grain, when we know quite well such nicety of measurement never took place in practice!

* * *

The N-rays Mystery. Sir William Crookes is responsible for the "mystery of radium" expression, but the rays that M. Blondlot has described are wrapt in a far deeper mystery than ever attached to the radium rays. Only a few weeks ago that expert scientist not only described how easy to produce were the rays, but he actually measured their refractive indices through certain media, and also their wave-lengths, and on March 14th, at the Paris Academy of Sciences, M. Bayard gave

the extent of the rotary power of solutions of sugar, tartaric acid, and turpentine for eight groups of rays. Yet English and American observers, so far from being able to examine the N-rays with such nicety and precision as this, are actually unable to see them at all. Nearly a page of "Nature" was recently occupied by a letter dated March 10th, over the signature of C. C. Schenck, of the McGill University, in which he plainly states that, though he has been endeavouring for months past to repeat M. Blondlot's experiments, he can get no results that can be justly attributed to other than ordinary known causes. With regard to the measurement of indices of refraction and wave-lengths, he shows mathematically that under the conditions described by M. Blondlot it would hardly be possible to detect the existence of separate beams at all. Then, again, as to experimenting in the same direction with a diffraction grating, he says that Blondlot was apparently able, with regard to "a radiation so feeble that no observer outside of France has been able to see at all," to split up a divergent pencil of N-rays coming through a slit 5 mm. wide into eight divergent homogeneous beams by passing it through a prism, then to take only as much of one single beam as would pass through a second slit 1.5 mm. wide (having perhaps 1-50th the intensity of the original beam), and after allowing this small fraction of the whole beam to fall on a grating, to detect the existence of, and to measure up accurately, a central image and no less than twenty diffracted images the intensity of each of which must have been considerably less than 1-1,000th of the original beam! We can only say, "Magna est veritas et prevalebit."

* * *

Punch Artists.

In Mr. Layard's life of the celebrated "Punch" artist, Charles Keene—a book of which only 250 copies were printed for subscribers—occurs an interesting account of the manner in which photography first threatened the business of the wood engraver in those pictures which week by week for some years have been a pleasure to thousands. Charles Keene, like the other artists on that periodical, made his sketches direct on the wood block up to the year 1872, when the method was adopted of making the drawing on paper or cardboard, photographing it, and then transferring the film to the block. Sir John Tenniel, we learn, continued for a long time afterwards to draw on the wood direct, a circumstance that we must regret, because the originals were destroyed as drawings in the work of engraving them. Up to the time that this book was published (1892) the process block seems not to have been used at all in the pages of "Punch"—at least, no mention is made of zinc, or half-tone. We know now, that the wood block has been abandoned in favour of both processes, examples of which are constantly being published. It is a pity that the half-tone block was not used earlier, for the reproduction of Charles Keene's drawings require something more than mere "line." We learn that he to a large extent manufactured his own inks, and made them of various shades, so as to get tones into his pictures otherwise than by the combination of lines. Then, to quote from the volume in question, "in addition to his use of home-made inks, Keene worked largely with small pieces of wood lashed on to penholders, manufactured in lieu of pens by himself. With these he was able to put exquisitely soft touches and obtain delicate shades of expression, which were the despair of the most finished wood engravers." Beyond these idiosyncrasies, he objected altogether to drawing paper and Bristol board, preferring a rough bit of note-paper, which he liked all the better if it were coloured by age. In one picture, representing King

James in the throes of sea sickness, he selected a paper of a delicate green tint, which much enhanced the effect of the drawing. With more modern methods of reproduction the facsimile drawings which illustrate this handsome volume give all the niceties and peculiarities of Keene's method, and most of them are printed on toned paper, so as to heighten their effect. The volume is interesting in other ways, and is well worthy of perusal by photographers and pen artists alike.

* * *

Fraud in Connection with Photography.

A few weeks ago we called attention to a fraud that is being systematically practised on the public by unscrupulous photographers who, while charging for platinum pictures at about double, or more, the price of their silver prints, supply silver prints of the bromide and gaslight type for veritable platinum pictures. We are pleased to see from a letter which we published a fortnight ago, that the Platinotype Company are considering the question of putting a stop to this fraud. The fraud by "Tanqueray," now carried on by him in Paris, is being imitated in England, as well as in Scotland, as will be seen by reports that have appeared in our pages. Last week we alluded to an application made at the Southwark Police Court by a young woman, for the magistrate's assistance for the recovery of her mother's portrait. She said that a certain firm, through a lady canvasser, had promised to supply her free of cost with a "large crayon enlargement," but they now demanded 15s. 6d., which she could not afford to pay, and they would not give up the original picture. Of course, it is the old tale of expecting "something for nothing." The magistrate asked the applicant if she really believed they were going to do the work for nothing. The reply was that she did, because the lady canvasser told her so, and that if it had been a man she said she might not have believed it. The magistrate granted a summons. Male touts—or canvassers—in this class of trade are common enough in the suburbs, but this is the first time of a "lady" canvasser being employed in this kind of business that has come under our notice. Here is a fraud, practised in the suburbs, that was brought to our notice some time ago, and it was chiefly practised on servant girls. A tout called, showing cabinet portrait and enlargements, which might be had for so much and paid by weekly instalments. But the sittings were to be given at some distant part of London, and when the inconvenience of this was pointed out, the dupe was told that after a certain number of instalments had been paid, an order would be issued for the sitting to be given by one of the leading photographers in the neighbourhood. When the instalments were duly paid, and the order given, the dupes went for the sittings, and were, of course, told by the photographer that he knew nothing of the matter, and explained that they had been defrauded. He brought the matter to the notice of Scotland Yard, and was visited by one of the officials, but as he was not the party defrauded, he could not take any action in the matter. By this time the party had cleared out of the neighbourhood, probably to work some other district in the same way.

* * *

A New Pharmacy Bill.

A new Pharmacy Bill is to be introduced in the House of Commons, and it is understood that in the drafting of it the Government have utilised some of the clauses of the Pharmaceutical Society's Bill which was a short time ago introduced by Mr. Lough, besides carrying into effect some of the recommendations of the Departmental Committee of the Privy Council on Poisons, which issued

report more than a year ago. The Government Bill is not yet printed, but the recommendations made by the Departmental Committee, if carried into effect, would place considerable restrictions on the sale of poisons that are used for industrial purposes, and probably in photography. There are at present only two poisons that are used by photographers on which the sale is restricted in England, namely, bichloride of mercury and cyanide of potassium; these can only be purchased, except in wholesale quantities, from pharmaceutical chemists. There are several other chemicals that are used in photography which are of a poisonous nature—pyrogallie acid and some of the newer developing agents, for example. But it is to be hoped that these will not be included in the projected Bill. If they are, they will probably only be vendible by pharmaceutical chemists, when photographers will possibly have to pay more for them than they at present do when purchasing of their dealer. Since the suicide of Whitaker Wright by cyanide of potassium there have been several suicides by the same poison; yet, although its sale is restricted to pharmaceutical chemists, it has not prevented the suicides. The Bill promoted by the Pharmaceutical Society, and introduced into the House by Mr. Lough, is mainly aimed at the "stores," carried on by limited companies. It is proposed that "no company, or firm, or body of persons shall keep open shop for the retailing, dispensing, or compounding of poisons or of medical prescriptions, unless each shop shall be bona-fide conducted by a registered person; or to permit or suffer in such shop any poison to be retailed or any medical prescription to be dispensed, or compounded otherwise by or under the supervision of a registered person; also, it shall be unlawful for any person, or any company, firm, co-partnership, or body of persons to keep any shop, unless the address of the shop shall have been registered upon the register of shops to be kept under this Act, and the name and address of such registered person to be in the bona-fide conduct of the person who shall have been registered, etc." This Bill, if passed, would give the public the protection that their prescriptions would be dispensed by, or under the responsibility of, a certified chemist, and at the same time to an extent protect the pharmaceutical chemists from the cutting prices of the "stores." If this Bill passes it will in no way affect photographers. But in the case of the Government Bill it may be different. However, neither Bill has yet passed, and we understand that Mr. Dixon-Learland has given notice of his intention to move the rejection of the Bill on its second reading.

* * *

Cinematograph Patents. A good deal of correspondence with reference to the Patent Laws has recently been published in the "Society of Arts Journal," and we may hope that it will attract the attention of those who are able to bring influence to bear upon the powers that be. We dealt with the matter of Patent Law reform quite recently, and have no intention of returning just now to the same subject. What particularly aroused our interest in looking through the correspondence just referred to, was the letter from Mr. Friesse-Green, who is not only able to show by his own unfortunate experience how the present laws affect the poor inventor, but gives us an interesting peep into the early history of the cinematograph. He tells us that he began working upon this instrument twenty years ago—long before it could be made commercially, the difficulty being "that celluloid was not made in long lengths, and, therefore, could not be used for cinematograph films." We confess that we are unable to follow Mr. Green's statement, for there is no difficulty in joining celluloid, and, as a matter of fact, some of the most successful "trick" films have necessarily a great

number of junctions. Any one who has handled these celluloid ribbons will know that it is both easy and simple to make a strong joint by means of amyl acetate. This, however, may be regarded as a digression. Mr. Green goes on to say that he first showed the invention at a meeting of the Photographic Society at Pall Mall in 1885, and that it was patented four years later. The celluloid, he tells us, was not sufficiently transparent, it was very expensive, and it was not until 1893 or 1894 that a non-shrinkable celluloid photographic film, transparent enough to enable pictures to be projected upon a screen, was produced commercially. He took out further patents, and these, with those of 1889 and 1893, he considers to be the master patents on this invention. Parents are naturally apt to think too highly of their own children, and to forget that there are other youngsters in the world worthy of commendation. Surely Mr. Green has heard of a little instrument which was brought out, and we believe patented, several years before 1885. We refer to Beale's choreutoscope, a little contrivance which would fit the ordinary lantern stage, and which exhibited on the screen a dancing figure—hence its uncouth name. There is no doubt at all that the germ of the modern cinematograph machine is found in this primitive apparatus. By simple means the figures were made to pass in succession behind the lens—with a pause between each apparition, while a shutter cut off the light between the successive appearances. Still earlier than this was the Phenakistiscope contrived, curiously enough by a blind man, Plateau, of Ghent. This was arranged for the oxy-hydrogen light of Duboscq, and a very complicated affair it was. In this instrument the components of the picture were painted upon a revolving glass disc. The first photographic contribution to cinematography was, of course, found in the studies of animal movements by Muybridge, of California, and he himself used a rough appliance for throwing those movements upon a screen. Thus we see that many minds were at work upon the idea from which afterwards, in the hands of Edison, Birt Acres, Friesse Green, and others, was gradually evolved the cinematograph. Like many other inventions, the credit must not be given to one man, but to many. The two instruments which we have named were quite familiar to visitors to the Old Polytechnic institution twenty-five years ago. And we are able to show, by a quotation from a volume compiled by Professor Pepper, of ghost fame, who was for many years the guiding genius of the place, that the book form of cinematograph, now so common in the penny-in-the-slot machines, was also well-known. He writes of "the penny book now sold in the streets. The little pages have printed on them a series of devices representing any ordinary act of motion, such as a see-saw, and by rapidly passing the pages over the thumb with the first finger the effect of apparent movement is secured, as it would be with Plateau's apparatus, the Zoetrope, or Wheatstone's disc, with the checking and arresting mechanism."

We have received the prospectus of a photographic exhibition on a large scale, which is being organised under the auspices of the Corporation of Glasgow. The Museums and Art Galleries Committee have the matter in hand, and the exhibition will be held in Campbell Gallery, Glasgow, from June to October next. No charges will be made to exhibitors, and the exhibition will be open free to visitors. In addition to bearing all expense connected with the undertaking, the sum of £20 has been allocated by the Corporation for prizes to competing amateurs. That amount will be at the disposal of the appointed judges, to be awarded to the works which in their opinion are most meritorious, irrespective of class. All information and entry forms, etc., can be obtained from the Secretary, Art Gallery and Museum, Kelvingrove, Glasgow.

MENTAL EQUIPMENT.

THE photographic season opens with the buds. As in the days of Chaucer, "the showers sweet and strengthening sun of April" bring about the same inherent desire to get out into the open air, and roam, as they did in the case of the Canterbury Pilgrims. A pity there was no photographer near—cinematographic, by preference—to preserve these immortal worthies for our benefit as they came out of the "Tabard" yard, starting upon their anything but ascetic pilgrimage to the tomb of the pious à Becket. But, to come back to the photographic season of 1904, about to commence, it means the careful examination and furbishing up of all material equipment, cameras, lenses, slides, shutters, stands, and so forth, that have been laid by with more or less care during the past winter months. Might it not be well to attend to and furbish up the mental equipment as well? As a matter of fact, how many photographers are there who give any deliberate heed to mental equipment? The camera has been carefully dusted, the lenses polished with soft silk, and the slides draw out smoothly to their full. But has the photographic mind been dusted, are its slides working freely, and has its eye been polished? Probably not, in the majority of cases, and a start will be made with the dusty, orthodox ideas of last season, and the season before. We do not mean to say that the mind is inactive, but that it is not active beyond the necessary point for carrying out the demand made upon it by the technical power of working. It is possible with great advantage to go beyond this stage. It is advisable to do so, and to enlarge mental equipment. Many who have taken up photography have dropped it after a few seasons, owing to the uniform mechanical character of the results gained. It does not satisfy their souls. It is a pity, and a heavy loss to the ranks of photography, for the very fact of their being dissatisfied for this reason is inferential proof that they are good men with individuality and artistic instincts. If that individuality and those instincts could find practical satisfactory expression, their possessors would probably be found well to the front. Is it possible to do so in the fields of photography? We believe that it is. Many and varied are those fields. There is that of the snap-shooter on the crowded beach or sunny pier; of the landscape worker seeking after the due apportionment in his picture of foreground, middle and extreme distances; of the interview illustrator of the weekly pictorial; of the commercial cataloguer; and of the studio professional carefully choosing the most interesting—or the least disagreeable—side or pose of his sitter, and afterwards polishing up the result laboriously at the retouching desk. They are all fair fields, and the labourers in them are good men and honest, fully deserving of their reward. May they—the rewards—never grow less. All such workers must, of course, be regarded as mentally equipped, after a fashion. But it is not equipment of the highest order, because it is exercised within but very narrow bounds, and is largely a question of formulae, customs, traditions, and text books. No particular appeal is made to the individuality, and possibly special powers of the worker. Where such exist they do not find expression. There are higher regions in which this last is possible, and where the results, as representing something of a man's own self, would be regarded in a very different light to the usual ones. Once in touch with this type of work there is little fear that interest will flag, or that photography will not be a large gainer. It is impossible to indicate fully the means by which these higher fields may be reached. The attempt will only be made to point out one path. As they are "higher" fields, it means a climb to begin with. It is

difficult to get to them. But this in itself would not prove a bar, provided there were a conviction that power was being exercised in the best way. A true man does not object to hard climbing, if only he feels that he is on the right path. It is a "path," too, and the higher paths of the mountain-side are ill-defined, compared with the travelled roads along the valley flats. To follow the simile, a man under such circumstances must have a broad instinct for locality, must have the *feel*, as it were, of where he wants to go. In the chief place, then, what would he like to see in his final print? He cannot very well express it himself, for, as a rule, it is vague. It certainly has not the sharply defined detail and the straight bounding lines of the print from the half-plate negative, even though that negative be photographically perfect. There are no lines that he can remember in the something that appeals to him sometimes as best worth picturing, nor much detail either. The charm of the diffused, which cannot be contained within a square negative, must tell against the photographic, eminently a sharp, four-sided art. But need we hold to the orthodox? We can vignette, it is true; but the bounds of the ordinary vignette, as a rule, are but little better than squareness. Oftentimes they are worse, in their suggestion of the means and effort to reduce squareness. What is desired is oftentimes contained in a negative, if we could only eliminate that which we do not want. But as the something to be eliminated may be, as often as not, away from the borders, cut off by the vignetting form, this method of elimination is impracticable. Why not adopt that used by block makers, by which the undesirable is blocked out of the picture? It is by using Chinese white as a vignetting or concealing agent, and taking a fresh negative from the print worked upon. Very little practice will enable one to do the work. It is not pure photography, but the means are immaterial if the result desired is gained. It seems rather foolish to regard the power of a special tool rather than the result aimed for. A tool should be used as far as possible; but surely it should not be allowed to cramp the accomplishment of purpose, when there are others available, though of a different order. Equally foolish it is to try and make a tool do work for which it is unsuited. We have seen too much of it in the "twilight" and "impressionist" rubbish turned out by lenses out of focus, and so forth.

A plan of work advocated, and one by means of which fuller individuality can be expressed, is this. Select something that you personally would very much like, and take a photograph of it under the best possible technical conditions towards gaining a perfect negative. The fact that you will be able to block out in the final picture anything you do not care for will give you a better chance in this, for you will be able to choose your point of view independently of any otherwise undesirable detail, which will probably be an aid in better gaining the salient feature. Block out of the print with Chinese white all you do not care for, and at the same time strengthen wherever you can with a soft lead. From this worked-up print take a fresh negative, which will give you all you originally desired. If an enlargement be desired, let the second negative be a quarter plate of the sharpest character. Success will not come with the first or second effort; but such possibilities will be opened out as will make perseverance towards success a pleasure. A perfect negative pure and simple is a very rare thing. The writer, at any rate, out of many hundred efforts could certainly not pick out half a dozen. But the peculiar part of it is that even those admittedly few perfect negatives, of scenes carefully selected as the most pleasing and gratifying to his feelings, are not regarded as anything equal to

portions selected, and treated as advocated above, out of negatives which, as wholes, were decidedly faulty.

The main point of the contention is that, as far as the photographer is concerned, he will use his brains more fully in selecting and working, and be able to turn out a picture that appeals specially to him. The result will benefit photography in making it clear that it is a medium by which brains can express their power in a general and artistic, as well as in the admitted technical and mechanical way.

SOME NOTES ON THREE-COLOUR WORK.

READING through the translation of Dr. Eder's notes on three-colour work, recently appearing in the *BRITISH JOURNAL OF PHOTOGRAPHY*, has led me to write the following short article. It may be of use, and will, at any rate, be of interest to those concerned in colour matters who are following the work translated.

Preference is given by many to the use of separate plates for the three exposures in colour photography, especially as the green-sensitive plate can be made so rapid by using a bath containing free silver nitrate and the requisite dye. But the dry plate is entirely different from a collodion emulsion, and

of these dyes which fall into the hands of different experimenters vary to a considerable extent, and, therefore, we must not always expect to get such a result as Dr. Eder claims to have obtained. But it is a remarkable thing that in each instance, as far as personal experience goes, the results should not have been anything like so good as those stated to be produced by these various authorities.

As an example, the sensitising bath with Wool-black 4 B given in the translation does not give a remarkably good result, and even in a stronger form the plates bathed with it leave very much to be desired. The following bath was used for bathing, and is distinctly preferable to the course suggested by Dr. Eder:—

Soak the plate for three minutes in

Wool-black 4 B (1 per cent. alc. solu.)	15 cc.
Water	100 cc.
Ammonia (concentrated)	3 cc.

Dry the plates in darkness.

The dry plates were exposed in a diffraction-grating spectroscopic camera, and in Fig. 1 we see the results of two exposures (A sixty seconds, B thirty seconds) to the spectrum of incandescent gas; glycine development. Fig. 2 shows a twenty seconds' exposure developed with metol-hydroquinone.* Both plates were very foggy.

While it is evident from these results that the sensitiveness imparted to the plate extends to the whole visible spectrum, it is at the same time obvious that the red-sensitiveness is only a fraction of that which would be conferred by cyanin blue, orthochrome T., etc. My results with Nigrosine, Dianil-black, Titan-scarlet, Pluto-black, and other purple-black dyes gave

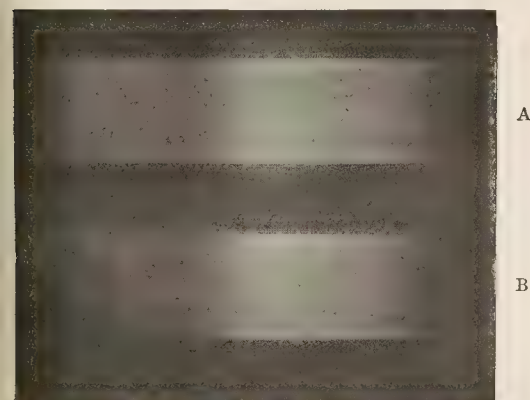


Fig. 1.

Whilst the latter can be sensitised for any one portion of the spectrum with comparative ease, the dry plate should undoubtedly be panchromatic.

A great deal of confusion was at one time caused in my experimental work by allowing the writings of other colour workers to be the "guide," as it was found in nearly every instance that the resulting sensitising action of a dye was widely different from the action stated by certain "authorities." At the present time what is very greatly needed is the publication of thoroughly practical notes on three-colour work, and I should like to see an account of the experiments carried out by some well-known worker with the dyes recommended by some authority such as, for example, Dr. Eder.

On page 252 of the issue of March 25th, 1904, of the *BRITISH JOURNAL*, the mention of Wool-black 4 B is to be noted as being an excellent sensitiser for the blue-printing plate.* In the first part of Dr. Eder's recent work on gelatine-emulsions mentions the use of Wool-black 4 B, Pluto-black, Dianil-black, Nigrosine, and many other dyes, which are suggested as other red-sensitisers or sensitisers for the whole spectrum. Now, it is of course quite possible—and likely—that the samples



Fig. 2.

similar results, silver nitrate being necessary in some cases to get a passable sensibility.

Baron Hübl, in his "Die Dreifarbenphotographie," gives Dr. Miethe's formula for a bathed plate, and plates bathed with this solution have a really remarkable and genuine panchromatic sensitiveness imparted to them. The following is the method of preparing the formula, which, though long and tedious, nevertheless well repays the trouble taken:—

Make three solutions as follows:

A. Glycin red	1 gm. or part.
Alcohol	500 cc. or parts.
B. Chinolin red	1 gm. or part.
Alcohol	500 cc. or parts.
C. Cyanin blue	1 gm. or part.
Alcohol	2,000 cc. or parts.

Mix 5 parts of A with 5 parts of B, add 12 parts of alcohol and 25 parts of water. Allow to stand for an hour, then add 1 part of C, and filter. When filtered add 25 parts of alcohol and 50 parts of water. Then add another 1 part of C, with 1.25 part strong ammonia. Soak the plates for two minutes, then dry them in darkness.

* By a slip of the pen, Mr. Wall has called this the red printing plate.

* The red end of the spectrum is on the left-hand side.

It should be mentioned in conclusion that the plates bathed with Wool-black 4 B when exposed through the red filter to the spectrum gave a good result, the C, B, and A lines being equally densely represented; but they offered no advantages over any good make of ready-sensitised panchromatic plates, and when not exposed through a filter are, to my mind, of little value.

T. THORNE BAKER, F.C.S.

THE OPPOSITION TO PHARMACY REFORM.

THERE has been much excitement and commotion in the pharmaceutical dovecots during the past two or three weeks anent the introduction, by Mr. Lough, the indefatigable Member of Parliament for Islington, West, into the House of the resuscitated Pharmacy Bill. The later statement by Mr. Balfour with regard to a promised "Sale of Poisons" Bill is answerable also for some awakened interest in the probable action of the Commons in reference to these matters.

So far as concerns the Pharmacy Bill, it is pretty clear that this Bill requires only a fair field and a clear course in order to receive favourable consideration. The Bill has received the general approval and support of the bulk of the Members of the House of Commons; with the exception of such Members as have a direct money interest in the opposite direction, its provisions have invariably commended themselves to disinterested parties. But a private Bill which is blocked may be said to be, under existing circumstances, as good as done for.

The opposition is to an extent twofold. To Mr. Alexander Cross, M.P. (member of a firm recently fined for illegal sale of a scheduled poison), anything proposed by the Pharmaceutical Society is at once anathema! The opposition of such Members as Messrs. Bailey and Batty Langley is directed mainly against Clause 7 (the qualified directors' clause), though Clause 11 (registration of shops and managers) is also considered obnoxious. Then Mr. George Harwood, M.P. for Bolton, has blocked the Bill under the impression, we are told, that it would affect the sale of Cockle's pills!

The main objects of the Bill are to put companies on the same footing as individuals, i.e., what is illegal for the individual should also be illegal for a number of individuals; secondly, to prevent the multiplication of branch shops either by individuals or companies except under qualified personal management; and, thirdly, to prevent the formation of bogus companies by compelling all the directors to be qualified chemists. With regard to the first proposition, the injustice to the properly qualified and duly certificated individual by allowing seven unqualified individuals in a corporate capacity to assume his functions and title is, of course, quite clear. It is true equally, of course, that each individual member of this seven would bring himself under the law if he or she, being unqualified, by chance made a sale of a scheduled poison to the public, but in their corporate capacity they are apparently unassailable; it is the paid and unqualified seller, frequently a young fellow with a small salary, who has to bear the brunt of the pharmaceutical attack.

The second proposition is also desirable and a move in the right direction; but with regard to the third we think it would be sufficient to provide for a bare majority of qualified men on the directorate. Two out of three, or three out of five, would be, in the present condition of affairs, a fair and reasonable stipulation. This would be practically a death-blow to the bogus company, and would do no shadow of harm to the big, and for the most part well-managed, companies, such as Boots and Taylors. The arguments of some of the opponents of the Bill are extremely fatuous. We read, for example, that Mr. A. Guess, of Leeds, addressed an audience of interested

persons at a meeting held recently in Manchester. After a few remarks on the subject of "Brains," this gentleman informed his hearers that "he was apprenticed to the trade of a chemist and druggist, and his father paid a £100 premium; but his master, although a pharmaceutical chemist, neglected to teach him the theory to enable him to go through the minor examination of the Pharmaceutical Society." This is an argument in favour of universal mediocrity. What is the use of any test of efficiency under such circumstances? Surely the unfortunate and unqualified sections in the professions of law and medicine have an equal right. The prospect of such a phalanx of interesting and guileless persons claiming their certificates on the ground, amongst others, of mental incapacity, is decidedly amusing.

Examinations are for the most part more difficult and stringent than they were some years ago; but on the other hand facilities are much greater in the direction of tuition in the various branches of science and art. In the sixties and seventies premiums were the rule in the drug trade, the master was usually a man who was on the register by virtue only of having been in business prior to the passing of the Act, and was not able, even if willing, to impart any theoretical knowledge. There were few classes of any sort open to the apprentice in those early years, and hours were longer, but he kept his nose to the grindstone, and pulled through *then*, as anyone else may *now*, by virtue of persistent study and hard work. At least that was our own experience.

The argument, also, that with the advent of companies and stores has come an era of cheap drugs and chemicals, has really nothing to do with the case, and, if it had, is one which will not bear a hard test. The biggest of the companies have not, as a matter of common knowledge, a low rate, and of universal application; compare prices in general in cities such as Liverpool, Sheffield, Manchester, Leicester, Nottingham, Derby, and Birmingham, to say nothing of the Metropolis, and we very easily discover that prices may be very variable. Dividends must be paid, and if directors cannot get them out of Birmingham, they must make the Sheffielder, or the Manchester man, or the Liverpoolian pay.

The prospects of the Bill are far from rosy, as will be seen. Its propositions are such as most Members approve; taken individually they have little to say against the reform. The great difficulty appears to be to bring the matter to debate and vote.

The "Sale of Poisons" Bill foreshadowed by Mr. Balfour will be awaited with interest; until it is definitely seen what is in view we cannot venture an opinion, except to the effect that any "widening of the gate" is improbable.

A PHARMACIST.

THE BRITISH PAVILION AT ST. LOUIS.

COLONEL C. M. WATSON, Secretary of the Royal Commission on the St. Louis Exhibition, and Commissioner-General, writes a correspondent of the "Times," has just taken possession of his offices in the pavilion erected on the World's Fair grounds by the British Government. This is a reproduction and adaptation of Wren's Orangery at Kensington Palace. It has been erected from designs made by a British architect, and the work of erection has been carried through by the well-known London contractors, Messrs. George Trollope and Sons. It is understood that the cost has been something over £20,000. As usual in all exhibitions, the British Commissioners have not been content to put up a temporary building in plaster or, as it is known technically, staff, but have made it as solid as if it were to stand the test of time.

The finishings and furnishings of the interior of the building are in keeping with the character of the apartments represented. The banquet hall, with fine panelling, is a reproduction of the Orangery at Kensington Palace. The plaster ceiling is enriched with the Royal arms and festooned mouldings of fruit and flowers, the work of the contractors. The furniture of this room, by the same firm, comprises fine reproductions of historical examples of the Queen Anne period. The old console tables formed part of the collection at Merstham House (Lord Hylton). The chairs are reproduced from the originals in the possession of the Earl of Westmorland and others. The brass chandeliers are patterned upon fine old examples. Next to the banquet hall is a fine suite of rooms designed in old English styles.

The Elizabethan room has an ornamental ceiling copied from the breakfast room of Holland House, to the designing and production of which some of the best artists of the day contributed. The chimney-piece, panelling, and plaster frieze are taken from well-known examples, such as Bromley Palace, Knole Park, Crewe Hall, and others. The furniture belongs to the same period, the small cabinet being a copy of one dated 1611, formerly belonging to Archbishop Sharp. The two large arm-chairs are also examples of the period. In the centre is a copy of a fine old Elizabethan table, formerly in the exhibitor's possession. The arm-chair and settee are adapted from models of the famous collection of Elizabethan furniture of Knole Park, but the seat of Lord Sackville, while the high-backed arm-chair and stool are exact reproductions from the same collection, in which are also drawn the designs for the chandeliers. The room was formerly in the collection of the late Earl of Mount at Cowdray, who also possessed the originals of the chairs covered in old embroidery.

The Georgian Room, with white carved panelling and mahogany doors, is a fine specimen of English work of the period, reproduced from an old house at Epsom. The furniture consists of beautiful examples of the period with a few reproductions of old pieces, formerly in the exhibitor's possession. Wall lights are copies of old ones. The Adams Room, with enriched plaster ceiling, frieze, and doorways, is taken from examples designed by Robert and James Adams in the latter part of the eighteenth century. The furniture in this room is in the manner of Sheraton, and comprises many actual examples of the period. The Large Room (Queen Anne) is designed in the style of Sir Christopher Wren, the details being taken from Hampton Court Palace and Belton House, where Sir Christopher Gibbons executed some of his best wood-carving under Sir Christopher's direction. Its furniture is from old examples, some of which were in the possession of the Messrs. Trollope. The original chair came from the collection of Lord Hylton, Merstham House, the settee was prepared for Queen Anne's reception at Forde Abbey, while the cabinet is an old one, reproduced from a family in which it has been for generations.

When the exhibition opens the pavilion will be further decorated with paintings, as at the last Paris Exhibition, when the work was carried out with great success under Mr. Isidore Mann, now, as then, secretary of the Fine Art Committee, and the chairmanship of Sir Edward Poynter. Most of the members of the Commission have already proceeded to St. Louis, and, so far, at least, as the British exhibit is concerned, nothing will be in good time for the opening day, April 30. It now seems probable, however, that, as usual, there will be considerable delay in the installation of some of the exhibits, especially those from America itself. The excuses given for this are well known—viz., the weather, dilatoriness in starting, and unexpected blocks in the transportation facilities, and the seaboard provided by the railways.

SOAP BUBBLES.

EXPERIMENTAL DEMONSTRATIONS.

DUPLEX nature of soap bubble films. Separation of the two films either by peeling or splitting. White and black films of bubbles. The black or invisible film is transparent, and most elastic, and supports the other films. The invisible film envelopes the white and coloured films, which are movable, by internal air currents. The white or fragile film can be obtained first, and is not then followed by a coloured film.

An investigation into the physical and optical properties of soap bubble films has not been considered beneath the dignity of some of our cleverest philosophers and scientific men. Whether the following notes will throw fresh light on their constitution, I am not in a position to say. It is not likely that every one would come across an account of everything that might have been said and done even during a long lifetime. Whether their duplex nature has ever been suspected or investigated, I am perfectly unaware, but such is the following. I have been led to understand that their colours are due to a varying thickness of the solution which enter into their constitution. As ordinarily produced, their colours are of a mixed character, floating about on the surface from the action of the air upon them. It was during some experiments, I could produce homogeneously coloured films of bubbles both deep and brilliant, and after going through the prismatic gradations of colour during distention terminated in an extraordinary manner, viz., by passing through various colour stages to a white one. Then, when all the necessary conditions have been complied, this white film either became riddled with apparent holes sailing from the bottom of the bubble, or it (the white film) detached itself from the mouth of the tube from which it was blown, and gradually settled down towards the bottom until we had the extraordinary spectacle of the lower half of the bubble apparently hanging cup-shape in mid-air, detached from the mouth of the tube. This apparent mid-air space has a most singular optical property of almost perfect total absence of the power of reflecting light from the convex or concave surfaces of so-called black film, for it is necessary, in order to dispel the illusion that it has no existence, is to illuminate it with a very bright light, in order to get it to show a reflecting capacity. For convenience, I have called this film a black one, because of this difficulty of not reflecting light like the ordinary objects around.

Occasionally the whole of the white film contracts from the black one, and then nothing remains to show its existence, but a small quantity of the solution suspended as it were in mid-air for a short period. Several times during my experiments I have taken advantage of the complete stripping to draw the air out of the bubble to see if by so doing I could make it increase its reflecting power, but it failed to show any signs, although its thickness must have been considerably increased by the time its size was reduced down to that of a small pea; neither did it show any signs of colour either, or course.

How this variable thickness will affect the theory of supposing the black spot (in this case film) may be the measure of the size of the ultimate particles of matter I am not aware. A further question might be asked: Are there not more sizes than one of the ultimate atoms of matter?

It is evident from the above facts that an ordinary bubble is composed of two films, which accounts for the peculiar behaviour and movement of the colours upon it, which could not be possible without a permanent and rigid foundation for them to float upon.

Now, these two films have totally different properties in some respects, but in other respects are similar. Both are stretchable under pressure, but one more than the other before rupture. The one from which the colours are developed has the least, and consequently ruptures and slides over the more permanent, or so-called black, film, and therefore when all is in perfect order slides down under the influence of gravitation to the lower part of the film or bubble. Now, this can never take place with too much free liquid taken up by the pipe from which the bubble is blown, consequently all the liquid taken up by the pipe should be used up in the production of the bubble. But no amount of varied manipulation will suffice for, or take the place of, a proper condition of the soap solution itself, and state as to dryness of the tube used.

Limpid solutions are of no use for this purpose, and if too thick

from cold and strength, a bubble cannot be blown with it. There is a slight range of strength and temperature between these two extremes.

The most suitable orifice for conveniently limiting the amount of solution taken up is a glass tube drawn out to the size of a worsted darning needle, and the mouth of it spread out trumpet-like. The external air should be excluded from the bubble under a square glass shade, for obvious reasons. Very occasionally the coloured film has been observed to split up into holes all over simultaneously.

But the solution may be so constructed to give the white film at once, and then splitting takes place at once, immediately the bubble is blown. This would seem to indicate that there is present a larger quantity of elastic material than there is of the free liquid from which the colours are produced. Or, to put it the other way, the free liquid is not present in sufficient quantity to spread itself over the more permanently elastic or black film, only up to a certain size before its cohesive limits are exhausted.

For the constitution of the soap solution many recipes have been given, each experimenter having his own favourite formula for any special purpose or experiment he may happen to have in hand; they are all more or less complicated. For stripping experiments, nothing could be more simple, as nothing but Castile soap and pure water is necessary, of a certain consistency. For a stock mixture, take soap and cut it into small fragments, and in a bottle simply cover it with pure water, or clear rain water, stir or shake thoroughly till completely mixed, which will take some considerable time. When completely soaked, a small portion may be taken and put into a separate bottle, and water added in small quantities, thoroughly mixed and tried after each addition of water until the end in view is accomplished. It is as well to have several specimens of variable strengths, as the homogeneous colours require a much less strength for their production. This stock solution—or rather, paste—does not separate into two parts as does a weaker mixture, which is useful occasionally to dip the pipe in certain cases, when other solutions from various causes are not giving satisfactory results. The trumpet-shaped capillary glass tube should have a convenient length of indiarubber tube attached to it to blow the bubble up, and a small piece of tubing inserted in the other or mouth end. The management of this tube is of great consequence, as after a time vapour from the breath gets condensed, and the water therefrom gets blown down the tube on which the bubble is formed, and vitiates all one's endeavour to obtain uniform results. This points to the necessity for several specimens of variable strengths, so that if one fails to give good results, the stronger or weaker specimen may be at hand for use until the tube has been freed from water.

Since writing the above I have obtained a better method of getting the best consistency of the soap solution for film splitting, i.e., by reversing the mode of procedure. Take a quantity of water for the amount of solution required, and add of the soap paste bit by bit until the consistency is reached best suited for a given purpose. Shake well till dissolved, and test after the last addition is completely dissolved. Having made several specimens of variable strengths, choose that one which, after standing undisturbed about a day, has a stiff, jelly-like consistency at about 58 to 65 degrees temperature. With the mixture I have best succeeded, a bubble could not be blown at the lower temperature, and if higher than 65 degrees the splitting and peeling was very difficult to get with any amount of coaxing.

No very definite method can be given to obtain success under all conditions at every attempt. To secure unfailing good results practice, perseverance, and intelligence are three prime mental elements or roads to success, coupled, of course, with the essential material elements.

G. MARLOW.

THE SPECTACLE MAKERS' COMPANY.—The Worshipful Company of Spectacle Makers have decided, after prolonged investigation, to institute an examination and diploma in eyesight testing, specially applicable to members of the optical industry. So well has the diploma scheme of the Spectacle Makers' Company been received, that the National Association of Goldsmiths has approached the Spectacle Makers' Company with the request to undertake the examination of jeweller-opticians in order that they may gain the diploma.

IN THE WEST.

About a year ago or so Bideford Photographic Society was founded, and it has been pursuing a useful, if not a very demonstrative, course, inciting its members to good works, and gradually drawing together the fraternity of the camera. It is not every society that contains within itself workers who feel themselves capable of leading their fellows, though it is generally admitted that co-operation in this direction has a very useful effect. However, the Bideford Society adopted a somewhat novel expedient and obtained a course of lectures upon photographic subjects, by securing the services of Mr. W. E. Searley, of the County Council, during the winter session just closed. That gentleman dealt with the following subjects:—1, camera lenses and fittings; 2, exposure and exposure meters; 3, developers and developing; 4, intensification, reduction, printing, and toning, P.O.P. and bromide papers; 5, carbon, gum bichromate, platinotype, and gaslight papers; 6, enlarging, reducing, and copying; 7, lantern slide making; 8, art in photography. These proved most instructive and useful. Mr. Searley closed the series with a lecture on a trip to Lapland, Spitzbergen, and Iceland, illustrated by his own slides. The audience was a very large one, and the lecture was very heartily and deservedly applauded. The Society in recognition of his work has made him a presentation of a handsome writing case, silver mounted.

Recently a very interesting lecture was delivered at the Athenæum, Plymouth, in the rooms of the Plymouth Institution, by Mr. Charles R. Rowe, M.J.L., upon "Rambles in photographic byeways." The lecturer dealt with specialised photographic work as distinguished from the common place—the highway in photography. He showed that those who left the highway, and went into the byeways had produced very striking and frequently very valuable work. He dealt with "Nocturnal photography," with examples by Paul Martin and W. A. Fraser; flowers, W. A. Fraser. The development of the window in church architecture, Harold Baker; lightning, W. Archibald; the life history of a tadpole (radiography), W. Morley Martin; sea birds, C. J. King; small mammals, reptiles, and insects, Douglas English; crystallography, microphotography, etc., Fred Hes; and frost crystals, J. Leadbeater. The series included a splendid lot of slides and evoked very hearty applause for their novelty, great beauty, and technical quality.

Torbay Camera Society beside holding a monthly meeting has adopted the plan of circulating an album of prints every month for stirring up the emulation, and quickening the ability of its members, with very marked and excellent results, as each album appears to be an advance on its predecessor. Each member is not compelled to contribute, and, as a matter of fact, only about half do so. But the album goes to every member, and each member may contribute a criticism and award a vote. The last album has just been circulated with the following result: First, Miss Marillier, for a very effective and striking interior—a drawing-room. Second, Mr. E. Midgley, "Reredos, Exeter Cathedral," a skilful and clever example of interior architectural work. Mr. R. F. Welby is a veteran in photographic work, and his range is wide. He contributed besides an example of snapshot photography a copy of a water colour sketch by Welby Pugin, a fine bit of work. Miss Rodway's landscape work is always characterised by excellence of selection and good technique. She has recently taken up enlarging and contributed a couple of examples from the charming spot "Pittisham on the Dart." Mr. Carslake Winter Wood has two technically good subjects, the better, perhaps, being that of fishermen on the quay at Brixham. "Toilers of the Deep." Miss G. M. Rodway has sent a couple of subjects from Santa Margherita, Italy, "Lemons and mimosa," very excellent, and "Entrance to olive groves," a small picture of great merit, too small to do itself justice. "Scarborough Harbour" by Mrs. Marillier, is a very clever rendering of a shimmering sea and well-broken reflections, a highly creditable example of work. Miss C. E. Robinson is an expert in architecture, but in this case her scores best with a landscape "Bickford, on the Mendips," the charm of which would have been greater but for its biting sharpness. Colonel Macmullen's flower study is a very fine thing. Miss F. E. Welch has "The Lenywater, near Callander," a happy selection. The average of the album is excellent, and the progress of the members of an encouraging character. The membership is steadily growing. South Devon Teachers' Camera Club is somewhat, if not altogether unique in its character, as it has a membership from an area of

large size, and of scattered character. This does not, however, militate against excellent attendances. The meetings are held at various places, once a month. The last took place at the Wolborough National School, Newton Abbot, Mr. W. E. Searley is president, and he occupied the chair. After the ordinary business had been dealt with the President delivered a very practical and well reasoned address on "Pictorial Composition." The lecturer's purpose was to encourage the thoughtful use of the camera, and as far as possible, utilising the principles of composition as defined and used by painters. He very happily hit off photographers into three classes:—The scientist, the topographer, and the artist. He everly defined all three more elaborately, and though he spoke of pictorial photography it was by no means with a very big A. He did much to say upon what art was, and was not, yet he admitted it was hard to define so clearly as could be desired. It was, he thought, clearly a matter of temperament, and that without individuality there could be no interpretation of art. Art was not merely a transcript of nature. It was more than that—just that something that raised it from the commonplace. After speaking of the limitations and pointing out that the camera draws too much of the whole subject was dealt with in a broad spirit. The lecturer pointed out that, so far as might be possible, the photographer could be governed by the following principles in the arranging and selecting of his picture:—Balance, contrast, repetition, variety, gradation, repose, breadth, and simplicity. If these were kept in mind camera workers would probably take more time, do less, but get better results. The lecturer evoked hearty applause at the conclusion of his lecture. He had demonstrated his arguments with drawings on the blackboard, and by passing around reproductions from the works of the old and modern masters, all of which supported and accentuated his contentions. An excellent discussion followed, and a hearty vote of thanks was tendered to the lecturer, a well-deserved compliment.

ON THE ALTERATION OF ANHYDROUS SODA SULPHITE WHEN EXPOSED TO THE AIR.

Sulphite of soda is, as we know, usually employed in order to prevent the oxidation of developing solutions when exposed to the air, by reason of its easy transformation into sulphate. It rapidly absorbs the oxygen of the air, which acts on the developer. This oxidation, we know, may take place spontaneously prior to the sulphite being used in the preparation of developers, either during manufacture, in the vessels to which it is transferred, or in solution, when the latter is prepared in advance. Owing to this oxidability, sulphite of soda is, therefore, liable to alteration, which renders its action uncertain, and prevents uniform results being obtained in the preparation of developers. Quite recently Namias* has shown by analysis of various samples of anhydrous and commercial crystallised sulphites that these products have a variable yield of pure sulphite, declining in certain cases to 44.2 per cent., but not exceeding 90 per cent. He recognises, furthermore, that the alteration in air is more rapid in the case of anhydrous soda sulphite than in that of the crystallised form, and confirmed the experiences of Ellis and other authors† on the rapid oxidation of aqueous solutions of commercial soda sulphite in a half-full bottle. Such alteration occurs even when the operations are protected from the air.

On account of its liability to alteration, Namias recommends the replacement of soda sulphite by potassium metabisulphite,



which is a substance liable to but slight alteration.

Unfortunately, this body has an acid reaction, and considerably hinders development; whilst in order to use it under the same conditions as sulphite of soda, the addition of suitable quantities of caustic soda or of caustic soda is necessary (3.5 grm. of soda or 5 grm. of potash to 10 grm. of metabisulphite, according to Namias). We considered it desirable, before condemning the use of soda sulphite, so general in photography, and substituting an acid body

which must be neutralised at time of use, to examine the conditions under which alteration of the sulphite takes place. It will then be possible to indicate the means to be used for preventing or minimising such alteration.

We propose to determine the causes favouring oxidation, in the air, not only of anhydrous soda sulphite and of crystallised soda sulphite, but also of metabisulphite of potash and bisulphite of soda, i.e., all the derivatives of sulphurous acid most generally in use in photography.

In the following study we shall confine ourselves to exhibiting the first results of our researches; these concern only the alteration in air of anhydrous soda sulphite.

I.—ALTERATION OF ANHYDROUS SODA SULPHITE IN SOLID FORM.

We endeavoured, in the first place, to discover whether anhydrous soda sulphite oxidises in air when exposed in a thin layer, at ordinary temperature, either in relatively dry air or in air of great humidity, as well as at temperatures of 50 degrees and 100 degrees. In order to follow the alteration of the sulphite we made a quantitative analysis of its sulphurous acid by means of a liquor of iodine one-half decime normal added to 10 c.c. of liquor of sulphite brought by dilution in every case to a strength of 1 per cent. To these 10 c.c. of liquor, placed in a glass and increased by the addition of an equal quantity of water, were added a few drops of starch. To this mixture was added little by little the titrated liquor of iodine until of a fixed blue colour.

The following are the results of the titration effected on an anhydrous sulphite:—

Date of Titration.	Relatively dry air Temp. 15°.	Very humid air Temp 15°.	Sulphite kept at 50°.	Sulphite kept at 100°.
5 December.....	29 ccm. liq. iode	29 ccm. liq. iode	29 ccm. liq. iode	29 ccm. liq. iode
8 " " " " " "	29.1 " " "	28.7 " " "	29 " " "	29 " " "
12 " " " " " "	29 " " "	26 " " "	29 " " "	28.1 " " "
16 " " " " " "	28.8 " " "	25.5 " " "	28.0 " " "	29 " " "
21 " " " " " "	29 " " "	24.1 " " "	28.7 " " "	29.1 " " "
30 " " " " " "	28.5 " " "	24 " " "	28.5 " " "	29 " " "
5 January	28.5 " " "	21 " " "	28.7 " " "	29 " " "

The preceding results show, therefore, that anhydrous sulphite of soda in solid state, and dry, does not appreciably alter when exposed to the air, even at a temperature of 100 degrees. Alteration occurs, but only slowly, when this product is exposed to very humid air. In all cases, however, the conditions most favourable to oxidation were present, the sulphite having been exposed to the air in the form of a very thin layer.

II.—ALTERATION OF SOLUTIONS OF ANHYDROUS SODA SULPHITE.

Various authors have indicated the alteration undergone by solutions of soda sulphite, but no precise observation has up to the present been made on the rapidity of such alteration at a fixed concentration, nor on the influence of temperature and concentration on the speed of oxidation.

(a)—INFLUENCE OF CONCENTRATION AT ONE TEMPERATURE.

With the same sample of anhydrous soda sulphite we made two litres of solutions at 1 per cent., 3 per cent., 5 per cent., 10 per cent., and 20 per cent. Each of these solutions was divided into two equal parts, and each part, about a litre, was placed in two two-litre bottles, one of which was corked and the other left uncorked, in order to examine the influence of corking in a half-filled bottle. Each solution was titrated daily.

For this titration all the liquors were suitably diluted in such manner as to contain only 1 per cent. of sulphite, 10 c.c. of liquor was used, the operations being carried out exactly as indicated above.

The results found in these titrations are not positive—their comparison only is interesting. The numbers obtained vary, in fact, according to the size of the bottles, the quantity of liquid they contain, the surface of liquid in contact with the air, and the exterior temperature.

Further, in the same solution one number is not altogether comparable with those following, the less so as the quantity of liquid

* Bulletin de la Société Suisse de Photographie, p. 513 (1903).

† Hauberriiser : Das Atelier de Photographen, p. 129 (1903).

* This anhydrous sulphite, 10c.c. of 10 per cent. solution of which require 29c.c. of liquor half decime normal (6 gr. 35 per litre) contains, according to calculation, 91 gr. 35 per cent. of pure Sulphite $\text{SO}_3 \text{Na}_2$.

contained in the bottle becomes weaker in proportion to the daily titration.

The surface of absorption of the oxygen remains, in fact, the same, whatever the quantity of liquid.

Also, it may be noticed that in those solutions which oxidise less rapidly (those in which a large number of titrations has been made) the rapidity of oxidation increases in proportion to the increase in the number of titrations.

The following table indicates the results of our operations:—

Strength of Solution.	Duration of Contact with the Air.	Quantity of Oxidized Sulphite, per 100 gr. Total used.	Quantity of Oxidized Sulphite, per 100 c.c. After 7 days.
1 p.c. solution.			
Half-filled bottle, open	After 7 days, total oxid'n.....	100 p.c.	1 gr.
Half-filled bottle, closed.....	After 7 days, total oxid'n.....	78 p.c.	0 gr. 73
3 p.c. solution.			
Half-filled bottle, open	After 7 days, total oxid'n.....	100 p.c.	—
Half-filled bottle, closed.....	After 14 days, total oxid'n.....	100 p.c.	—
5 p.c. solution.			
Half-filled bottle, open	After 7 days, total oxid'n.....	61 p.c.	1 gr. 83
Half-filled bottle, closed.....	After 12 days, total oxid'n.....	100 p.c.	—
10 p.c. solution.			
Half-filled bottle, open	After 7 days, total oxid'n.....	90 p.c.	0 gr. 6
Half-filled bottle, closed.....	After 1 month.....	72 p.c.	—
20 p.c. solution.			
Half-filled bottle, open	After 7 days, total oxid'n.....	27 p.c.	1 gr. 35
Half-filled bottle, closed.....	After 14 days, total oxid'n.....	100 p.c.	—
30 p.c. solution.			
Half-filled bottle, open	After 7 days, total oxid'n.....	10 p.c.	0 gr. 5
Half-filled bottle, closed.....	After 1 month.....	81 p.c.	—
40 p.c. solution.			
Half-filled bottle, open	After 7 days, total oxid'n.....	19 p.c.	1 gr.
Half-filled bottle, closed.....	After 1 month.....	98 p.c.	—
50 p.c. solution.			
Half-filled bottle, open	After 7 days, total oxid'n.....	5 p.c.	0 gr. 5
Half-filled bottle, closed.....	After 1 month.....	32 p.c.	—
60 p.c. solution.			
Half-filled bottle, open	After 7 days, total oxid'n.....	2.4 p.c.	0 gr. 43
Half-filled bottle, closed.....	After 1 month.....	14 p.c.	—
70 p.c. solution.			
Half-filled bottle, open	After 7 days, total oxid'n.....	0.5 p.c.	0 gr. 1
Half-filled bottle, closed.....	After 1 month.....	6.5 p.c.	—

The above table shows that the relation between the amount of oxidised sulphite at the end of the same period, in solutions of variable concentration, and the total quantity of sulphite contained in the same volume of solution, is weaker the greater the concentration.

Thus, it is seen that after seven days the total of the sulphite, 100 per cent. is oxidised in the 1 per cent. solution, whilst at the end of the same period there is only 2.4 per cent. of the total quantity of sulphite that has disappeared in a 20 per cent. solution.*

If the quantity of oxidised sulphite in 100 c.c. of solution be calculated it is seen that this quantity is weakest in the 20 per cent. solution. Thus, in place of about 1 gr. of oxidised sulphite after seven days to 100 c.c. of liquid in the 1 per cent. solution, only 0.48 is found in the 20 per cent. solution. The alteration of 20 per cent. solution of anhydrous sulphite may, therefore, be considered as notably less than that of a weaker concentration.

B.—INFLUENCE OF TEMPERATURE ON THE SAME CONCENTRATION.

We repeated experiments similar to the foregoing, using 1 per cent. solutions of anhydrous sulphite of soda, and maintaining these at temperatures of 15, 25, 35, and 45 degrees, respectively. Each test was made on a litre of liquid placed in two-litre bottles, the same temperature being maintained for an open and a closed bottle.

In the open bottles the following total oxidation resulted:—

- After 6 days, at 15 degrees.
- After 4 days, at 25 degrees.
- After 3 days, at 35 degrees.
- Après 2 days $\frac{1}{2}$, at 45 degrees.

In the closed bottles the alteration was complete

- After 14 days, at 15 degrees.
- After 12 days, at 25 degrees.
- After 12 days, at 35 degrees.
- After 11 days, at 45 degrees.

Therefore, the higher the temperature the more rapid is oxidation, particularly if an open bottle be used.

* As we have pointed out above, the 2 litre bottles which contained 1 litre of liquid, were half-full at the commencement of the trials, but when the experiments were repeated during a month there remained finally about 50 c.c. of liquid in the 2-litre bottle.

C.—ALTERATION OF SOLUTIONS AT THEIR BOILING POINT.

We have endeavoured to discover with what rapidity oxidation takes place in the case of solutions of anhydrous soda sulphite, in different degrees of concentration, when placed in contact with the air in their boiling state. One per cent., 3 per cent., 5 per cent., 10 per cent., and 20 per cent. solutions were used, each solution being titrated before heating, then raised to and maintained at boiling point in two-litre capsules, care being taken to make up for the loss of water in proportion to evaporation. After a suitable time, each operation was stopped, and titration carried out. In all these titrations the solution was restored, after cooling, exactly to its original volume, then diluted to correspond in strength to 1 per cent. in relation to the original liquor.

The following table indicates the results obtained in the titration of solutions of anhydrous sulphite in various degrees of concentration after boiling for variable periods:—

Strength of Solution.	Duration of Boiling.	Quantity of Oxidized Sulphite, per 100 gr. Total used.	Quantity of Oxidized Sulphite, per 100 c.c. of Solution, after 2 hours' boiling.
1 p.c. solution	2 hours. 2½ hours.	97 p.c. 100 p.c.	0 gr. 97 —
3 p.c. solution	2 hours. 4 hours.	19 p.c. 44 p.c.	0 gr. 57 —
5 p.c. solution	2 hours. 5 hours.	13.6 p.c. 27.5 p.c.	0 gr. 68 —
10 p.c. solution	2 hours. 10 hours.	2.7 p.c. 14 p.c.	0 gr. 27 —
20 p.c. solution	2 hours. 12 hours.	0.8 p.c. 4.5 p.c.	0 gr. 16 —

Examination of the figures of this table shows that at their boiling temperature the ordinary solutions are considerably more susceptible to oxidation than concentrated solutions. This result may be deduced not only from comparative examination of the amount of oxidised sulphite, in relation to 100 gr. of sulphite employed, but also in relation to the same volume of solution.

If, for example, solutions at 1 per cent. to 20 per cent. be compared, it is seen that after two hours boiling, in the first 97 per cent. of the total sulphite had oxidised, and 0.8 per cent. in the second, or 0.97 of substance to 100 c.c. of 1 per cent. solution, and 0 gr. 16 to the same volume of 20 per cent. solution.

CAUSE OF OXIDATION OF SOLUTIONS OF SODA SULPHITE.

We have sought for the cause to which may be attributed oxidation of solutions of soda sulphite. The oxygen originally dissolved in the water appears to us to have no perceptible influence on this alteration, for no appreciable difference was observed in the rapidity of oxidation when using solutions prepared with boiled water and unboiled water kept in hermetically sealed bottles.

In every case, solutions of anhydrous soda sulphite undergo no appreciable alteration no matter what their concentration, except after a very long period, if kept in a full bottle hermetically closed, whatever the exterior temperature.

The oxygen of the water then appears to have no connection with the phenomenon, and the oxygen of the air alone seems to be the reaction agent. Doubtless, it is during its dissolution in the liquid in proportion to its fixation that oxidation occurs.

May it not be deduced from this that if ordinary solutions oxidise more readily than concentrated solutions, it may well be because oxygen is less soluble in the latter than in the former?

CONCLUSIONS.

From the preceding experiments a series of practical conclusions may be drawn.

(1) Anhydrous soda sulphite exposed to air, even in a thin layer, at ordinary or high temperature, undergoes no appreciable alteration, except the atmosphere be very humid.

(2) Weak solutions of anhydrous soda sulphite oxidise very rapidly in the air at ordinary temperature. In solutions of various degrees of concentration the relation between the quantity of oxidised sulphite at the end of the same time, and the total quantity of sulphite dissolved, is the weaker, the greater the concentration of the solution.

5) Concentrated solutions, from 20 per cent., are but very slightly stable, even if kept in an uncorked bottle, and present to the air a large surface of contact. In order to keep sulphite in solution it is, therefore, best to use it in concentrated form.

4) At boiling point, solutions of anhydrous soda sulphite oxidise the silver rapidly the greater their dilution. From 20 per cent. these solutions may be kept at boiling point, in the air, without appreciable variation.

Exhibitions.

HOUSE EXHIBITION AT THE ROYAL PHOTOGRAPHIC SOCIETY.

INTERVALS of such length are now allowed to elapse between the house exhibitions held by the Royal Photographic Society at its domicile, 66, Russell Square, that the series has almost forfeited its right to be titled a series; moreover, the present exhibition departs from the custom of including only the work of a single person, and in this respect it is on different lines from its predecessors. We understand that it was intended to include work by several professional photographers who at the last moment were unable to send in, but, except that the number of pictures shown is rather small, there is no reason to regret that the exhibition is confined to the work of three exhibitors.

The three exhibitors are William Crooke, Frederick Hollyer, and T. C. Turner, and the work of each may be taken as typically representative of the result of a different influence. Frederick Hollyer is best known by his photographic reproductions of works of art, particularly paintings. His success in this branch of photography is everywhere recognised, and it is undoubtedly due, apart from the technical photographic perfection of his work, to his intuition of the feeling of the man whose work he is translating. Knowledge of the methods of the painter and sympathy with his desires constitute the secret of Mr. Hollyer's aptitude at rendering the spirit as well as the details of his copy in the monochrome of a photograph. Intimate acquaintance with and appreciation of the plastic facilities of the brush help to give direction to Mr. Hollyer's ideas in dealing by photography with subjects direct from life. There is not the slightest suggestion of the methods or ideals of the ordinary photographer in any of his work. He sees his model with the eyes of a painter, and he earnestly endeavours to make his production as a painter would make it, entirely without regard to any conventional ideas of what a photograph should be. In this endeavour he succeeds entirely. His portraits are the characteristic of photographic copies of paintings, so much so that many of them might be easily mistaken for such, and they often are just the defects that photographic copies of paintings are subject to.

The method of mounting frequently adopted, upon canvas so that the grain of the canvas is apparent, the semi-glossy surface, and the framing, without a glass, help to complete the illusion. These means secure effect are legitimate enough, but in less capable hands their employment might easily have no other result than to suggest that an imitation had been attempted. Hollyer's work does not suggest that. It comes as an afterthought that its similarity to painting is due to anything further than the treatment of the subject and the minor details of the production are accepted as carrying out the spirit of the work.

A characteristic of Hollyer's work is its spontaneity. To the photographer with the usual experience in posing, it gives the impression of the result of happy accident rather than of a thought-out scheme. There is no rigging in any way or faking of any kind, not even to the extent of removing or modifying details which might well have been altered. Hollyer's portraits are full of character, but it is his fortune to be able to choose persons of character for portrayal. In any respects Hollyer's work bears a strong resemblance to that of the late Mrs. Julia Margaret Cameron. There is the same breadth both in conception and execution and the same disregard for conventionalities, and though a generation of photographers has passed since her time, among them there is not one who has so nearly followed the same path.

Much as there is in common in the work of Hollyer and William

Crooke, as indeed there must be much in common in the work of all artists who use the same means of expression, there is little similarity in the results. Crooke does not go to the painter direct for his guidance but takes his cue from a branch of art more nearly allied in its requirements and limitations to photography. As Hollyer directly follows the lines of the painter, Crooke as directly follows the lines of the engraver, the etcher, and the draughtsman in black and white. It is the engraver's business to translate into monochrome pictures which in addition to contrasts in tones contain contrasts in colours, and to do so in a way that preserves the semblance and the spirit of the original in spite of the limitations imposed upon him. The etcher and the black and white artist, although they may work directly from nature, have also the same translation to effect, the photographer likewise. The art of them all is to deal with contrasts and gradations. What, then, is more natural than for the photographer to adopt the methods, as far as his craft will allow, of those aims which are so closely allied with his own? That Crooke sometimes finishes and mounts his pictures so as to imitate the appearance of old engravings, even to the lines and lettering, constitutes but a minor point of resemblance. It is not in the get-up of the pictures but in their treatment that the influence over their creation is shown. Minutely perfect in detail, one instinctively feels that not a line or a tone exists that has not been the subject of thought, yet, withal, the effects are so natural that there is no appearance of labour. Crooke is usually sparing of the higher tones, but his masses of shadow are not empty spaces but full of subtle gradations, and his flesh-tints, although he uses the strongest lighting involving deep shadows, are so well managed that the inky blackness which almost universally characterises similar attempts in photography are absent. The two pictures, "Summer" and "A Lady of High Degree," alike, inasmuch as they both contain faces shaded by hatbrims, are examples of this able treatment, while some of the feeble attempts at chiaroscuro of a similar kind which hung a year or so ago on the same walls during the exhibition of American work, represented the other extreme. As most of the pictures are, on the whole, low in tone, and the lighting of the room is not brilliant, the effect of several hung together is somewhat sombre, but this is not the feeling that the individual pictures would produce.

In the work of Thomas C. Turner there is the exemplification of yet another path to success in photography. Throughout there is nothing suggestive of any influence outside photography except what may be looked upon as traditional. The earliest photographers, provided with a chemical means of doing what had hitherto required years of study and practice to do by hand, were unprovided with artistic methods suited to the new departure. Naturally they adopted, as far as they could, the practices of their predecessors and contemporaries—miniaturists and painters. But the imaginative accessories of the latter, pillars, curtains, pedestals, balustrades, etc., together with park-like landscapes, when roughly imitated in the solid or painted upon canvas under the searching power of the lens, and used unintelligently and without discretion, made but a ridiculous travesty of what under idealistic treatment served a useful purpose. It was when the *carte de visite* boom was on the wane that photographers struck out a course for themselves, and for a long period we have had a treatment of portraiture on lines entirely peculiar to photography. But while generally photographic portraitists have been content to follow popular taste, some of them, among them T. C. Turner, have sought to lead it. No one could mistake any of Turner's works for an engraving or a copy of a painting. It is distinctly photographic in character, and the natural evolution of the *carte de visite* of Doderer. Improved processes, better materials and greater facilities have done much towards advancement, but all these, as we may see every day by looking around, are in themselves of little avail without exceptional skill and taste in the man who directs the operations. Photography has existed from the first with an unmerited slur on its character. In the beginning artists with other means of expression thought and were terribly afraid it would supersede their work. Nowadays some of them dislike photographs because they are like photographs, while others sneer at them because they are like something else. A new generation, it is to be hoped, will recognise that a photograph pure and simple may possess qualities which deserve admiration, and that a photographer who conscientiously works out his art by the means best suited to the possibilities and limitations of his method of expression is not unworthy of the brotherhood.

MR. TOM REVELEY'S EXHIBITION.

At the Camera Club a small one man show, the work of the above-named professional photographer, of Wantage, affords a display interesting especially to those concerned in the breeding of pedigree animals, whether horses, dogs, cattle, or sheep. Mr. Reveley has attained an extremely creditable excellence, artistic, technical, and one may add, occasionally humorous in photography in this special direction. While very careful in the correct posing for points, he has succeeded also in giving artistic results, frequently very difficult to obtain with such subjects, and his technical work, especially in the marvellous reproduction of the texture of the coats of the animals, is very attractive. An excellent example of large and difficult grouping is a picture which perpetuates the memory of a visit paid by the King and Queen (when Prince and Princess of Wales) to the birthplace of their great ancestor King Alfred.

Nor has Mr. Reveley neglected human kind for the lower races. In portraiture he exhibits some examples of high merit, those of Professor Wicksteed (the Dante specialist), the Dowager Countess of Crawford, and others testifying to his power in that direction, as also one of the Right Hon. Sir Henry Elliott, G.C.B., who faces us here as the country squire in quiet retirement from many years of Diplomatic toil.

Visitors can obtain cards of admission to view this collection by application to the Hon. Secretary of the Camera Club, and on Tuesday and Friday afternoons during April from 3 to 5 p.m. on presentation of visiting card.

FORTHCOMING EXHIBITIONS.

April 20-26.—Swansea Photographic Club. Hon. Secretary, W. R. Stephens, 14 and 15, Temple Street, Swansea.

May 2-4.—Bristol Eisteddfod. Photographic Section. Hon. Secretary, Arthur B. Cleaves, Westbury-on-Trym, Bristol.

May 11-18.—Plymouth Photographic Society. Hon. Secretary, Wilfred Grist, 105, Old Town Street, Plymouth.

May 16-28.—Photographic Society of Ireland. Hon. Secretary, E. Webb-Smith, care of Royal Dublin Society, Kildare Street, Dublin.

May 24-28.—Devonport Camera Club. Hon. Secretary, A. J. Catford, 78, Charlotte Street, Devonport.

Patent News.

The following applications for patents were made between March 21, and March 26, 1904:—

Apparatus.—No. 6,855. "Improvements in photographic cameras, plate holders, focus screens, and means of attachment to stands." Henry Major.

Cameras.—No. 6,839. "Improvements in photographic cameras." The Thornton-Pickard Manufacturing Company, Limited, George Arthur Pickard and Frank Slinger.

Diaphragm Adjuster.—No. 6,974. "Improvements in appliances for adjusting and working iris diaphragms of photographic cameras." Alfred Watkins and Charles Godfrey Woodhead.

Printing Apparatus.—No. 7,009. "Improvements in photographic printing apparatus." Complete specification. Hervey Heman McIntire.

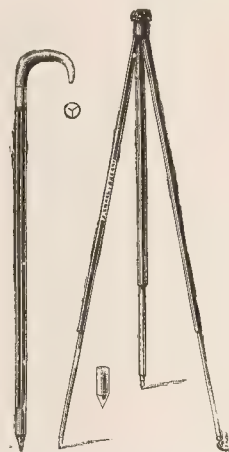
Film Cartridges.—No. 7,131. "Improvements in and relating to photographic film cartridges." John Laird Nuttall and Thomas Arthur Harrison.

THE Discovery Antarctic Exhibition. — It is stated that some thousands of photographs were taken on the expedition, covering natural features and bird and animal life. The main practical interest of the expedition lies in the results of the magnetic investigations. Continuous observations were taken in the neighbourhood of the Magnetic Pole.

New Apparatus, &c.

The "Falloroll" Aluminium Telescopic Walking Stick Stand.—Sold by Jonathan Fallowfield, 146, Charing Cross Road, London, W.

This latest addition to the long list of telescopic and walking stick tripods already on the market has, at least, the merit of fully bearing out its title, and is probably better than most "walking stick" stands we have seen. When closed it resembles nothing so much as a neat ebony walking stick with crook handle, silver ferrule, and band. As a walking stick it is lighter than ebony, and is well



balanced. By unscrewing the crook and ferrule the stick opens into the familiar tripod, which can now be doubled in length or height by pulling out inner draw tubes. A neat little turntable can be screwed on the top, which is then ready to take a light camera. We question its rigidity with a heavy camera, but its intention is obviously to supply a handy and portable tripod in an unostentatious manner, when on tour with a hand camera. In this it succeeds admirably. Its cost in aluminium is not excessive.

BUTCHER, Curnow, and Co., Limited.—The above-named company has been registered with a capital of £6,000 in £1 shares. Object, to acquire the business of wholesale and retail chemists, retail dealers in photographic apparatus, etc., carried on at 33 and 35, Tranquil Vale, Blackheath, as W. Butcher and Son and F. E. Butcher of the first part, W. A. Curnow of the second part, J. L. Savage of the third part, and the company of the fourth part, and to carry on the said business and any other incidental thereto. No initial public issue. The first directors are W. F. Butcher, F. E. Butcher, W. A. Curnow, and J. D. Savage. Qualification, £500. Remuneration of W. F. Butcher as chairman, £50 per annum; of others, as fixed by the company. Registered office, 33-35, Tranquil Vale, Blackheath.

How to Make Post-cards Dry Flat.—Everyone who has printed post-cards knows the inconvenient way they have of curling when dry. After many experiments I have succeeded in drying them almost flat, and as the process employed requires no expense, skill, or trouble, I trust that it will prove of interest to printers of post-cards. The procedure is as follows:—Two pieces of wood are tacked on a piece of board four inches apart (preferably putting a sheet of blotting-paper under, so as to absorb the water that drains from the post-cards). When the post-cards are washed, take them out of the final water and place them one by one between the two pieces of wood in a curved way, film upwards. Allow them to stay so until thoroughly dry, then take them off, when they will after a little while flatten themselves. If they are wanted quickly, put them under some weight, say between two books. I have dried post-cards more or less flat in other ways, but this one has proved to be the simplest and cleanest.—John Mallia, in "The Bromide Monthly."

RECENT ASTRONOMICAL RESEARCH.

[From "Popular Astronomy."]

I.

It is our aim, each month, in a general way, to call attention briefly to some of the more prominent lines of original astronomical work, in regard to plans, methods or results, or, in other respect, which may seem to be very useful to those interested in astronomy. Photography has come into such general use in some branches of the science that we now wonder that so very efficient aid in astronomical research had not been put to place of service long ago. The great star charts of the heavens, observations of Eros, the work on nebulae and comets are some of the important lines of work in which photography works specially well.

Harvard College Observatory in Cambridge and at its station in Peru has done, in the last few years, a vast amount of astronomical work by the aid of photography chiefly. In Professor W. C. Pickering's last report is found a brief statement in this regard that is well worth copying, for the general reader. It is as follows:—

"The problem of obtaining the greatest return for astronomical research from a given expenditure of money should be the principal concern of every astronomer. It is obvious that no single observatory can accomplish as much and as good work as could be done through the efforts of the entire astronomical world. The present attempt on the part of this Observatory to secure an endowment for international astronomical research has led certain persons to infer that the present needs at Harvard are supplied. An important part of this very plan is to enable a large Observatory to do this, which can undertake to great advantage large pieces of routine investigation quite beyond the reach of the smaller observatories, to use its resources to the best advantage. It can co-operate with others, and thus bring the energy of many minds to bear upon a single problem. As an illustration, it is recognised that the distribution of the stars in space is one of the most important problems in astronomy. This investigation depends on the accurate measures of the light of stars in all parts of the sky. But little work of this kind has been done on the light of the southern stars. Special attention has been paid to photometry at this Observatory, and we have an excellent southern station where such work could be carried on to great advantage. An expenditure of one thousand dollars annually for five years would go far to provide for this want; but as the expenses here for the last year have exceeded the income, additional work cannot be undertaken. Again, the Harvard collection of astronomical photographs gives the history of the stellar universe for the last fourteen years with a completeness not attempted elsewhere; but these photographs are of little use unless a careful study is made of them. A satisfactory plan has been prepared for organising a corps of observers at a cost of about five thousand dollars a year, for studying these photographs. The Carnegie Institution appropriated 2,500 dollars last year for this work, but gave no assurance that it would be increased, or even continued. Results have already been obtained which show what might be expected from a permanent maintenance of this work, but the appropriation is not continued much work will be lost, and many assistants who have been carefully trained will be obliged to seek work elsewhere. The great increase in the resources of the Observatory has not been accompanied by a similar increase in the amount of capital available for plant. Accordingly, the buildings and instruments here, purchased mainly from income, are very inferior to those of other observatories whose endowment is much greater. The anonymous gift of 1902 has been of the greatest service in this respect, since it will provide two reflectors of twenty-five inches aperture, one for use on the northern, and the other on the

southern stars, and has given us a fireproof wing to the building already used for storing and studying the photographs. The cost of the entire building and wing was only about 20,000 dollars, and two similar buildings would provide for a much needed new library for the Observatory, computing rooms, photographic laboratory, and a workshop. All of this work is now carried on in very inferior wooden buildings, some of them more than half a century old. Much money is also spent in strengthening floors and repairing foundations; and the danger from fire is ever present.

If the sum of 50,000 dollars could be expended during the next ten years for such researches and buildings as those mentioned above, it is believed that a relatively large return in scientific results would be obtained. Our expenses now slightly exceed our income, and if they are cut down, a proportionately greater diminution in work will ensue. An unrestricted fund like that mentioned above would permit our present appliances to be used to the best advantage. Whatever may be the future of the Observatory, there is no doubt that a reasonable sum could be wisely expended at once, while a delay of several years may bring other conditions less favourable to effective expenditure, and will certainly cause some needs to be neglected which now seem most urgent."

Another piece of excellent photographic work is found in the new book prepared by Professor William H. Pickering of Harvard College Observatory, titled, *The Moon*. This volume is a summary of the existing knowledge of our satellite with a complete photographic atlas; it is published by Doubleday, Page, and Company, of New York, the net price being ten dollars. The description of this book consists of thirteen chapters, embracing 103 pages, large size, with wide margin; very fully illustrated with drawings and half-tone cuts, interspersed in the reading matter.

In the text the author considers the origin of the Moon; its rotation, distance, orbit, light, libration, gravitation; atmosphere, water, temperature; origin of the lunar craters; illustrative artificial craters; origin of the various formations; active lunar craters, riverbeds; ice on the Moon, the bright streaks; vegetation, the lunar canals; recent investigations; fancies, apparent size, suppositions, influence on the weather; history of lunar research; the photographic atlas, the map of the Moon, and lunar altitudes.

In his treatment of these themes, the author has passed by almost all the common-place information found in the ordinary text-books of astronomy, and has presented the latest phases of study known to the modern selenographer in plain and untechnical language. This fact alone makes the book a very useful one for the popular reader, the student and professional scientist as well.

It may be known to some of our readers that the author of this new volume recently had charge of a party from Harvard College Observatory which went to Jamaica, and there made a very complete and valuable set of Moon photographs. These have been related and arranged to form the atlas before referred to. In planning how to take the photographs, it was decided to divide the diameter of the Moon, east and west, into eight equal parts and erect perpendiculars at the dividing points which gave in all sixteen regions. Of each of these divisions five photographs were taken, making eighty in all, which covered the entire, visible surface of the Moon five times. The views for each region are, one at lunar sunrise, one two days after sunrise, one at lunar noon; another two days before lunar sunset, and the last at lunar sunset. The manifest advantage of this plan is, that it shows the same objects on the Moon's surface, at least, under five different phases of illumination, to say nothing about some of the overlapping parts of the plates which appear as many as ten times in the series. This fact suggests a pretty severe test on the skill of the artist to get all parts of these Moon pictures so well in the focus of his instrument that one does not notice obtrusive lack of definition in any. It appears to the writer that not all the pictures are equally sharp or equally good; but the wonder is that there are not greater differences in merit among so many taken within a period of seven months.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

April.	Name of Society.	Subject.
8 and 9.....	West London Photo. Society.....	Annual Exhibition.
8.....	Plymouth Photo. Society	Platotype Printing. Mr. Alfred W. Hicks.
9.....	Borough Poly. Photo. Society	Bohemian Concert.
9.....	Aberdeen Photographic Assoc.....	Slide Competition.
11.....	Oxford Camera Club	Portraiture. Miss Hopkins.
11.....	Ulster Amateur Photo. Soc.	Photographic News Prize Slides.
11.....	Glasgow & W. of Scotland P.A.	Enlarged Negatives. Demonstrated. Mr. J. W. Downs.
11.....	Southampton Camera Club	The Bernese Oberland. Illustrated. Mr. W. R. Kay.
12.....	Royal Photographic Society	Demonstration of the Author's Method of Determining the Focal Length and the Aberrations of a Photographic Objective. Reg. S. Clay D.Sc.
12.....	Rotherham Photo. Society	Ortho-chromatic v. Ordinary Plates. Demonstration. Mr. J. W. Charlesworth.
12.....	Glasgow Southern Photo. Assoc.	Control in Development. Mr. Wm. Goodwin.
12.....	Birmingham Photo. Society	Some Photo-Optical Instruments. Mr. Wardell.
12.....	Croydon Nat. His. and Sc. Soc.	Geological Section.
13.....	Nottingham Camera Club	Practical Night. Subject to be arranged.
13.....	Cricklewood Photo. Society.....	Apparatus Night and Sale and Exchange.
13.....	Everton Camera Club	Half-day Outing.
13.....	Bath Y.M.C.A. Camera Club.....	Exhibition of Prize Lantern Slides.
14.....	Liverpool Amateur Photo. Assn.	Photography on Appreciation. Mr. W. A. Taylor.
14.....	Richmond Camera Club.....	Java: Its People and Temples. Mr. Sargent.
14.....	Everton Camera Club	Half-day Outing.
14.....	London and Prov. Photo. Assoc.	Natural History Photography. Mr. G. T. Harris, F.R.P.S.

CAMERA CLUB.

THE lecture season at the Camera Club is fast drawing to a close, and there have been signs lately in reduced attendances that the counter-attractions which the improved weather has rendered possible have had their effect. But several good things have been kept until the last. "Comedy in Art" was the title of a lecture by Mr. T. C. Hepworth on the 17th ult., the subject covering a wide field, as its title indicated. It began with prehistoric cave drawings and ended with Phil May.

Prehistoric man also came under review the following week, when Mr. Cornelius Robbins told of an interesting find of remains which he had had the opportunity of seeing and photographing. On Thursday, the 24th, Mr. Frederick Enoch gave "Illustrations of Insect Life"—a lecture which was especially interesting from the circumstance that nearly the whole of the lantern slides were produced by the Sanger-Shepherd colour process. We believe that this is the first time that a lecture on a natural history subject has been thus illustrated. Pictures of flowers and fruit we have seen taken by the process without number, and such still-life studies are comparatively easy of accomplishment. But Mr. Enoch has succeeded in photographing living insects, which are as likely as not to fly or crawl away in the middle of an exposure. And when we remember that in this colour work the exposure is rather protracted the merit of having secured such pictures is much enhanced. On the 28th ult. there was no lecture, the evening being set apart for the consideration of any question that might be raised or any novelty that might be brought forward. The members were fortunate in having brought under their notice three things which were new, two of which were submitted to scrutiny for the first time.

Mr. Franklyn exhibited his tripod stand, which is certainly a very ingenious thing. When folded up it is of the same size and has much the same appearance as an ordinary folding tripod, only that it clips together without straps, and has a convenient handle at one end by which it can be carried. It has no loose triangular head, but in place of this each of its component legs has a hinged piece of cloth-covered wood with a hole in it. These when brought together, with

the usual T-screw inserted in the holes—now brought one above the other—constitute the head, a flexible head, which by a turn of the screw or adjustment of the hinge screws can be turned in any direction with the greatest ease. With this stand the worker can turn his camera vertically upwards or downwards or in any direction which he pleases. And he can get the instrument truly level, however uneven be the ground upon which the tripod points rest. The stand is 5ft. 3in. in height, but it shuts up to the space of an ordinary 4ft. 10in. stand. The stand is intended primarily for landscape and architectural work, but its power of allowing the lens to point downwards should make it useful for copying many things which by their nature must lie flat.

Mr. Hector Maclean then introduced to the meeting the next novelty, which was a method of printing in three colours invented by Herr Szczepanik. By the courtesy of Mr. Gamble (Messrs. Penrose and Co.), he was able to show a number of specimens printed by this method. A special paper is employed which has received three coatings, of either collodion or gelatine—it was not quite clear which medium was used—each stained with a fugitive dye—blue, yellow, and red respectively. The paper was finally treated with oil of aniseed, which acted as a sensitiser. If such paper be exposed to light beneath a red glass all the colours except red are bleached out of it, if beneath a yellow glass nothing but the yellow dye remains, and if beneath blue glass everything disappears from the paper but the blue dye. So that if a coloured transparency, such as a church window, were exposed to light with the paper beneath it a correct copy of the original would be obtained. The specimens shown had been procured in this manner from designs in imitation stained glass, known as "glacier" decoration, and their colours were extremely brilliant. The exposure necessary for such work ranges between 30 and 60 minutes in bright sunshine, according to the nature of the positive employed, but the inventor has under favourable conditions obtained a print in ten minutes. No development or toning is required, but in order to make the picture permanent it must be treated with benzine in order to remove the aniseed. The film is then hardened in alum solution or formalin, and the dyes are fixed in a mordant—i.e., acetate of alumina.

The inventor and others are now busy in prosecuting experiments with a view to greatly shorten the exposure, and they have hopes that before long it will be possible to obtain a picture by exposing the film to the direct action of the lens in the camera. This would result in a photograph in natural colours of the kind that the man in the street has long looked forward to. Perhaps Mr. Maclean was rather too sanguine in foreshadowing the time when this process would supersede the tintype at places of popular resort, and when for sixpence holiday-makers could get coloured photographs as easily as they get plain ones now.

The process is certainly a very promising one, and it should indicate an easy method of obtaining duplicates of lantern slides in colour prepared by the Lumière or the Sanger-Shepherd method, for we suppose that glass can be coated with the dyed films as easily as paper. Photographic prints coloured by hand could also be used in the same manner. We understand that this paper will soon be on the market, so that our readers will have an opportunity of trying it for themselves.

One more novelty was brought before the Camera Club, and this time by one of its oldest members. Mr. Davis had a lens to show, a single lens, but one of somewhat peculiar construction. We all know how useful it is on occasions to have command of a single lens of long focus. But such a lens, if used to cover a large plate, has its drawbacks; for one thing it is almost too large to be conveniently portable. Mr. Davis gave the diameter of a single lens of the ordinary type with 22 inches focus as being $3\frac{1}{2}$ inches. He had long had the idea that this unwieldy thing could be reduced to more reasonable limits by cutting a big piece off its margin, but he could not get any optician to entertain the idea. At last he discovered one who was not too conservative to consider the matter, and who made for him the lens which he showed, which had the desired 22in. focal length, with a diameter of only 1 $\frac{1}{2}$ in. In other words, it works with an aperture of f/16. The image given is rectilinear, as was shown by a negative of an architectural subject handed round for examination, and the price paid for the lens—again we take Mr. Davis's estimate—was about one-tenth of that which would be asked for a lens of the same type not shorn of its marginal rays.

News and Notes.

MESSRS. MORLEY AND COOPER, 271, Upper Street, London, N., send their latest photographic catalogue. It is very complete, and includes nearly everything necessary for the amateur or professional. **SOUTH London Photographic Society**.—The balance sheet of this society is to hand, and shows a most successful year passed, and that the Society is in a sound financial state, with a satisfactory balance hand. We feel sure the announcement of the resignation of Mr. Calder Marshall, the energetic hon. secretary, will be the occasion of much regret.

MESSRS. NEWMAN AND GUARDIA, of 90-92, Shaftesbury Avenue, have sent us their 1904 hand camera list. It is a handsome brochure, and contains full particulars of the well-known N. and G. cameras and the Nydia; a supplement also deals very fully with the Cyclops focussing focal plane camera.

SOUTHAMPTON Camera Club.—A lecturette competition was held at the Club Rooms on March 28th. Messrs. Henley, Legg, Gibbings, Kay, and Winzar competed. Mr. Gibbings's discourse on the photography of waterfalls, illustrated by lantern slides, was awarded the Club certificate. Mr. W. R. Kay's description of a visit to Dinan and district took second place.

We have received an attractive little price list from Messrs. Henley and Co., of the Photo Works, Nottingham. In addition to full particulars of developing, printing, enlarging, lantern slide making, etc., which the firm undertakes, it contains several good half-tone reproductions.

JOBBERS, LTD., 12, Paternoster Square, E.C., have just issued their 1904 catalogue of photographic requisites, which includes many good things. The principal novelty appears to be a series of hand and camera for photographic post-cards. These cameras are made to order, special plates, measuring $5\frac{1}{2}$ in. by $3\frac{1}{2}$ in.—the regulation postcard size.

THE New Magnetic Observatory.—A Scotch correspondent of the "Standard," writing one day last week, says it is intended to begin operations at once for the erection of the new magnetic observatory Eskdalemuir, Dumfriesshire, in place of the one at Kew. Representatives of the Government and the Duke of Buccleuch, from whom the land at Eskdalemuir has been bought, have visited the site, and May, 100 men are to be at work.

We have been informed that the business of photographic dealers, enlargers, lantern and cinematograph showmen, and X-ray operators carried on by Messrs. Williamson and Co., of Hove, has been purchased by Messrs. Sanders and Crowhurst, Opticians and Photographic Dealers, of 71, Shaftesbury Avenue, London, W. Messrs. Williamson and Co. will, however, continue to carry on the business of Cinematograph Film Makers at the Works, Wilbury Road, Hove.

CONCERNING the paucity of sales at the International Society's exhibition, a correspondent tells the following anecdote: "A very distinguished Impressionist artist was picked up by a successful popular painter and taken into his carriage. Said he: 'Can you explain why you should be making your thousands and driving in this old carriage while I am almost starving?' The popular artist pointed out of the window to a crowd, and asked what proportion of the crowd was intellectual enough to buy clever pictures like those of the Impressionist. 'Hardly any,' he replied; 'perhaps two or three.' 'Well,' rejoined the popular man, 'the clever ones buy from you; all the rest come to me.'"

ROYAL Institution.—On Tuesday, April 12th, at 5 o'clock, Professor L. C. Miall delivers the first of the three lectures at the Royal Institution on the "Transformations of Animals"; on Thursday, April 14th, at the same hour, Professor Dewar begins a course of three lectures on "Dissociation"; and on Saturday, April 16th, at 3 o'clock, Mr. Cyril Davenport delivers a lecture on "Mezzotints"; to be followed on the two succeeding Saturdays by lectures (1) Cameos; (2) Jewelry. The Friday evening discourse on April 15th will be delivered by Count Vay de Vaya on "Korea and the Koreans"; on April 22nd by Colonel David Bruce on "Sleeping Sickness in Uganda"; and on April 29th by Dean Robinson on "Westminster Abbey in the Early Part of the 17th Century."

MR. W. CLAYDEN, of Plymouth, gave a lecture on "The Carbon Process" before the members of the Devonport Camera Club on

March 31st. During the evening, Mr. A. J. Catford, the hon. secretary, reported that the arrangements for an exhibition to be held during Whitsun week were complete. The patron of the Club, Lord St. Levan, had offered a gold medal for competition in the open classes, and this, together with a silver medal offered by Dr. E. Symes Saunders, and sixteen silver and bronze plaques offered by the Society, made the award list better than in any previous exhibition held in the West of England. Lord St. Levan also promised, if in the neighbourhood, that he would attend the opening ceremony. Mr. Catford said the judges would be Mr. J. H. Coath, F.R.P.S., of Liskeard; Mr. H. R. Babb, Principal of Devonport School of Art, and Mr. C. E. Brittan.

DUTCH Art at the Whitechapel Art Gallery.—On Tuesday, last week, another loan exhibition was opened at the Whitechapel Art Gallery. This time it is a collection of Dutch pictures. The pictures shown are not all of equal merit, but the majority are of very high quality. Pictures of the Dutch School of the seventeenth century should be of special interest to photographers, inasmuch as so many of the subjects depicted—portraits, interiors, and studies—may well be dealt with by photography. In the collection will be found fine examples by Mauves, Maris, Israels, Bosboons, as well as some good Rembrandts. Since the exhibition was formally opened, it has been further enriched, for we learn that the Duke of Devonshire has lent his two fine portraits by Frans Hals, and Mr. Pierpont Morgan has also lent the superb portrait of the painter as a young man, by Rembrandt. By the way, many photographers who are now providing so-called "Rembrandt portraits," would do well to see some of Rembrandt's work; if they did, they would then see how widely different it is from what they produce under the name of "Rembrandt pictures."

THORIUM in Ceylon.—The Government of Ceylon determined last year to carry out a systematic survey of the economic minerals of Ceylon and to despatch specimens of the minerals found to the Imperial Institute for chemical examination and commercial valuation. Among the specimens thus received were those of a mineral existing in small black cubical crystals, and supposed to be uraninite or pitchblende. The specific gravity of the mineral was found to be 9.32, and analysis showed that it is clearly not pitchblende, since the percentage of oxide of uranium is only about 12 per cent., whilst the principal constituent is oxide of thorium (thoria), which is present to the extent of over 75 per cent., an amount far higher than that contained in any mineral hitherto examined. This mineral appears to be new, and Professor Dunstan has suggested for it the name of thorianite. Since it is radioactive it may prove an important source of radium or radioactive earths. A second mineral less rich in thorium has also been found, and careful explorations are now being made as to the extent of the occurrence of both in Ceylon. The discovery of two minerals rich in thoria, now so largely employed for the manufacture of incandescent gas mantles, may be of considerable commercial importance should they prove abundant.

ANCIENT Astronomy.—At a meeting of the British Astronomical Association, held on Wednesday, last week, at Sion College, Victoria Embankment, Mr. A. W. Maunder, Superintendent of the Solar Department at Greenwich Observatory, gave an account of ancient astronomy and the usage of the signs of the Zodiac. He fixed the date of the origin of the 48 constellations at about 2,800 B.C. From a number of Babylonian and Assyrian tablets used in connection with the earliest Greek records he came to the conclusion that about 700 B.C. there was a great development of the science of astronomy, and that the sign of the Ram in the Zodiac was then recognised as the leading sign instead of the Bull as before. Julius Cæsar fixed the beginning of the year shortly before the Winter solstice; the Hebrews' civil year began at the Autumnal equinox, and the Assyrians' at the Spring equinox. A letter was read from one of the German Observatories stating that it is intended to organise an expedition to Spain to observe the Solar Eclipse which takes place in August, 1905, and is visible in that country, and asking for the co-operation of the British Association in the expedition. The consideration of the letter was postponed.

BEN Nevis Observatory.—There seems to be a prospect that the high-level observatory on Ben Nevis will be kept going for some time

longer. It will be remembered that some time ago the Meteorological Council decided to close it on account, it said, of want of funds. But it should be borne in mind that the Council was never much in favour of this observatory, so that it received but little money from that source, and the money subscribed by the public did not amount to much. However, it is now stated that a generous donor has come forward with a sum that will be sufficient to keep the observatory on for the next three years, and now, it is said, Sir Herbert Maxwell's committee have agreed in recommending that more money should be granted to it, also that means be taken to organise the work to be done there, so that meteorological science may have the full advantage of the observations made there. It appears that, hitherto, this observatory has not been required to send daily telegrams to the Meteorological Office, so that there have been no means of testing whether the observations at Ben Nevis have any value in reference to forecasting the weather. This seems a little strange, seeing that the Meteorological Office have still something to learn in the matter of forecasting the weather, even for twenty-four hours in advance, as is frequently seen by the daily forecasts now issued. However, it seems that this is to be changed, as it has been recognised that before the Ben Nevis Observatory is discontinued it should be given the opportunity of showing what service it can render to meteorological science. Few of us, we think, will envy those who are engaged at the observatory at the top of Ben Nevis all the year round, and more particularly during the winter months. At no period can it be a cheerful dwelling.

TECHNICAL SCHOOLS IN GERMANY.—The latest of the series of reports on technical education in Germany by Dr. Frederic Rose, our Consul at Stuttgart, deals with technical schools for special branches of the metal industries, and may be regarded as a continuation of No. 601 on special schools and courses for mechanical engineering and electro-technics. The courses described in both reports belong to secondary or middle technical education, and should not be confounded with the higher technical instruction given at the ten great technical Universities, which has been described in previous reports in the series. The schools discussed in the present report "are intended to take the place of the apprentice instruction in the workshops of factories, and may, therefore, be regarded as an attempt to solve the problem whether for certain branches of certain industries with their highly specialised modern requirements apprentice instruction in the works themselves or in a special technical school with a combined theoretical and practical curriculum is preferable and more productive of practical and profitable results." The Consul discusses the respective advantages and disadvantages of these two modes of early technical training at some length, and then describes in detail the system of training at twelve schools in various parts of Germany, nearly all founded in quite recent years, and all dealing with metal industries. Of these three are devoted to steel and iron ware, one each to bronze, copper, sheet metal, and precious metals, jewellery, while three are given up to clock and watch making, and two to general mechanical and artistic ironwork. In addition to these schools, Dr. Rose states that combined theoretical and practical instruction is given on a complete scale by the administrative bodies of the State railways, and by many large industrial establishments.

ILFORD COMPETITIONS.

THIS competition marks the completion of the twenty-fifth year of the manufacture of Ilford plates, which have deservedly achieved world-wide renown. We have no doubt that details of the competition will be awaited with the greatest eagerness, and that a very large number of entries will be secured. The production of a perfect negative has been authoritatively termed a combination of art and science; we await with no inconsiderable interest the results of a competition which will bring together a collection of clichés in which these qualities are manifested. Print competitions galore abound; seldom, however, are prizes offered for what is after all the very base and foundation of the photographic art: the negative. Hence the Ilford Competition is invested with unique interest.

Correspondence.

- * * *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*
- * * *We do not undertake responsibility for the opinions expressed by our correspondents.*

THE VERANT.

To the Editors.

Gentlemen,—I was much interested in the theoretical explanation of "The Verant" which appeared in your issue of January 8th. By the time you receive this letter you will probably have further information about it, and I shall be much obliged if you will kindly answer the following questions:—(1) Is the stereoscopic effect produced by viewing an ordinary photo with a single lens Verant, or two prints from the same negative placed side by side viewed with a double lens Verant, equivalent to that of a stereoscopic slide, viewed with an ordinary stereoscope? (2) Will it be of any advantage to use a double lens Verant for viewing a stereoscopic slide instead of the ordinary form of stereoscope with half lenses as now used, and, if so, is the Verant made in the enclosed form with a ground glass screen for viewing transparencies, size $6\frac{1}{2}$ by $3\frac{1}{4}$? (3) From whom can the Verant be purchased in England?—I am, sirs, yours faithfully,

H. R. HEARSON.

Shanghai, February 20th, 1904.

[A note on this subject will appear in our next.—Eds. B.J.P.]

AURORA AUSTRALIS.

To the Editors.

Gentlemen,—On page 267 you say "as far as we can gather, this beautiful thing has never been photographed." Unless my memory is playing me a trick, I have seen a photo of the aurora, exhibited by Lieutenant Shackleton, R.N., who was invalided home from the South Polar Expedition. We had the luxury of a lantern lecture from him in this village a short time ago, and among the number of beautiful photos, one, if not two, were of the aurora, so I believe, and he told us that it showed beautiful tints, unless again my memory is playing me false.

We had this luxury owing to Lieutenant Shackleton being a cousin of Mr. W. A. Bell, of Pendell Court, and no one who was present will ever forget that lecture. He told us very little about himself, but he was one of the three men who have been furthest south, and how he ever got home is a tale that one would like to hear, but none of them will probably say much about it.—Yours truly,

JARVIS KENRICK.

Pendell, Bletchingley, March 31st, 1904.

CHROMATIC RADIOGRAPHS.

To the Editors.

Gentlemen,—I have been greatly interested in your "Photographic Almanac, 1904," more especially in your paper upon the Eburneum processes, because it touches upon a stripping process which I am searching for, so as to enable me to overcome the combination between paper and nascent silver.

For the past year I have been studying the effect of radiation upon chloride of silver, and have produced over 1,000 examples of what I call "Chromatic Radiographs," three samples of which I enclose. The ordinary commercial photographic printing paper is used, but I find if I could obtain a gelatine stripping film I could obtain much better results, and also if I had any ready means of controlling the quantity of chloride of silver in the film. There is an ultimate strain effect, and an arrested strain effect, and my method of arresting is to expose the back of the photographic paper to the radiator. With soluble and insoluble gelatine film in one piece, I could draw by diffusion all the silver from the face to the back, and then remove the back film of gelatine. This would lead to being able to take a positive on gelatine, and fix with my radiator by diffusion in the dry state without touching liquid. Then the photo chloride picture on the front face could be thrown into the ultimate or stable photo chloride of Ag. by exposure to sunshine and thus enter into a stable condition of silver. At present all photos are arrested conditions, liable to

ge, whereas a chloride of silver exposed for two hours to bright
hine is not liable to change after reaching the ultimate strain. It
e same with my chromatic radiographs. The arrested strain reverts
alls back, whereas ultimate strain does not do so. Professor
ley explains this in your Journal. Can you kindly put me in the
of obtaining what I search for. The stripping films are described
Thorpe's Applied Chemistry," Vol. III, p. 216.—Yours truly,
s Tours, St. Clement's, Jersey, ARCHD. C. PONTON.
Channel Isles.

We doubt if such stripping films are now commercially obtainable.
os. B.J.P.]

TELEPHOTO DIAGRAMS.

To the Editors.

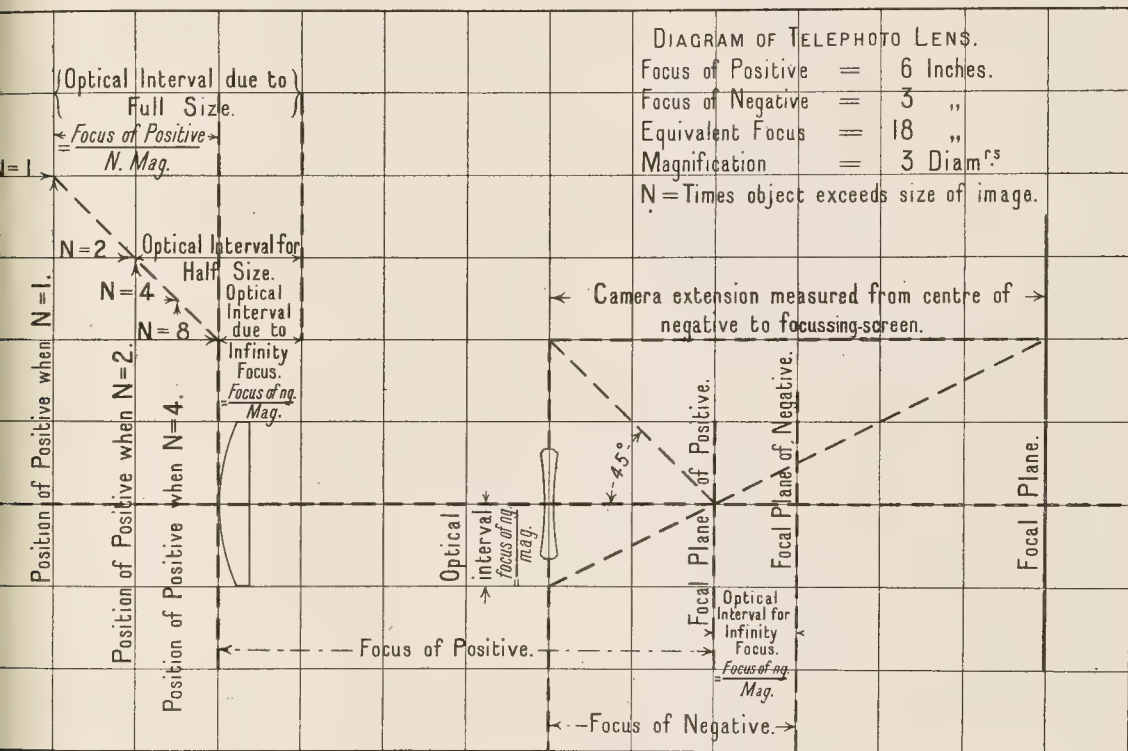
Gentlemen,—In your issue of March 27th, 1896, p. 200, you pub-
d a diagram of a telephoto lens. I have recently improved this,
ting it to use on squared paper, and also extending it to show the
cal interval required to give images in various proportion to the
inal. In the case of near objects (when using a large stop) the size

PSYCHIC PHOTOGRAPHS.

To the Editors.

Gentlemen,—Respecting the late exhibition of the above, it is to
be regretted that your representative did not make himself known to
me, as I should have been glad to have given him some information
on the subject, which is an intensely interesting one, and of the
highest importance.

The collection consisted of about three hundred photographs, many
of them taken by amateurs, and with over a dozen different sitters,
and evidence of this magnitude is not to be dismissed with a few
sarcastic comments from one who has evidently not made any study of
this particular phase of photography—"Some of these, we have no
hesitation in saying, are taken from pictures, and in nearly every case
the face of the ghost is framed in stiff, new muslin." This is a
serious charge, but the absurdity of these statements betrays the
prejudice of the writer, and I will forfeit a sovereign for each and
every photograph exhibited that he can prove to be taken from a
picture. As to the "stiff muslin," this is simply an aura which the
spirits sometimes find it necessary to envelop themselves with when



the object may be calculated from the photo taken if the optical
val be noted. In constructing the diagram the focus of the
ive can be left over for a time. That of the negative and magnifica-
is all that is required to construct the portion of the diagram to
right hand. The magnification is the equivalent focus of the
combination divided by that of the positive of whatever length may after-
is decided on. I think it important to make this clear, as the
magnification is sometimes applied to the focus of the positive
led by that of the negative—in other words, the magnifying power
combination if used as a Galilean telescope. The optical interval
finity focus being calculated by dividing the forms of the negative
the magnification the construction of the diagram will be apparent.
the focus of the positive now being fixed upon, it is only necessary
etermine its movement to give an image 1-nth of the size of the
nal. This can be found by dividing the focus of the positive by
mes the magnification. This being calculated for full size, the
movements are then obtained by construction, and the diagram
s also the total optical interval due to any selected value of n.—
CHAS. LOUIS HETT.

being photographed as a protection from the human magnetism, which,
under certain conditions, has a dematerialising effect. In nearly
two hundred of the photographs, which comprised spirit forms, faces,
flowers, birds, and lights, no aura had been necessary, while some of
the pictures showed several faces, and in one which was taken in
Washington, appear no less than twenty-four, including my own
mother. This is the most wonderful photograph that I have ever
seen, and is from one of eighteen negatives taken at one sitting, seven-
teen of which exhibited spirit manifestations.

It is desirable to say that in most instances all proper precautions
were taken against any possibility of fraud, and on many occasions I
was accompanied by a clairvoyante, who wrote down a description of
the forms as they appeared. Some of the promises were given in
Canada and fulfilled in London and Washington, and though some of
the great ones of the past have taken this means of showing their
continued interest in those still in the mortal, yet the large majority
were relatives and friends of the sitters or unknown to them. My
little niece has been taken with me four times, and each in a different
position. This effectually disposes of the assertion "that it

would be extremely easy for any photographer to produce the same effects."

Hundreds of aching hearts have been made glad by the appearance on the plate of some loved one from "the other shore," and as soon as the public generally begin to understand this possibility, then there will arise such a demand for cameras and their accessories as will astonish the whole trade.

At the present time I know of more than half a dozen amateurs who occasionally obtain psychic markings, lights, or faces on their plates, sometimes with a camera, and at other times by simply holding the plates in their hands; and as there have been many cases where professional photographers have taken invisible sitters, may I suggest that it would be of great interest to have details of any such instances recorded in your columns?

It is now above forty years since spirit photographs were first known, and ten years ago your late esteemed editor, Mr. J. Traill Taylor, convinced himself by a long series of experiments, and the Rev. H. R. Haweis courageously held an exhibition at his own church.

We have far better evidence before us in the present age, when it is difficult to take up a newspaper without finding some reference to the "psychic," or "occult." Photographers, of all people, should learn that a new world is open to their view, and though at present this phase of mediumship is very rare, yet no doubt in the near future many earnest students will be able to develop the gift, and prove that "there are more things in heaven and earth than are dreamt of in your philosophy."—I am, yours, etc.,

April 4th, 1904.

H. BLACKWELL.

[Mr. Blackwell has been good enough to call upon us and exhibit a large number of negatives and prints in support of his claim that the somewhat abnormal results criticised in these pages, were produced by direct photographic agency. Of Mr. Blackwell's bona-fides in the matter we ourselves have no doubt; he is a gentleman of the highest probity, and a personal acquaintance of our own of some twenty-four years' standing. Without any other object than that of honest investigation, he has devoted a great deal of time and money to the study of psychic photography. He is, besides, an expert amateur photographer. We also understand that he is not unwilling at an early date to address a photographic society on the subject of his experiences. While at first we were inclined to close the correspondence at this point, we think, upon reflection, that the cause of truth will best be served by keeping our columns open for a few weeks longer to those of our readers who may feel inclined to give us the benefit of their experiences in psychic photography. We do not, however, invite anonymous letters on the subject.—Eds. B.J.P.]

THE METRIC SYSTEM.

To the Editors.

Gentlemen,—I much regret to find a bad blunder in my last letter. A treacherous memory failed to remind me that a standard millilitre cannot possibly be smaller than a cubic centimetre at the same temperature (being in fact always larger) and that the figures based upon the table of equivalents must therefore be wrong. As the table only shows "legal," and not actual, equivalents, it is impossible to find from it the weight of a standard litre at 62 deg. F. Things equal to the same thing are not equal to one another in the table, which fact I entirely overlooked. It appears that the litre at 62 deg. F. is really rather less than a gramme under weight, hence the difference is even more "hair-splitting" than before, but this in no way upsets the fact that the discrepancy has caused the introduction of the conventional litre and has complicated the metric system. It has also caused confusion as to the meaning of the term cubic centimetre, which is now applied indifferently to the conventional and standard millilitres as well as in its proper sense. Mr. Tennant has fallen into the same error with regard to this conventional litre as certain other metrical advocates. It is not simply a foolish British invention due to the Royal College of Physicians. The Superintendent of the Standards Department of the Board of Trade has stated that in adopting the litre graduated at 60 deg. F. we have only followed foreign practice. Further, a man of science, who is not a doctor, informs me that measures graduated at 15 deg. C. are commonly used, hence they are evidently not "repudiated by all men of science." It is also worth note that such measures, verified in Berlin, are the only verified "Standard" measures listed by one of the best known English dealers in chemical apparatus. As specific gravity bottles are also graduated at normal temperatures it does not appear that inconveniently low temperature standards are now really necessary. In any case the three different temperatures of the metric system are confusing.

Mr. Tennant's "squaring" problem does not prove his case. By chance one of his metric figures is a simple 12, and if another figure had appeared the case might have been very different. Further, the usual run of such problems include feet as well as inches, and if 1-in. is the limit of error metric dimensions then involve three or four

figures, when there is at once a most distinct advantage on the side of the English measures.

To deny that it is easier to find $3\frac{1}{4}$ per cent. on £67 than on 67 dollars is equal to denying an obvious fact. With the dollars you multiply by 3.5 and cut off two figures, and you have the answer in dollars and cents; with the £67 you multiply by 7 and cut off one figure, when you have the answer in shillings, pence, and fifth of a pence. This is obviously shorter, as there is one figure less in the multiplier, and with all ordinary rates there is nearly always a saving of one multiplier with the English money. Mr. Tennant's clumsy method is, of course, the wrong one for this type of sum, though it might be the right one for a sum of a different type. There are always half-a-dozen different methods to choose from, and the right one is the shortest.

With regard to my suggestion that a decimal system based on an existing English unit would be readily acceptable, it is interesting to see that the Central and Associated Chambers of Agriculture, on March 29th last, passed, by a large majority, a resolution to the effect that the Chamber would welcome a measure improving weights and measures by the introduction of a decimal system, "but not by adopting a metric system which has no affinity with our existing denominations used in trade or commerce in the United Kingdom." It is worth noting that we have the basis of a good system in the fact that an ounce fluid is equal to an ounce avoirdupois and to the cube of the 'centh-part of a foot, within an error of less than $\frac{1}{2}$ per cent. The decimally divided foot is already a common measure marked on two-foot rules, and a system worked out on this basis would include many of the best of our present units, and could be used in unison with certain nondecimal units that we cannot part with.

I see that "Free Lance" in your issue of February 19th refers to "the clumsiness of the metric system for general use," and to the fact that English measures "lend themselves to ready calculation and subdivide far more readily." He thus very aptly describes two facts which alone are enough to condemn the metric system for general use in this country. The system is clumsy because its scheme is too simple for our intricate requirements.

Mr. Tennant suggests that manufacturers find no difficulty in supplying things to strange weights and measures when it is worth while. Just so. The weights and measures difficulty is a very small matter in the great majority of cases, therefore, why should we be compelled to go to the expense and inconvenience of altering them to please only a small minority of our customers? Our export trade in metric countries is only about 41 per cent. of our whole export trade, and only 15 per cent. of our whole overseas trade, and only a very small portion of that 15 per cent. is affected by the metric question at all. What we want is a system convenient to ourselves first, and to the majority of our customers next. The minority may not like it, but charity should begin at home. Again, Mr. Tennant says that the export of cameras is hindered by heavy duties. Other exports are hindered by the same cause, but the usual metrical argument is that our weights and measures are the cause of the trouble, and therefore, we should alter them. Evidently Mr. Tennant does not see eye to eye with the reformers in all respects.

With regard to the protective effect of our system the protection is not so much against fair competition on the part of foreign manufacturers enterprising enough to master our measures; but against unfair competition. Any natural surplus stock held by the foreign manufacturer, being in his own measures and not in ours, cannot be thrown on our market at under-market prices; while the creation of an artificial surplus in our measures is a losing game. This, of course, only applies to cases in which measure or gauge is of real importance. In a number of cases it is of no importance whatever. The trade that would be most seriously disturbed by compulsory metric measures is the building trade, which for some time would be completely disorganised. This would necessarily increase the cost of building and directly or indirectly affect all pockets and purses, photographic or otherwise, through the media of rates and rents.

An apology is due to you, gentlemen, for the length to which this discussion has extended. I have felt bound to do all I can to correct the exaggerated claims made by worshippers of decimals and the metric system, which have been of such a nature as to mislead people into thinking that decimals are an infallible cure for all present complaints, but I have no wish to pursue the subject further in this journal. Thanking you for the space you have allowed me to occupy and regretting there has been so much of it.—I am yours, etc.,

April 2nd, 1904.

C. WELBORN PRER.

[The correspondence on the Metric System has gone to quite sufficient length, and we here terminate it. Without on the present occasion arguing the pros and cons of the subject, we agree with Sir William Abney, who some years ago, when speaking on the subject, said it was a very difficult thing to accustom persons who habitually thought in grains, ounces, inches, and feet, to think in cubic centimetres, and millimetres. Parliament can do, it is said, everything but convert a man into a woman; we are equally of opinion that it will find it just as difficult to supplant the existing system of weights and measures, unscientific though it may be, by the undoubtedly scientific but unquestionably alien metric system.—Eds. B.J.P.]

Answers to Correspondents.

* All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.

* Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.

* Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.

* For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

W. Oakley, Sussex Cottage, Sholing, Southampton. Photograph of Troopship "Assaye" after Collision.

Hunter, The Studio, Port-Glasgow. Two Photographs of Provost H. McMaster. Keeping, 94, Paris Street, Exeter. Two Photographs of Hallsands, Devonshire.

F. J. Clegg, 7, Onborsley Road, Birmingham. Two Photographs of the Rev. T. Tozers.

Cherry, 38, Castle Street, Cirencester. Photograph of the Church and Market Place, Cirencester. Photograph of the Police Station, Cirencester. Photograph of the Barracks and Park Gates, Cirencester.

A. Horsburgh, 4, West Maitland Street, Edinburgh. Photograph of Hon. C. M. James.

Penske, 99, St. John's Hill, New Wandsworth, London, S.W. Photograph of the Royal Masonic School for Girls, Wandsworth Common.

FLASHLIGHT COMPOSITION.—T. W. S. says: "Kindly tell me if people using flashlight powder require to have a licence under the Explosives Act." In reply: No, unless the powder is stored in quantity.

FIXING BATH.—M. BELL asks: "Is a 5 per cent. solution of hypo. sufficiently strong for the fixing of P.O.P.?" In reply: No; double that strength is rather weak, unless a pretty long immersion is given.

FORMULA WANTED.—E. HADLEY says: "Kindly give me a developing formula that appeared in the 'Almanac' some years ago for plates, published by Clement J. Leeper?" In reply: We must trouble our correspondent for a more definite date than "some years ago." We have referred to the "Almanacs" for the past seven years, and do not find the formula.

REQUIRE.—You should, surely, be better able than ourselves to judge if your establishment is over-staffed. We should think that it was not. The employees are certainly not overpaid, and the hours none too short. Your prices are rather low, but with the turnover you mention we do not see how you can lose money over the business unless the rent and taxes are abnormally high.

PRO. CASES.—J. E. GUBBINS writes: "In the 'B. J.' of the 25th ult., p. 247, bottom of first and top of second column, you say, 'One extensive manufacturer at Bow,' etc. Will you kindly tell me the address and what he makes? The case would suit for hypo., and I want to buy some." In reply: The address is Messrs. Boake and Co., chemical manufacturers, Bow, London.

NUMBER OF PHOTOGRAPHERS.—J. C. HARRISON asks: "Can you give me the number of professional photographers in England, Scotland, and Ireland and adjacent islands?" In reply: We cannot. The only way to get the numbers is to consult the last census returns. You will be able to get them, we believe, from the King's printers, Messrs. Eyre and Spottiswoode, East Harding Street, E.C. We do not reply to correspondents by post.

TREAT OF RESIDUES.—HAD asks: "Will you inform me if my conception of receiving a percentage of silver waste from your employer is and has been a standing rule in the photographic trade? I may here state I have made inquiries, and there seem doubts on same. The waste, I may say, is all wet plate work." In reply: We have never heard of employees claiming a share of the residues, and we do not see that they have any

claim. So far as we know, there is no trade custom in the matter.

PAPER FOR X-RAY WORK.—E. T. W. says: "On p. 802 of 'B. J. Almanac' a new bromide paper for X-ray work is mentioned. Could you tell me the exact name of this paper, and where it can be obtained in England? Also what English papers, if any, would give good results with X-ray work?" In reply: The address of the makers of the paper is given in the article. Probably the Rotary Photographic Company, which is the English branch of the firm, will supply the paper. Any bromide paper will answer for the work, whether English or German.

ENLARGING.—LUX says: "I enlarge with condenser and 50 c.p. electric incandescent light, but as soon as I attempt to stop down I get rainbow circles on my screen. Please say how am I to avoid this. I may say (even if it suited my purpose) to alter the distance between lamp and condenser that has no effect." In reply: If you cannot alter the position of the condenser, we should advise you to work the lens at full aperture. The lens named by you will cover well with its full opening.

COPYRIGHT QUERY.—ANDION says: "I have two photographs I want to copyright in the shape of a postcard. The two pictures will appear on one card, longways, and will cover the card. In so doing must I copyright both pictures, or will one fee be enough to cover the safe registration of both? Also, as both prints will be titled and dated, must the prints bear this before copyrighting them? Your assistance will oblige." In reply: Each of the pictures should be registered. It is not necessary that the pictures be titled before they are registered.

A BUSINESS QUERY.—PRENTICE asks: "(1) Is an apprentice photographer a professional photographer? (2) When a professional photographer places an order with any of the large wholesale dealers, is it an understood thing that he gets a special discount, or does he have to ask for it?" In reply: Yes; if he follows his business when he is out of his apprenticeship. (2) Different dealers have different terms as to discounts. Your master will enlighten you as to those of the firms he deals with during your apprenticeship.

ENAMELLING PRINTS.—G. S. GALLOWAY asks: "Could you kindly give me the title and publisher of any good book on enamelling C.C. prints; or any more general work which deals in detail with that process; or any other place where I could get information on the subject?" In reply: There is no book devoted to enamelling collodio-chloride prints, and none is required. The prints are simply enamelled as other prints are. So much has appeared on the subject in back volumes of the JOURNAL, that we should have imagined that every one was familiar with such a simple thing as enamelling prints, whether C.C. or others.

POSITIVES DIRECT.—J. KEANE asks: "Will you please inform me if there is any means of taking a positive on bromide paper or glass direct in the camera, or can I reverse the image by development? If so, please give formula." In reply: We know of no successful method of taking positives on bromide paper direct in the camera. On plates, by giving a short exposure, and then whitening the image with bichloride of mercury, and backing up with black varnish, fairly good results may be obtained, but not equal to those obtainable by the old collodion process.

RESIDUES.—HELIO asks: "Can you tell why silver print washings remain turbid?—it takes fully two weeks before they will precipitate after large, old oil-barrel is filled up. I have tried more or less salt, also sulphuric acid and hydrochloric acid, but the washings will remain turbid for so very long a time. Our town water is hard and chalky. Can I hasten the precipitation?" In reply: If there is very little silver in the water it will take a long time to subside, owing to the fine state of division the chloride is in. Try using hydrochloric acid in place of the salt, and well stir up the contents of the barrel after the addition.

PICTURE POST CARDS.—W. M. asks: "Can you tell me whether there are firms who publish picture post cards of suitable subjects from photographers' negatives, paying the photographer a percentage or royalty on copies sold? I have some animal studies, but do not wish to sell the negatives outright." In reply: There are several firms that purchase negatives for picture

post cards, but we do not know of any that deal with them on the lines mentioned. You might, however, write to the Rotary Photographic Company, New Union Street, E.C., or Messrs. Wyndham and Co., Acton, W.

STUDIO.—CLAY AND LACY write: "We wish to convert a room into a studio. The dimensions of room are as follows: 20 ft. long by 10 ft. wide. Roof concave, slanting from 15 ft. to 7 ft. at the sides. People adjoining object to us making window for north side light. Can you suggest any other method of lighting to answer purpose?" In reply: It seems to us that, as you cannot have a side light, you will have to be content with a top one—bring that as low as you can. A top light in so small a studio will be somewhat difficult to work, but there appears to be no help for it.

CAMERA OBSCURA.—NERO says: "I am thinking of building (in an amateur way) a camera obscura. I am not quite clear as to the arrangement of lens, prism, reflector, etc., at top. If you can give me details of this I should be much obliged?" In reply: This is a very simple matter. Fix in the top of the building, so that it can be revolved horizontally, a mirror at an angle of 45 deg., so that the image is reflected on to a lens fitted in the ceiling of the room. In the room, at the focus of the lens, place a table with a whitened top to receive the picture. Most of the old works on optics give a diagram of the arrangement.

DAMAGED PULP SLAB.—E. A. JOHNSON (Algiers) says: "I have got a pulp slab for glossing P.O.P. prints which, through constant use, has lost the high polish it originally had. I should be much obliged if you could give me instructions for restoring it, if it can be done. I have tried beeswax and benzine, which acted all right for a single batch of prints, but would not stand a second." In reply: We are afraid that you will not be very successful in re-polishing the slab. You might, however, try putty powder or rouge. But the beeswax treatment is not much trouble, even if you have to treat the slab with it every time you use it.

LENS QUERY.—BUSY BEE says: "I have a 12 by 10 extra rapid lens, and thought I would try it for portraiture, but find it not much better than a 10 by 8 —'s rapid rectilinear. Does the fact of it being a 12 by 10 make it better for half-plate work in studio than a good portrait lens (half plate) as regards definition and quickness in exposure? Which would be best, half-plate portrait, or 12 by 10 mentioned?" In reply: The large lens, by reason of its greater focal length, would cover the half plate better than a half plate portrait lens would do with its full aperture. But the latter would have about four times the rapidity of the former.

CLAIM TO ESTATE.—H. M. says: "May I ask the following question? A few months ago a photographer in the suburbs of London died, leaving a house full of good furniture, also valuable photo. apparatus and a banking account. Having no father or mother, the eldest of the family (a sister) claimed and took the lot, but did not pay any of the creditors. Am I right in saying all the creditors should have been paid first, then what was over equally divided between the rest of the family?" In reply: The creditors should certainly be paid before the estate is divided. You had better consult a solicitor on the matter.

STUDIO BUILDING.—BLACK BOY says: "I am about to erect a studio, and enclose herewith a rough sketch of the accommodation at my disposal. I wish to know which would be the better way to build the studio—against the southern wall and facing north (approximately) or against the western wall and facing the house. If the studio were built with the northerly aspect, there is a window at A which could be enlarged into a doorway, giving extra room between the camera and sitter if necessary. Which system of glazing do you think would be the more useful, single slant or the usual top and side light?" In reply: If the north light is unobstructed, by all means build the studio against the southern wall. As to the system of glazing, it is quite a matter of opinion as to which is the better. Both systems are good.

LENS QUERIES.—LEX asks: "1st. Do you consider Beck's bi-planat lens, as per enclosed illustration, good for general portraiture

(studio work)? 2nd. No. 6 on accompanying list is recommended me. Can you tell me the distance required for a full length of adult with it from lens? 3rd. Will it work as quick as an ordinary portrait combination and give equal results? 4th. Would you say as to your knowledge of the portrait lenses by —, as advertised in your year book, page — for 1903? 5th. Will you tell me the mechanical form of arrangement for heating hollow roller by spirit when gas is available?" In reply: 1. Yes. 2. About 18 ft. 3. The same will be somewhat slower than an ordinary portrait lens. It will require about double the exposure. 4. We have had no personal experience with the lenses named. The firm, however, is a good one. 5. Better write to the maker, as you do not say whose burnisher it is.

SELECTION OF APPARATUS.—INVALID writes: "I want to furnish myself with a $\frac{1}{2}$ -plate camera and lens and the strictest necessities for outdoor photography, but as my knowledge of such articles is very limited, and also my means, I wish you would kindly instruct me: (1) What kind of camera and lens to choose for outdoor and occasional indoor work, and, if compelled to buy them second-hand, how to test them; (2) what is the best contrivance for changing plates without a dark room; and (3) from what book could I gather the most information about outdoor lighting." In reply: (1) An ordinary outdoor camera, you will find many different kinds advertised in the "Journal" and the "Almanac." A lens of the R.R. type will be the most useful for general work. You can test the apparatus by taking one or two pictures with it. If you buy a second-hand one, or, perhaps, the better way would be to get a photographer to test it for you. (2) A small, portable dark tent or box. (3) You will find Robinson's "Letters on Landscape Photography" useful.

VARIOUS QUERIES.—T. COUSIN asks: "Fluorotype Process (1) How to prepare fluuate of soda, as I find difficulty in obtaining it, and do not see it mentioned in any of the books on chemistry. Chromotype Process—(2) Strength of the nitrate of silver solution in washing over the exposed print, and also the strength of the neutral solution of the chloride of gold in the modified process. Monckhoven Silver Cyanide Intensifier—(3) Have intensified a negative with same, but it has altered the negative to a considerable degree. As I wish to bleach the negative in mercury and re-develop with ferrous oxalate, please say how to remove the silver cyanide and restore the negative to its original condition. Furnell's Developer—(4) In this the preservative is nitrate of soda. It gives negatives of a chocolate colour and quick printing. The solution itself keeps good a very long time. The formulae appeared in the first edition of 'Wall's Dictionary of Photography,' but I have not a copy of same. Please give me formula." In reply: (1) Saturate hydrofluoric acid with soda and then evaporate to dryness. You will do better, however, to purchase the salt. It may be had from such houses as Hopkin and Williams', Cross Street, Hatton Garden. (2) The strength of the solution is not very material, but it must not be strong. (3) If you have made the negative too dense it may be reduced with a weak solution of hyposulphite of soda. (4) Some reader may be able to oblige; we have not a copy of the book referred to.

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EX CATHEDRA.

Chemicals and their formulæ.

The theory of the constitution of a compound that is capable of developing the latent photographic image has been reduced to such luminous simplicity by Messrs. Lumière and Seyewetz that a mere inspection of the formula of a particular compound enables a safe prediction to be made as to whether it possesses developing powers or not. It is the popular idea that the same certainty is to be found among the dye-stuffs of modern creation, yet so far from being the case that Prof. Meldola, speaking of particular class of dyes, says: "With the exception of . . . for which a probable formula is given, not one of these new compounds has even an empirical formula assigned to it. We have here, in fact, another illustration of the well-known principle that technology is often in advance of pure science"—which is a very nice way of saying that "rule of thumb" is often in advance of laboratory learning!

Public Recognition Opticians.

We learn from the "Photographische Correspondenz," that the Town Council of Vienna, at the suggestion of the Photographic Association, have named one of the streets "Petzvalgasse," after the well-known inventor of the portrait lens. Petzval was not only the first photographic optician of note, but his work was so thorough that now, after more than fifty years, his portrait lens still remains the favourite of the professional photographer, notwithstanding the many innovations of the last decade. Although Petzval's reticence has been adversely criticised, much might be said in his defence. The practice of

opticians to protect by patent the right to manufacture lens constructions they have invented and calculated at the cost of great mental strain, differs only from it in degree. Yet, who but those that are devoid of respect for the adequate remuneration of mental work, through the material products embodying its results, would find fault with the optician for availing himself of the protection given by the patent laws. In recording the fact of this honour, bestowed upon the deceased optician of Vienna, it may perhaps be interesting to remark that two other modern opticians have been similarly honoured. In Munich there is a Steinheil Strasse, and in Jena a Carl Zeiss Strasse.

* * *

Pirates and Coiners.

The police have lately had the good fortune and the cleverness to make two very important seizures. They have come upon a coiner's den, not of the usual humble kind, but a regular factory for turning out spurious money with a good "ring" to it, in large quantities. And they have also spotted a printing establishment whose apparent business it was to supply pirated music to the itinerant vendors who sell it in the streets. Not only was the printed music seized, but also a large number of photo zincographic plates which produced those printed sheets, plates which must have cost many hundreds of pounds to prepare. We are sorry that photography should have been put to so base a use as this, but it represents such an easy and cheap method of duplication that its employment was only to be expected in the hands of dishonest men. The law as to coining is about as severe as it can be, and the judges will have no difficulty in meting out punishment to the guilty ones, but we doubt very much whether the illicit printers and publishers will get their deserts. To our mind, the crime of robbing a man of the fruits of his brainwork is quite as heinous as that of making spurious shillings, but one happens to be an offence against the State, and the other is only against the individual. Men have been hanged, drawn, and quartered for piracy—but not for piracy of music—and as lately as the year 1835 a man was executed for coining. We are more merciful to our criminals now, but there is too often a great disproportion between the punishments inflicted for different crimes. It will probably be so in the cases now under consideration.

* * *

Exposure Tables.

Many amateurs will be glad to learn that the firm of C. P. Goerz is distributing gratis in Germany an exposure table worked out by one of their calculators, Herr W. Zschokke. It is printed on a stiff card, and easy to use because the series of factors expressing the conditions of the exposure are low numbers. Knowing the enterprising character of this

firm, we should be surprised if these tables are not distributed free to those who may wish to have them here in England. From the particulars given in the "Photographische Chronik" we are struck by the resemblance the tables bear to the well-known Hurter and Driffield system, excepting the speed standard of the plate. We are surprised that Herr Zschokke should have adopted the antiquated, unreliable standard, if such it may be called, of 25 degrees Warnerke. But as our best plate-makers now give great attention to the uniformity of the speed of their products, it will be an easy matter for the amateur to estimate a factor corresponding to the brand he favours. The Zschokke tables consist of factors. The first may be looked upon as the same as the H. and D. curves for the sun's altitude. The second corresponds with the H. and D. classification of the different characteristic kinds of light, and may be said to be identically the same. The third table gives factors for the ordinary classes of subjects. The fourth table expresses the speed of the plate in degrees Warnerke or degrees Scheiner. The fifth, the fractional value of the different stops of the lens. The product of the five factors is the exposure, expressed in time, which should be given to the plate. We know photographers who have used the Hurter and Driffield system for years and found it surprisingly correct for plates, which have been correctly marked according to the standard. The tables are more portable than the Actinograph, and should, therefore, be a welcome gift to the amateur photographer.

* * *

Another Aspect of the Patents Question.

We once knew a manufacturer of a kind of wire-netting, out of which he made a large income, he being the only maker who had worked the process to a successful end. He was, however, as the process was a secret one, afraid of some one getting the better of him in the matter of patents, and, eventually, he consulted a Quaker friend and confided his troubles to him. "Does any one know how to make it but thee?" he was asked, and replied in the negative. "Can any one find out how to make it?" "No, I think not." "Then, do not thee take out a patent, and tell everybody thereby how it is done," was the oracle's dictum, and it was adhered to with success. It is, however, a poor rule that will not work both ways, an old proverb tells us, and on this rock of secrecy versus patent a most promising modern vessel was wrecked. According to Prof. R. Meldola, F.R.S., the first member of the thiazol or thiobenzoyl colouring matters was introduced into commerce by Prof. Green, under the name of primuline (our readers will remember the photographic printing method with this compound as the main factor). The monopoly conferred by the right of discovery of this important compound was lost to the firm in the laboratory of which the discovery was made by the adoption of the short-sighted policy that a new product could be protected as a trade secret. Within a year of its introduction the Germans had found out its chemical constitution, and were manufacturing it, and a German firm actually obtained patents for producing it in this country as well as in Germany! The inference is that Prof. Meldola's advice would be to patent, and that the old Quaker we referred to was wrong in principle. There is, of course, a keener competition nowadays among rival chemists than ever has been the case, either as regards prices and the introduction of novelties, or the perfecting of processes. Yet it is not so very many years ago that a laboratory spy in the guise of a workman was discovered taking observations by his fellow-workmen at a coal-tar-dye manufacturer's works, a self-betrayal that cost him dear, as he was promptly tarred and feathered.

The N-Ray Mystery

We have already placed on record difficulty, or, rather, the impossibility experienced by many non-Continental observers of seeing the Blondlot rays at all, not to speak of classifying them, observing their indices of refraction and so on. The current number of "Nature" furnishes still another example of this impossibility of verifying M. Blondlot's discovery, in the form of a letter over signatures of John J. McKendrick and Walter Colquhoun, Physiological Laboratory, The University, Glasgow. The experiments were made with the help of seven observers, including five doctors, one student, and one laboratory attendant. Under a special code of signals they called out whenever changes were visible in the screens; and, unfortunately for the theory, when the changes did occur they were not preceded or accompanied by any muscular commotion. The observers were then told to look through the screen, as it were, into the distance beyond the bright spot—to focus the eye for infinity, to use a well-understood photographic term. They reported no changes in brightness, though brightness did follow when the observer touched the back of the screen. "How is it," the writer asks, "that M. Blondlot and many of his compatriots increase of brightness under conditions in which we see none?" They conclude by what we think we may agree to describe as a nice way of putting things: "Can it be that the mental condition of some observers in a state of expectancy reacts on the intrinsic muscles of their eyes, and thus they see what they think they should see?" We should add to this our opinion that if a ray can be divided into its constituents, after the manner we described last week, some of the first refractions ought to be powerful enough to act upon a sensitive dry-plate, and until we have an image fixed in that manner there is so much mystery surrounding the whole of the production of these one-sided phenomena that incredulity will characterise the reception in scientific circles outside those of the Académie des Sciences.

* * *

New Colour Sensitisers.

Our readers will doubtless have noticed that two very important colour sensitisers have recently been placed at the disposal of photographers. We refer to Orthochrom and Pinachrom. They seem destined to play a very important part in colour photography and some notice concerning their use, by Dr. E. Koenig, which has appeared in the "Photographische Correspondenz," will be found of value by those who wish to try these new sensitisers. They refer especially to Pinachrom, but Dr. Koenig remarks that practically the same results were obtained when using Orthochrom T. It has generally been found that dipped plates give better results than those which are sensitised by adding the dye to the emulsion. Those who require plates of the highest rapidity, therefore, usually sensitise them by dipping. To ascertain the best conditions for using Pinachrom, Dr. Koenig made a series of experiments, using the dye in various degrees of strength, and varying the time of immersion. It was found that a bath of 100 parts of water, 1 part of ammonia, and 2 parts of Pinachrom dissolved in 1,000 parts of water with four minutes' immersion, gave the maximum sensitiveness for red. The use of more dye does not add to the effect, and tends to produce fog. An increased quantity of ammonia gives rather greater sensitiveness, but some plates cannot stand it. Experiments were also made to ascertain the number of plates which may be dipped in the bath. 200 c.c. of water, 2 c.c. of ammonia, and 4 c.c. of Pinachrom, 1 to 1,000, were taken. The plates were immersed for four minutes each consecutively, washed for three minutes and dried. The plates measured 13 by

3c., and the first and second showed maximum sensitive-ness, say, 100, the third fell to 78, the fourth to 70, and the fifth to 60. By dipping for three minutes only, the third plate had a sensitiveness of 90. To obtain even results it is, therefore, desirable not to dip more than two plates of that size in the quantity of solution specified. The bath should then be discarded or receive a further addition of 2c.c. of Pinachrom solution. The bath should be freshly prepared, and not kept for future use. All kinds of plates are not suited for use with this dye. Some are invariably, although otherwise excellent. Great care should be exercised in selecting the light for the dark room, only the rays of the extreme red end of the spectrum being permissible. Even then the plates will be affected very easily, and it is preferable to work in the dark if possible.

* * *

Incandescent Lamp.

The common use of the electric glow lamp is such a comparatively new thing that it is difficult to realise that the first lamp was made by Edison twenty-five years ago. Any form of artificial light has an interest for the photographer, and this form of lamp is doubly interesting from the circumstance that a well-known photographic experimenter and chemist, Mr. Swan, had so much to do in bringing it to perfection. The "Ediswan" lamp is known all over the civilised world, and the story of its birth, in Edison's laboratory, as told in "Cassier's Magazine" for the current month is worthy of attention. The incandescent filament was the great difficulty, and Edison pretty well searched the world for a substance which would, after carbonising, retain its form at a white heat. The first filament tried was cotton thread, which was placed in a little mould in a groove of the shape of a hair-pin, surrounded by charcoal. For five hours this mould was submitted to the heat of a furnace, and at the end of that time the carbon thread was found to be so fragile that it fell to powder as soon as it was removed from its bed. Again and again did this happen with subsequent filaments, until at last a tougher specimen was obtained which, alas, fell to pieces when it was being adjusted to the lamp. Another promising filament was carried away by a gust of kind wind as it was being removed from the laboratory the glass-blowing building. Then Edison and the one assistant who had carried through these experiments determined that they would make a lamp before they slept, or perished in the attempt. They worked on for forty-eight hours, and at last their perseverance was crowned with success. A lamp was made, connected up with the current-bearing wires—and it glowed. Then, and only then, did Edison and his colleague think of rest. They slept for a few hours, and when they woke were rejoiced to see that the lamp on which they had expended so much anxious thought was still aglow. Several days did the little lamp continue burning, and Edison then thought it was time to see how much current it would stand. It bore the ordeal much better than he expected, but at length the breaking point was reached and the lamp went out. Edison soon realised that the invention had reached that stage when it might be brought before public notice, and soon afterwards, the Edison Electric Light Company was formed with a capital of three hundred thousand dollars. The inventor may justly claim that his lamp is now better known, and is far more wonderful than the fabled lamp of Aladdin. In all civilised countries it is being utilised, and it is no exaggeration to say that many millions of lamps are in use continually, for their employment is so widely spread that, in the same sense that the sun never sets upon the wide realm of Britannia, we may say that the carbons never go out on the much wider area covered by these marvellous

little lamps. Their manufacture, together with the work of making fittings, and wiring buildings for their use must give employment to tens of thousands of persons. Aladdin's lamp benefited but one selfish individual, Edison's brings sunshine to thousands.

* * *

Photography for Babies.

The photographic column which appears periodically in several of our newspapers, is one of the signs of the present popularity of the camera, and we welcome it as such. At the same time we feel sorry that we cannot always compliment the writer thereof upon the choice of nourishment which he provides for the sucklings for whom he caters. We take it for granted that these writings are intended for the benefit of photographic infants, for they are generally of the most elementary kind. The gentleman who does the work for one of the leading London dailies travelled the other day a little out of the safe path, we think, when he began his column with directions for "turning" to account bromide paper or P.O.P. which had been already used but not subsequently wanted. Perhaps he did not like to hurt the feelings of his readers by writing "spoilt prints," but that was evidently what he meant. Economy, we all know, is one of the leading virtues, and the art of turning to practical use a waste product has brought fortune to many. It is, therefore, a thing much to be desired that some employment should be found for prints which even in these days of latitude with regard to pictorial excellence will occasionally not come up to the expectations of their producers. What is the method by which such discarded things can once more be made serviceable in the printing frame? The matter lies in a nutshell. All you have to do is to remove the image from the paper, wash it, treat it with fresh chemical solutions, and use it for blue printing. As to the process it is simplicity itself, but let us quote the directions given in case we should not do sufficient justice to them: "The only chemicals necessary are a saturated solution of iodine (the metalloids) in methylated spirit, and a saturated solution of potassium-cyanide in water." Is there any caution suggested with regard to the attributes of this last-mentioned salt? Not a bit of it. Why discourage the aspirant to photographic honours by suggesting difficulties? He is advised to place his prints, while swabbing them with the mixture "on the bottom of a tray," and he will naturally, with the thoughtlessness of youth, employ the tea-tray for the purpose. But, supposing that our friend the photographic babe has the good luck to escape the attentions of the coroner, how much is he likely to gain by this economical use of spoilt prints? His aspirations probably have not soared beyond the quarter-plate size, and he would probably not own to more than a dozen failures if as many. Now a dozen pieces of bromide or P.O.P. can be purchased for sixpence, and we fancy that the iodine, spirit, and cyanide to resuscitate the same number of spoilt prints would cost something more than that, to say nothing of the trouble and the probable undertaker's charges which would follow the operation. But, seriously, the advice given is really of a most mischievous kind. To suggest the introduction into an ordinary household of such a deadly thing as cyanide, even if some important photographic operation could not be done without its aid, would, one might think, be incurring a grave responsibility. But to do so without a word of warning as to its dangerous properties is—well, we do not exactly like to say what we think of it. It is said that everything has its humorous side, and the comic element in this matter is afforded by the advertisements at the end of the column—which emanate from well-known firms who supply bromide paper and P.O.P. How

delighted they will be when they read this fatherly advice to their clients to use up old prints instead of buying fresh paper to work with.

* * *

Popular Taste in Art.

Thanks to photography having come to the help of the printing press, never before were there so many pictures published in periodicals as there are now. It is difficult to recall the time, little more than half a century ago, when Britain had its one illustrated weekly newspaper. Persons who subscribed to that journal, which we are glad to know is still flourishing, would treasure up the numbers, and would have them bound at the end of each volume. Who thinks of doing this to-day? If anyone attempted to bind a quarter of the illustrated journals which he reads, he would have to think about renting a warehouse to hold the accumulative tomes. We have not attempted to make a close calculation of the number of photographs reproduced in half-tone, and given to the world through the agency of periodicals, but we may fairly estimate the output for London alone at some thousands per week. The demand for pictures of this kind seems to be increasing; if it were not so most of the minor illustrated periodicals would cease to exist. So we may presume that the public is satisfied with what it gets, and the proprietors of the journals are content with the result. By the pictures published we are able to gauge the popular taste in art matters, and we are bound to acknowledge, with much regret, that we do not think much of it. Against the old-established leading illustrated papers we have not a word to say. They keep up their reputation for good work, and whether it be a wood cut or a half-tone block we may feel sure that it will not be printed until the best has been made of it under artistic supervision. But the great majority of the new comers into the literary arena seem content to boast of quantity rather than quality, and many of them will put forward as an attraction that each number contains a hundred or more illustrations. We have one of these journals before us as we write, and after carefully looking through its shining pages we may truly say that there is not a single picture in the issue which we should care to look at again. There are photographs of racing eights, football and jumping matches, one or two landscapes, a few portraits of more or less eminent persons, including, of course, an actress or two, some scenes photographed at the theatre, etc., etc. As specimens of photography these are terribly poor, excepting the portraits, which are by well-known professional workers. But most of the other pictures look as if they were done by the rawest of amateurs in the usual happy-go-lucky "snapshot" way. They seem to have been turned into blocks without any kind of retouching, or of that helpful work which a careful editor will have executed on a photograph before it passes into the block-maker's hands. In this way we are flooded week by week with an avalanche of mediocre work which ought never to have seen publicity. And the reason of it all is that the public taste in art matters is at the lowest possible ebb. The educated eye sees and deprecates these things, but the ordinary individual is content if the pictures give him five minutes' amusement, and he does not possess the power of appreciating one above the other for any artistic excellence which it may possess. So the editor and the proprietor can shake hands over the fact that what they serve up to the public is good enough. "'Tis true 'tis pity, and pity 'tis 'tis true."

THE Royal Photographic Society of Great Britain.—Lantern meeting, Tuesday, April 19, at 66, Russell Square, at 8 p.m. Mr. R. R. Beard will give a display of animated photographs.

MISCONCEPTIONS AS TO PHOTOGRAPHIC COPYRIGHT.

II.

SOME three or four weeks back we alluded to certain misconceptions under which some photographers appear to labour with regard to the law of copyright and privileges that they suppose they enjoy under it. One would almost have surmised, as we said then, seeing the length to which the subject of copyright has been dealt with in these pages during the past few years, that every photographer—more especially if he be a professional, for it is he who is most interested, at least pecuniarily in the subject—would be quite familiar with every phase of copyright law. But such seems not to be the case as evidenced by the queries relating to it to which we are constantly replying. Even since the article just referred to we have received others.

Here is one. The correspondent says in effect that he has taken for publication a series of views of local scenery, which he says, from selection of point of view and time of lighting, are superior to any that have been done before of the same subjects, and has registered his copyright in them. He says that now another photographer has taken the same views, planting his camera in precisely the same place as he did, and at about the same time in the day, so that he has got practically identical pictures, which he is now publishing as picture postcards. The correspondent asks if this is not an infringement of his copyright and, if so, what steps he should take. He adds that the pictures, though not actually copied from his photographs, are really facsimiles of them—being taken from exactly the same spots as his were, and with similar lighting. Of course, there is no infringement of copyright in such a case as this. There is a copyright in our correspondent's photographs, but there is none in the subjects themselves, and, as a matter of course, anyone is at liberty to photograph them from any point of sight he likes, whether there may have been other pictures taken of them and made copyright or not.

Here is another point somewhat analogous to the above that we have frequently replied to, and it mostly has reference to lantern slides of pictures in national collections, old engravings, and the like. Some persons seem to think that as the copyright in the majority of the pictures in our national collections and those in foreign ones has long since expired, and also in many old engravings, they are at liberty to copy any of the photographic reproductions of them that have been published either here or abroad. This is quite a mistaken idea. There may not be an existing copyright in the original picture; but a photographer, when he reproduces a copy of it, almost invariably registers the copyright in his reproduction—his work—and so protects that from piracy. Anyone, of course, is still at liberty to copy the original as many times as he may choose, and in as many forms as he likes, and register his copyright in any or all of his reproductions, and one is allowed to copy them, the copyright being in the reproductions.

Some seem to imagine that the photographs of pictures in the foreign galleries, and those in the English ones, that are published abroad, and which command so great a sale here, possess no copyright unless they have been registered here at Stationers' Hall. That is quite a mistake, as it is not at all necessary that they should be so registered. Under the International Copyright Act, if the conditions necessary to secure copyright in any of the countries signatory to the Convention are fulfilled the works become copyright in all of them just the same as if the works were copyrighted in each of the countries. For example, a picture, the copyright in which has been

registered at our Stationers' Hall, becomes copyright in all the countries that entered into the Convention without any forms to be gone through abroad. In Germany, for instance, from whence we get so many art reproductions, no registration of copyright is necessary. The mere publication in Germany secures copyright in the work there and, consequently, in all others, partly to the Convention. Most of the pictures of the late Queen at Windsor, and at Buckingham Palace, as well as those in our national collections, have been reproduced by German firms, but as the reproductions were first published in Germany there was no occasion for the copyright in them to be registered in this country, although the negatives were actually made here.

There is a point that is not so much a question of copyright as of common right which does not seem to be so well understood by many photographers as it should be. It is this: The negatives of his customers are the property of the photographer, but he has no copyright in them; what is vested in the sitter. Although the negative is his property he has no right to use it for any purposes of his own, without the customer's consent. It is illegal for him to sell copies of it, or to use it for specimens or anything of that sort. Sometime back, we remember, a correspondent wrote to the effect that he had taken the portrait of a very pretty young lady, and, after the order was executed, he had an enlargement made and finished at considerable cost to use as a specimen in the shop window. As soon as the picture was shown the father of the lady called and demanded its immediate removal, which was refused. Legal proceedings were threatened, and we were consulted by the photographer, and then he was told that what he had done was illegal, and that he had laid himself open to costly law proceedings. Afterwards, it appears, he offered to sell the picture to the family at a reduced price, but this was indignantly refused, and its destruction at once was demanded or legal proceedings would be taken. When the photographer seemed to think himself an ill-used party because the enlargement had cost him a considerable sum to produce, and was a good specimen, but he could not use it. Why he should have felt aggrieved it is a little difficult to conceive. He had done an illegal thing in using the customer's negative, which he had no legal, or moral, right to do.

Any photographer who has been paid for taking a portrait can, by injunction from the Court of Chancery, be restrained from exhibiting, or selling, copies of it, and will be mulcted, in the costs of the proceedings, as more than one has found to his cost. He may also, possibly, have to pay a certain sum by way of damages. But in the cases we are aware of damages were not claimed. But without damages the costs in a Chancery trial are not readily forgotten by those who have to pay them. This is a matter that many do not seem to be aware of when they exhibit copies, or enlargements, made without the consent of the customers having been previously obtained.

ROYAL INSTITUTION.—A general monthly meeting of the members of the Royal Institution was held on Monday afternoon (the 11th inst.), Sir James Crichton-Browne, Treasurer and Vice-President, in the chair. The Right Hon. the Marquis of Salisbury, Mr. W. B. Anderson, Mr. J. Benson, Mrs. G. E. Broun-Morison, Mrs. Douglas, Mrs. J. Mackenzie Davidson, Mr. J. A. W. Dollar, Mr. Baynton Phipps, Mr. E. W. Linging, Mrs. Master, Mr. J. C. Prince, Mr. A. Short, Mr. H. L. Tidy, Mr. W. Watson-Taylor, and Mr. C. S. Whitehead were elected members. The special thanks of the members are returned to Mr. Francis Gaskell for his donation of £50 to the fund for the Promotion of Experimental Research at Low Temperatures.

RECENT ASTRONOMICAL RESEARCH.

II.

[From "Popular Astronomy,"]

In these photographs the author has also avoided a fault which appears in so many pictures of the Moon which have been greatly enlarged from the original negatives. Sometimes this work of enlargement has been carried so far as to make the granular structure of the film of the original negative stand out harshly even in the finest prints that can be made. Such a glare is unnatural, and is always disappointing to those who rightly expect the soft, continuous finish of a photographic film that will differentiate, in detail, most beautifully and almost perfectly, when it is not over-worked.

The appearance is that these good results could not have been realised without an instrument giving a wide, flat, photographic field, and it is interesting to know how this end was accomplished. From the descriptive part of the photographic atlas it is learned that a twelve-inch objective with a photographic focus of 135 feet and 4 inches was mounted on the side of a hill with inclination of about 30 degrees. The upper end of this long tube came into a second story of a building where the observations were made. At the lower end of it was the objective and a mirror 18 inches in diameter, used as a reflector to throw the light of the Moon through the objective and the long tube to its eye-end. By means of electric motors the mirror and the plate-holder were made to revolve, so as to neutralise the rotation of the Earth on its axis. It is said, by the author, that this novel means of controlling the mirror and the photographic plate, in actual use, worked very well. A good objective of this kind, handled in this way, ought to do fine work.

As an illustration of how the photographs were prepared for the atlas, we will cite one instance which was the first step in constructing the author's map of the Moon. The negative of the full Moon finally chosen was taken, at Jamaica, on the night of August 29, 1901, 16h 50m G. M. T. The image measured 15.7 inches in diameter.

It was enlarged on bromide paper to a diameter of about 27.7 inches. The craters, parallels and meridians were then inserted. When completed the map was reduced by photography to an approximate diameter of 13.7 inches, which is just one ten-millionth of the diameter of the Moon. This would give a scale, measured on the Moon's axis, of about 160 miles to the inch.

It would be profitable to our readers to take up the themes presented by the author in this new book, and give somewhat in detail the new things therein said in connection with each, but this would carry us too far from the object of this already extended notice of this popular work. It will suffice to say that Professor W. H. Pickering has made a most valuable and timely contribution to the literature of the Moon, by the aid of the best modern methods of research. The fact that the book has been written entirely in popular language is one of the best things about it. Intelligent popular readers will find it the best reference book for late knowledge of the Moon in connection with any good text-book on the subject that we know of.

W. W. PAYNE.

INAUGURAL Dinner of Houghton's, Limited.—To celebrate the amalgamation of the firms of George Houghton and Sons, Limited, Joseph Levi and Co., Spratt Bros., Holmes Bros., and A. C. Jackson, under the style of Houghton's, Limited, an inaugural dinner was held at the Trocadero Restaurant on Saturday last, April 9. Mr. G. Houghton occupied the chair, and amongst those present were the heads of the allied houses, members of the various staffs, representatives of the Press, and others, the company numbering about eighty. At the conclusion of the dinner, which was served in Messrs. Lyons' best style, the chairman gave the loyal toast, that of "Houghton's, Limited," being submitted by Mr. Thomas Bedding, F.R.P.S. (Editor of "The British Journal of Photography"). Mr. Edgar Houghton replied. Other toasts were "The Press," "The Works," "The Staff," "The Chairman and Directors," and "The Guests." The enjoyment of a delightful evening was further enhanced by a musical programme, to which the orchestra and several well-known entertainers contributed. The dinner, which we trust signals the commencement of a prosperous career for Houghton's, Limited, was a great success in every way.

SHUTTER TESTING.

In the March number of the "Instrumentenkunde" a paper by Dr. Hans Lehmann, of Munich on the speed measurement of shutters is published. The method made use of is described as follows:—The contact-breaker of an induction coil is removed, and in its place a large tuning fork, which has on the end of one of its prongs a piece of platinum wire, dipping into a small cup of mercury covered with distilled water, is substituted; the secondary terminals of the coil are connected through a Leyden jar to two electrodes fixed on a wheel driven by a small electric motor, and the sparks are photographed by a camera, set up at a convenient distance, with the shutter to be tested. The number of vibrations of the tuning-fork per second must not be too large, or the amplitude will be too small for the make and break of the current to take place satisfactorily. The accuracy of the speed measured is, of course, the period of vibration of the tuning-fork. It is, nevertheless, possible to accurately measure shutter speeds, which are smaller than this period of vibration. This is done by mounting a strip of white paper, or a small incandescent lamp, behind the electrodes, the sparks from which

this tuning-fork the speeds of several shutters were measured, and it was found that the accuracy of the shutters themselves was not sufficient to require the method with increased accuracy of measurement above described. This was especially the case with those to which a friction brake was fitted, but the pneumatic shutters were not constant also, some of the same construction and size varying considerably. Dr. Lehmann then gives some determinations of the speed of various shutters by Bruns (one of the two best German makers), Goltz and Breitmänn, Bausch and Lomb, Steinheil, and Newman and Guardia of London. He speaks very highly indeed of the performance of the last-named shutter, which, he mentions, had been in constant use for two years, and the figures given show that it was the only one of those measured that worked to its indicated speeds. One of the shutters tested was a focal plane shutter, and it was found that variation of the tension of the spring had not much practical effect on the speed. The following table summarises the results, the margin of error being within

$$\pm \frac{1}{145} \text{ sec.}$$

Name of Shutter.	Bruns. large pattern	Bruns. small pattern	Bausch and Lomb.	Newman and Guardia.	Steinheil. Alto-stereo-Quart.	Goltz & Breitmann. Alto-stereo-Quart.								
Position of Shutter.	diaphragm	diaphragm	diaphragm	diaphragm.	Behind the lens.	—								
Brake.	friction	friction	pneumatic	pneumatic.	—	—								
Focus of lens.	28".	12c.	15c.	12c.	8c.	—								
Aperture.	f/6.8	f/6.8	f/6.8	f/8	f/8.	—								
Speed Index.	No. of dots.	True speed	No. of dots.	True speed	No. of dots.	True speed.	Tension.	No. of dots.	True Speed.	Tension.	Width of slit in m. m.	Nos. of dots.	True Speed.	
$\frac{1}{100}$ sec.	3	$\frac{1}{30}$ sec.	2	$\frac{1}{24}$ sec.	—	—	No. 1	3	$\frac{1}{40}$ sec.	No. 1 {	80	13	$\frac{1}{100}$ "	
$\frac{1}{125}$ "	4	"	2	$\frac{1}{30}$ "	3	$\frac{1}{24}$ sec.	" 2	4	"		40	6	$\frac{1}{125}$ "	
$\frac{1}{150}$ "	—	"	—	—	4	"	" 3	10	"		20	3	$\frac{1}{150}$ "	
$\frac{1}{180}$ "	—	"	2	$\frac{1}{36}$ "	—	"	" 4	44	"		2	80	12	$\frac{1}{180}$ "
$\frac{1}{200}$ "	—	"	—	—	6	"	" 5	96	"		3	80	13	$\frac{1}{200}$ "
$\frac{1}{250}$ "	—	"	2	$\frac{1}{45}$ "	16	"	" 6	—	"		4	80	12	$\frac{1}{250}$ "
$\frac{1}{300}$ "	—	"	—	—	—	"	" 7	—	"		5	80	10	$\frac{1}{300}$ "
$\frac{1}{360}$ "	—	"	4	$\frac{1}{54}$ "	—	"	" 8	—	"		6	80	9	$\frac{1}{360}$ "
$\frac{1}{400}$ "	—	"	—	—	21	"	" 9	—	"		6	40	4	$\frac{1}{400}$ "
$\frac{1}{500}$ "	9	$\frac{1}{50}$ "	17	$\frac{1}{50}$ "	—	"	18	$\frac{1}{120}$ "	—		—	—	—	—
$\frac{1}{600}$ "	26	$\frac{1}{60}$ "	—	—	27	$\frac{1}{200}$ "	65	$\frac{1}{250}$ "	—	—	—	—	—	
$\frac{1}{800}$ "	—	"	—	—	25	$\frac{1}{80}$ "	90	$\frac{1}{80}$ "	—	—	—	—	—	
Bulb.	7	$\frac{1}{17}$ "	4	$\frac{1}{37}$ "	—	—	—	—	—	—	—	—	—	

then serve as the divisions of a scale. The period of vibration is determined as follows: A photographic plate is suspended by a fine thread from corner to corner, upon two screws in the camera, in the plane of the image of the sparks. The contact-breaker is set in motion and the thread released by burning it. The image on the plate after development consists of a number of small points, whose distances from the first are proportional to the square of the time of fall respectively. The first point is a small disc, in consequence of the number of sparks having caused a spreading-out of the image before the plate was released. These distances are measured with a micrometer reading to 0.0005 mm. (about 1-50,000 in.). Dr. Lehmann here specially points out that the accuracy of the measurements, in spite of the larger size of the first disc, is not less than that of stellar photographs. The distances between stars of various magnitudes have to be measured thus, and the accuracy is known to be very great indeed. Under certain conditions a series of much weaker points follows each large one; they are due to partial discharges. Dr. Lehmann develops formulæ for calculating the period of vibration, consideration being given to the fact that generally the moment of release of the plate does not coincide with the passage of a spark. For these formulæ the reader is referred to the original paper. The number of vibrations of the tuning-fork used was found to be 148.23 per second. With

A NOTABLE GERMAN ASTROPHYSICIST.

AMONG modern spectroscopic astronomers a high place is occupied by Dr. Scheiner, the distinguished assistant to Dr. Vogel at Potsdam. To him we owe much of our knowledge of various branches of spectroscopic and photographic astronomy—among them the spectra of bright stars, of the important nebulae, and the radial motions of the stars.

Julius Scheiner was born at Cologne on 25th November, 1858. After education in the Royal Gymnasium in his native town he entered the University of Bonn in the spring of 1878 at the age of nineteen. While still a student he became interested in astronomy, and Professor Schönfeld appointed him assistant in the Bonn Observatory.

After six years' service at the Bonn Observatory Dr. Scheiner was called to Potsdam Astrophysical Observatory as assistant in 1887. In the same year he assisted Dr. Vogel in his work on the radial motions of stars. The radial motion of each star was measured independently on the plates by both Dr. Vogel and Dr. Scheiner, and the mean of their results was used to denote the motion of the stars in the line of sight. Dr. Scheiner's name is connected with all Dr. Vogel's important spectrographic investigations.

Dr. Scheiner's photographs of the spectra of bright stars, taken at Potsdam, are worthy of special mention.

In 1890 Dr. Scheiner published his well-known volume, "*Die Spectralanalyse der Gestirne*," which was in 1893 translated, revised, and enlarged by Professor Frost, then of Dartmouth, New Hampshire, now of the Yerkes Observatory. In the preface to his work Dr. Scheiner remarked: "Hitherto no text-book has existed for this chief field of spectrum analysis—astronomical spectroscopy."

This want was filled by Dr. Scheiner's magnificent piece of work, and his book is now an authority on spectroscopy. The volume is divided into four parts—spectroscopic apparatus, spectroscopic theories, the results of spectroscopic observations, and spectroscopic tables. In the third part of the volume Dr. Scheiner gives an admirable summary of the work of the leading modern spectroscopists. In addition to "*Astronomical Spectroscopy*," Dr. Scheiner is author of several other volumes on astronomy. These works are "*Die Photographie der Gestirne*" (Leipzig, 1897), "*Strahlung und Temperatur der Sonne*" (1899), and "*Der Bau des Weltalls*" (1901).

On 9th September, 1891, Dr. Scheiner obtained, with the 13-inch photographic refractor of the Astrophysical Observatory at Potsdam, a plate of the great star cluster in Hercules known as Messier 13. This was the first plate on which the component stars were sufficiently well defined for the purposes of exact measurement. Accordingly, Dr. Scheiner prepared a catalogue of 853 stars in the cluster, the positions of which he checked with great accuracy.

In 1893 Dr. Scheiner published a drawing of the Xi Persei nebula, discovered by Professor Barnard in 1885. Dr. Scheiner's drawing was the result of five photographs obtained with a small instrument of four inches aperture. He found that the Xi Persei nebula was not much smaller than that in Orion, and that its borders are more brilliant than its centre, which is comparatively obscure.

In 1894 Dr. Scheiner succeeded Professor Spörer as "Chief Observer" in the Potsdam Astrophysical Observatory, under the direction of Professor Vogel. In the following year he became Professor of Astrophysics in the University of Berlin.

In 1898 Dr. Scheiner photographically determined the positions of seventy of the stars in the Orion nebula, which cannot be proved useful in a discussion of proper motion. He compared the positions of stars as deduced from his photographic researches with earlier measurements by Gould. From the fact that the positions as measured by Dr. Gould and Dr. Scheiner at an interval of twenty years were practically the same, it was deduced that the stars remained practically stationary—in comparison, that is, with the stars of the tapezium—and are not physically connected with either the tapezium or the great nebula. In the "*Astronomische Nachrichten*," Dr. Scheiner has described his researches as to the nature of nebulae. He considers that they are composed of rarefied matter, their temperature being exceedingly low.

In January, 1899, Dr. Scheiner obtained a magnificent photograph of the spectrum of the Andromeda nebula, with an exposure of seven hours. Dark rays were seen, which interrupted the continuous spectrum, and Dr. Scheiner inferred them to correspond to the Fraunhofer lines in the solar spectrum. This points to the conclusion that the Andromeda nebula is actually a cluster of stars of the second type, too distant for the individual stars to be visible.

Dr. Scheiner, assisted by Dr. Wilsing, of the Observatory at Potsdam, has investigated the motions of nebulae in the line of sight by means of Doppler's principle. He has also made many investigations on both stars and nebulae and on the canals of Mars. He photographed the zone of the heavens for the International Chart of the Heavens undertaken by the Observatory at Potsdam. In all, he has published forty-four papers.

THE PHOTOGRAPHY OF GOLF.

[The following review of Mr. G. W. Beldam's book on "Great Golfers: Their Methods at a Glance," appears in the first number of "C. B. Fry's Magazine."]

MANY books have been written on golf—some of them might, perhaps, judiciously have been left unwritten. But of all the volumes ever penned concerning the game, the one before us is undoubtedly the most original. "Great Golfers" is not only the book of the month, but the best book on golf instruction yet produced. Indeed, it has two entirely novel features—the device which shows the stance, and action-photographs, or photographs taken while the player is actually making the stroke.

No book hitherto has been able to show the exact stance of the player for any stroke. Yet so simple is the idea of marking 6 in. squares on the ground that one wonders it has not been done before. For instructional purposes the advantage is very great, for stance is of as much importance in golf as the position of the feet at cricket when the actual stroke is being made. Hitherto, as the author points out, photographs have been of little use for teaching the positions of the feet, which vary according to the stroke played. In this book we are left in no doubt about it at all; moreover, each reader can experience the effect on his play by standing for any stroke shown in the book exactly as Vardon, Taylor, Braid, or others do. It strikes us, by the way, as an excellent idea that the author has arranged for a golf stance mat to be placed on the market, which will be of linoleum, and have the 6 in. squares marked on it to correspond with those shown in the photographs. Who has not noticed beginners and others asking the professional to let them stand in his foot-prints for this very purpose?

Then, again, the point of view of the camera always being the same—viz., looking directly up and down the middle line at right angles to the intended line of flight of the ball, there is ample scope for comparing the methods of all the players. If a player is standing for a low ball, or a sliced ball, the position of the shaft, relative to this line, shows the difference at once. And we are not left in doubt as to the exact line of the intended flight of the ball, which is along the line on which the ball is placed. As Mr. Beldam points out, the stance is therefore the more readily understood. It is the outcome of a simple idea, but one which accomplishes much.

As regards the other feature of the book, action-photographs, Mr. Beldam is, we believe, the first to make a new departure in the illustration of golf books, and to attempt to "time" the golfer at the top of the swing, standing quite close to the subject. He must evidently have aimed at catching that point in the golfer's swing where the club is imperceptibly (in most cases) checked, and commences to return on the downward swing, for most of the photographs are so sharp as to create doubts whether the golfer could have been playing the stroke. The movement of the garments, however, and the action in the photograph prove that the stroke was actually being made.

To accomplish this, perfect timing with the shutter of the camera must have been imperative. We have ventured to ask Mr. Beldam "how he did it," if he had many failures, or took many pictures of the same person for the same stroke. Here is what he said:—

"It is all a question of eye and hand, as in any other game, but two things besides are most necessary—a camera with a full-sized viewfinder and a focal plane shutter, and, a knowledge of the golfing swing; in other words, the camera artist must be a golfer. The fact that when the button is pressed the full-sized reflector springs up and releases the focal plane shutter really helps the operator to time more perfectly. There is only a fractional part of a second between the pressing of the button and the releasing of the shutter; the reflector has to spring up to get out of the way, and release the shutter. Hence I soon found I had to allow for this, and "press the button" just before I wanted to. This short space of time, in my opinion, just fits in with the golfing swing, and also compensates for the difference there would be between the eye seeing and the hand pressing. I therefore watched the wrists working, and not the club head, and I soon found that practice gave me the necessary knowledge when to press. I seemed to know if one had been mistimed, and immediately took another of the same stroke.

"My failures on this account were not many; out of nearly three hundred photographs taken, a dozen failures from mistiming is not a great number. Unfortunately, whilst at the Amateur Champion-

ship, owing to a defective changing box, I lost about eighteen valuable snap-shots.

"When taking a great number in one day I seemed to get set, as one does at cricket, and could then be certain of my efforts being absolutely timed. The top of the swing, of course, requires more timing than the finish, but the most ticklish thing is to catch the ball at, or immediately after, impact in the drive, so as to show the ball and driver on the plate. Of course, in such a case, there is considerable movement of the club and the ball, but this gives a better idea of the pace at which they were travelling, especially when it is remembered at what speed the shutter was working, viz., at 1-1000th to 1-1250th of a second."

From the foregoing it will be seen that golf-action photography, to get the best results, requires almost as much timing as golf or cricket. Enough has been said to demonstrate that the second feature in the book is a new departure, and we can truthfully assert that the photographs do all Mr. Beldam claims for them. It needs only a casual glance to show the individuality of the players coming out in every photograph. How different, indeed, from the posed and wooden illustrations one often sees displayed in golf books! Action-photography is a word which seems to have been coined by Mr. Beldam as a safeguard against misinterpretation! We think he need have no fear on that score. The name is a good one, and full of meaning.

These two ideas, the stance device and the action-photographs, stand out as the two prominent features of the book, which is bound to mark a new era in practical golf instruction, whether to the beginner or scratch player. But it must not be thought that these are the only features. It is a book full of infinite variety, and the arrangement has been evidently well thought out.

Wisely keeping to his subject, instruction by means of photographs, Mr. Beldam leaves others to deal with the history and technical developments of the game. His own chapter on "Instantaneous Photography in Golf" should capture the interest of the golfer who knows anything at all about photography. And his chapter on "Cricket and Golf" is written with the keen insight of one who is not only a theorist, but can verify his theories by putting them into practice. As one of the leading men in the Middlesex eleven, Mr. Beldam's name needs no introduction. As a golfer, if he would only give up that "wretched game of cricket," he would assuredly come rapidly to the fore.

That Mr. Beldam has a keen, observant eye, and a mind for details, is shown by his chapter, which is the keynote to his book—"Instruction by Illustration." Throughout the book he tries, whether talking of golf or cricket, to inculcate principles into the mind of the reader; and a noticeable quality is the absence of all dogmatism. Though he has got hold of principles, he sees that individuality must come out in interpreting them. Hence he says that golf (and cricket) can be played well in many different ways. The principles do not vary, but individuality does; it is the beauty of such games as golf and cricket that they leave plenty of scope for personality.

After these three chapters come four by the famous quartette of professionals—Vardon, Taylor, Braid, and Herd—each of whom writes notes on his own methods of play. In Vardon's portion, what seem to be entirely new ideas are given birth, and he analyses the golfing swing in a masterly yet simple way. Vardon makes golf look a very easy game, and it would appear that he has let readers of this book into his secret, for his notes on the swing, and the manner in which he plays the push stroke, how and when the knees should work, are an explanation as lucid as one could wish.

People who think that Vardon simply walks up to the ball and strikes it in the way he does from sheer natural ability, and after the manner of the parrot, will here see that this great player has method in the "mad" way he plays golf! His game looks simple, his deductions are simple, and the result is simple! For Vardon is acknowledged by even those who most closely challenge his supremacy to be the best golfer who ever lived. We shall be very much surprised if the manner in which he has "given away" his game and methods does not help very many golfers vastly to improve their game.

Taylor's notes are full of clear-headed ideas. If you see him play, he gives you the impression that he is determined and means to accomplish what is in his mind. His notes are written with like precision. His methods vary from Vardon's, for his full swing never

exceeds the horizontal position. For this reason he starts bending the knee sooner than Vardon in the upward swing of the drive. Indeed, Taylor's drive would seem to be but a half shot and wrist work, plenty of it! Yet he has been known to outdrive even Braid on his day, and his straightness is proverbial. His remarks on the "Mashie," on which club he is easily the greatest authority, are very explicit and well thought out. They should greatly help those who wish to excel in this most fascinating yet difficult part of the game.

Braid's annotations, too, are decidedly characteristic of the man. There is no waste of words—short, pithy sentences, full of instruction, give the man and his methods. Yet it is quite clear that he, like Vardon and Taylor, has his reasons for every stroke that he plays. As perhaps the longest driver in the world, his notes on the drive should prove most useful. His method of knee action in the drive seems rather to coincide with Vardon's.

Lastly comes Herd, a player of the brilliant order. His remarks are particularly interesting, as his methods differ somewhat from those of the other three. There is more right-hand grip with him, and consequent tighter grip of the left. He knows, however, how to let the right hand in at the right moment, and in the right way. Here we have an example that golf can be played successfully in different ways. He also lets his body into the stroke more than the other three, as the photographs clearly show. His notes on spoon play are a valuable addition to the book—coming as they do from a famous exponent of that club. Like Vardon, Taylor, and Braid, he has evidently given the game a good deal of thought, and worked out for himself his own individual style.

We rather fancy these four chapters will open the eyes of those who do not give the professional credit for thinking powers in regard to his game, but rather consider it as merely the natural outcome of much play, and fancy that he never went through the trying times which the goddess of golf requires of her votaries. Possibly, the reason why we have never been given such a wealth of advice from professionals before may be that they have not had photographs in which they could see their own methods portrayed. Mr. Beldam, we say again, is to be congratulated on getting together, in conjunction with his pictures, such a welcome addition to golf literature, and he has been wise in letting each professional state his own case.

Then we find the book again varied. No longer each player tells his own story, but the services of that most capable writer and brilliant exponent, Mr. Hilton, have been requisitioned. Like that of the author, his is a mind for detail, and he possesses a keen power of observation. Necessary qualities are these for the task he has been allotted, that of criticising the play of the various amateurs in the book; and being the only amateur who has twice won the open championship, and beaten all comers, Mr. Beldam has been well advised in securing his services. The notes on his own play are most interesting, and full of valuable hints. He is most candid about the rubber ball, and it would seem to bear out what we saw stated not long ago, that the reason for his slight falling off lately was perhaps his failure to master the eccentricities of the rubber-covered ball. He says himself that in approach shots it requires a different treatment to the gutty, and a different stroke to the one he has been accustomed to play. But it cannot be long before a golfer of his calibre acquires the necessary skill to treat the new invader successfully!

In criticising the games of the other amateurs, Mr. Hilton, has performed a difficult task with tact and ability. He has, we imagine, been helped in his task, however, by having action-photographs before him, and he brings out most ably the value of photographs taken in this way. For instance, in Mr. Hutchinson's case he shows how he moves the fingers of his hand in making the drive, and how at the finish they are fighting which shall hold the club. The photographs clearly prove his points. On the whole, Mr. Hilton's remarks are most pleasant reading, and from time to time he throws out valuable hints to beginners and others. He seems to understand well the difficulties of amateurs, and his advice should command every respect. In treating the series of Miss Adair, who (the author says through want of space) is the only lady champion in the book, Mr. Hilton seems to bewail the fact that skirts interfere with his task of criticism! As he humorously puts it, after doing his best to analyse her characteristics, "the dictates of hereditary fashion do

not allow a sufficiently close diagnosis to be made of her methods!" and "it is mere deduction."

The photographs of Miss Adair, however, only make us wish some other ladies had been included in the book. We will hope that it may be supplemented with another volume at some future date. Possibly "great golfers" in America may then be included, notwithstanding the talk of the so-called decay of golf there—a sure sign that it is taking deeper root. Mr. Hilton's pages make pleasantly light reading; he has fulfilled his task well. His last chapters, on "Putting" and "Theory and Essentials," are excellent, but it is doubtful if all will agree with him that putting is a separate part of the game! Yet, for the purpose of comparison, this chapter is no doubt better kept itself, as it introduces again a nice variety in the arrangement. We may safely say, in conclusion, that this book will take a great hold of the golfing world. Every golfer must have one if he is to keep pace with the times. For beginners, as well as for scratch players, it is easily the most helpful we know, for it does not make the mistake of treating beginners as beginners, but is rather written for the average player. Where all will find it so useful and helpful is in the fact that on every page golf is seen as it is played by our best exponents, and the reader is left to choose for himself. It will so appeal to those who like to compare the different styles and methods of the best golfers. Altogether it is a most fascinating and delightful work. The collection of photographs alone, two hundred and sixty odd, are of splendid value for the price charged for the book. They are a unique collection, and will hand down to posterity the methods of the finest golfers of our times.

A USEFUL PRINT METER

LIKE many amateur photographers, it is, and has been, a craze to come possessed of most new things, which from time to time inventors and dealers combine to place temptingly before us; and looking through one of my drawers just now, three or four of these useful little pieces of apparatus intended to do away with waste prints (when we indulge in platinotype or carbon) were come across, and the number of shillings they represented came somewhat of a shock, when one thought how little use they really were put in practical work.

As in most other matters connected with the practice of photography, it always seems as if the last new—I was almost saying toy, the latest acquired implement will, perhaps, sound less frivolous, the only one of any real assistance. One matter in which print meters have proved in a slight manner defective, is from exactly the same difficulty experienced when using meters designed to help one to estimate the needed exposure to be given a dry plate or film, namely, in telling with anything approaching certainty the exact point when sufficient darkening of the strip of sensitised paper has been reached, due, mainly, in this case, to the strip of bromide paper employed being very sensitive to the influence of moisture retained in the atmosphere, and when so affected printing a pinky colour, which to many, at least, proved a stumbling block in the way of rightly estimating the depth or darkening which has been reached; so, also, with print meters, it being not always possible to obtain a print-out silver paper which, when acted upon by light, gives anything like the same tint or colour as the standard one used to the little instrument.

Of course, we are all aware the mere colour of the printed test has no part in this matter, all that is needed being to darken it to a certain depth, irrespective of colour matching entirely; but simple as this seems, it has undoubtedly proved an obstacle to many, and especially, of late times, those so-called actinometers or meters where strips of bromide paper are used to gauge the action of light have been sent out with the covering piece of glass either, in one case, a yellow colour, or in another well-known and widely-used meter is covered by a small blue glass, either of which largely does away with any uncertainty in judging how the darkening is proceeding, any slight variation of colour in the sensitive paper, from whatever cause it arises, is obviated in quite a remarkable manner.

Under such conditions, it really becomes difficult to go far astray in forming a decision as to when the right moment has arrived, and the test is completed.

Just as it has been with that particular form of light gauge, so

also has it been, in less extent, perhaps, when using a print meter, for reasons already indicated.

Now, my last acquired fad in this direction, for use when printing with papers where it is advisable to rely upon some such guide, is a small, neat affair, which tells me as it lies on the printing board, or frame, just exactly how matters are progressing at a glance, without need to touch either meter or print.

It seems quite indifferent as to what make of P.O.P. is used, or what particular colour the deposit assumes, either bright red or purple, for whichever it be, when once it has been placed behind the graduated slip through which printing has to take place, the result is the same, just a plain, simple, easily read record of what is going on. So that once having obtained the right number of tint to print to for any particular negative, when employing any particular kind of process of print making, and using a test slip of one degree of sensitiveness, printing, especially of large pictures, loses its terrors, and failures from over or under printing become things of the past—or should, which is slightly different sometimes.

In appearance it is a narrow metal frame from three to four inches in length, slightly under one inch in breadth, and a quarter of an inch in depth. It opens in book form, one side the two leaves being held by a strong spring, on the other side there being a sliding indicator, which is pushed to any particular number of tint, down the centre being openings through which the printings take place. One-half down the entire series (there being ten such openings) is placed the standard tint, underneath which is a narrow pad of felt to press the sensitive strip of paper into contact, and hold it there.

So far there is nothing which differs in essentials from the rest of print meters, except one or two small particulars. But from this point it differs from any which have come under my personal notice, in that the cover glass is of an evenly graduated yellow colour, the result being, as already pointed out, there is no necessity, when once the strip of P.O.P. has been placed in position and the instrument closed, to do more than glance at it from time to time to see exactly how printing is progressing, in itself no small saving of time and trouble, especially when light is of high actinic quality, and to examine by opening a meter means taking it indoors, or a shady corner, before uncovering the enclosed slip of sensitive material.

After having put this small print guide to some amount of practical use the last few months, it seems quite as good, and indeed in many respects far in advance of others more commonly met with in dealers' shops; and that is all, except to repeat, it is a good and helpful bit of apparatus, and costs but three or four shillings.

To any desirous of using the same principle, there should be no difficulty in making a print meter with very much the same action, using yellow glass in place of opal or the clear glass screen of ordinary print meters every one is so familiar with.

W. THOMAS, F.R.P.S.

FORTHCOMING EXHIBITIONS.

April 20-26.—Swansea Photographic Club. Hon. Secretary, W. R. Stephens, 14 and 15, Temple Street, Swansea.

May 2-4.—Bristol Eidestdffd. Photographic Section. Hon. Secretary, Arthur B. Cleaves, Westbury-on-Trym, Bristol.

May 11-18.—Plymouth Photographic Society. Hon. Secretary, Wilfred Grist, 105, Old Town Street, Plymouth.

May 16-28.—Photographic Society of Ireland. Hon. Secretary, E. Webb-Smith, care of Royal Dublin Society, Kildare Street, Dublin.

May 24-28.—Devonport Camera Club. Hon. Secretary, A. J. Catford, 78, Charlotte Street, Devonport.

June-October.—Glasgow Photographic Exhibition. Secretary, Art Gallery and Museum, Kelvingrove, Glasgow.

WE have received a leaflet from J. Lizars, of Buchanan Street, Glasgow, containing a list of "Challenge" cameras for sale at reductions ranging from 33½ per cent. to 50 per cent. off list prices.

WE have received specimens of Messrs. Elliott and Sons' latest show-cards advertising the Barnet specialities. They are high-class productions, and would enhance the appearance of any photographic dealer's shop.

THE REPRESSION OF THE BRITISH INVENTOR.

[In justice to Mr. Friese-Greene, whose letter appears in our columns this week, we print his letter to the "Journal" of the Society of Arts of March 25, 1904.—Eps., B.J.P.]

As a British inventor with more than twenty years' practical experience of the British patent laws, and having taken out some thirty patents, I have been extremely interested in the correspondence in your "Journal" on the above matter, and I heartily agree with the position taken by Mr. Lowry and Mr. Boulton, that the present system prevailing in the British Patent Office is iniquitous and unjust to the inventor, and has done more than almost any other one thing to discourage English ingenuity and enterprise.

It is not my purpose to defend the German or United States patent laws, which may be (and doubtless are) open to the criticisms made by Mr. Abel. The fact that these countries have made mistakes in this line in no wise minimises the mistakes which our country has doubtless made, and I therefore do not propose to enter into a discussion of Mr. Abel's letter. What interests me as a British inventor, are the facilities the British Patent Office affords me for protecting and exploiting my inventions. My experience is, that it would be hard to devise a method which is more unjust to the inventor than the one which has prevailed in England for the last twenty-five years at the least.

The Act of 1902 has improved matters somewhat, but it does not get to the root of things, as it retains the very burdensome and unjust renewal fees which, coming as they usually do in the case of a new invention, just at the time when the inventor is least able to meet them, cannot be met, and therefore the inventor loses his time and the moneys already paid.

As Mr. Boulton very justly states in summing up his admirable letter: "Can anyone maintain that it is just that the patentee pays for his protection 1,188 times as much per annum as the author?" This is what the present patent law provides. To give you a practical illustration in my own case, which is one of many (and I may say that I have made so many valuable inventions that I am now financially ruined, although many of my inventions are practical and commercial, and have made thousands and hundreds of thousands of pounds for others), I will instance one case—i.e., the cinematograph.

I will not enter into the history of this invention, except to say that I began working on it over twenty years ago, long before it could be possibly made commercial, for the reason that, at the time I began my experiments and for several years thereafter, celluloid was not made in long lengths, and, therefore, could not be used for cinematograph films.

I first showed my invention at a meeting of the Photographic Society, Pall Mall, in 1885. The invention itself was first patented in 1889. This patent gives a complete description of the cinematograph camera which is used to-day, but it was not then commercial, for the reason that celluloid film was difficult to secure, was expensive, and was too opaque to give proper results upon a screen. In fact it was not until 1893 or 1894 that a non-shrinkable celluloid photographic film transparent enough to enable pictures to be projected upon a screen was produced commercially.

I took out a further patent in 1893. This patent covered the projecting apparatus, and is the first machine of its kind. In 1896 I took out a further patent, covering certain improvements and attachments for this machine; and this patent, together with my patents of 1889 and 1893, are the master patents on this invention. I had expended thousands of pounds and ten years' time in perfecting this invention.

Directly my patents were published others profited by my work, and brought out various forms of machines, all of which I maintain are infringements of my patents; but I was not in a position financially, owing to the large amount of money I had expended on this and other inventions, to properly protect my rights in the Courts, which would have cost me, as I was informed, from £2,000 to £5,000 at least.

The fact that I had obtained British patents on my invention did not in any way practically protect my rights as against infringers, who, knowing the practices prevailing in the Patent Office and in the Courts in reference to inventions, took the chances of a patent action, and exploited infringements of my invention for their own profit without payment of a penny to myself.

That is the condition to-day, with the exception of two firms in the trade who, as a matter of fairness to me (although I have not yet been in a position to bring action to protect my rights) have entered into royalty arrangements, and are paying me royalties on my invention, although nothing like as large royalties as I should have been entitled to receive, and which they no doubt would have been prepared to pay, had the patent laws been so framed as to discourage infringers, rather than encourage them, as is the case to-day.

I do not say this as any reflection upon the two firms who are paying me royalties. Quite the contrary. They could afford to pay me much larger royalties had the English patent laws been so framed as to enable me to protect them from unlawful competition. As a matter of fact, these firms are to-day paying royalty, which the other firms are not, and are, to this extent, hampered in their business by reason of their recognition of my rights. In other words, the practical result is, that the infringer is protected by the present laws, whereas the inventor is in the position of paying the British Government for the privilege of giving the details of his invention to the very men who are encouraged to infringe it.

This has been my experience with my cinematograph invention, and also my experience with many other of my inventions, but space prevents my going further into details.

Now as to practical suggestions, I do not for a moment imagine that the framers of the patent laws have deliberately tried to draw them so as to favour the infringers and hamper the inventors. On the contrary, I assume that it is the desire of the Government to frame laws which will encourage and protect the honest inventor.

Without going into detail, my suggestions are briefly as follows:

1. That a thorough search be made by the British Patent Office before the patent is granted.
2. That the cost of this search should be included in the initial fee.
3. That when a patent is once issued by the English Patent Office the presumption is not that it is bad, but that it is good, and that this presumption be one that the British Courts are instructed to recognise in any action for infringement.
4. That the penalty for infringement (where the infringement is clearly proved) be not merely an injunction against further infringement and the actual damages proved (which latter are almost impossible of proof in many cases), but should be substantial and exemplary damages which shall be sufficiently large to discourage others from attempting to infringe what they know to be a valid British patent. In other words, "make the punishment fit the crime," which is not the case under the present law. In fact, not infrequently happens that an inventor may win his action for infringement and be ruined by the delay and expenses he has incurred over and above his damages and taxed costs.
5. Any man stating in his application that he is the original inventor, when it is proved he knows he is not, should be held to be guilty of perjury and should be prosecuted by the Public Prosecutor at the public expense.
6. Make one fee cover the entire cost of the invention for the full term. You can figure out for yourself what it means to maintain twenty-five or thirty British patents, many of which while they are the basis of very valuable inventions, may be premature, in that certain features of the invention are not yet perfected, or the trade not yet sufficiently advanced to appreciate its value.
7. The appointment of a Royal Commission consisting of practical men who shall take evidence on this whole subject and report their recommendations to Parliament. I would respectfully suggest that you call before said Commission some of the practical inventors and mechanics who have been either discouraged from patenting their invention, or if they have been foolish enough to patent it, have been ruined by the expensive processes which are necessary in order to protect their rights. I think this Commission would get some good, solid facts which would be of the greatest value in formulating a law which will do substantial justice to the English inventor and encourage the industries of the country.

In other words, I make a plea for justice and common sense in our patent laws. Make it not only possible for a rich inventor to protect himself, but encourage a poor inventor to patent his idea with a certainty that he will obtain a proper return for any good invention he may make, and full protection of his rights without danger of being financially ruined by his own inventive genius at his attempt to contribute something to the welfare of his country.

W. FRIESE-GREENE.

THE SEPARATION OF DEVELOPMENT INTO PRIMARY AND SECONDARY ACTIONS. CONSEQUENT EFFECT UPON THE CORRECT RENDERING OF LIGHT VALUES AND THEORY OF THE LATENT IMAGE.

[A paper read before the Royal Photographic Society.]

DEVELOPMENT of the latent image has always more or less appeared consist of two distinct actions—the reduction of the haloid compound which has been acted upon by light and a further strengthening or intensification, either as in the collodion process as an addition of silver from without, or as in the gelatine film from within the film itself.

In the case of collodion this action is evident, but it is not so readily seen in the development of the gelatine film; still, there are indications that such is the case. For instance, if a series of exposures be made as for the estimation of the speed of the plate, it will be found that if one portion of the plate be developed very quickly and the other very slowly, a great difference in the results will be obtained. In the case of the slow development there will be found at first a marked increase both in the speed and latitude of the plate, but as the development is increased both will decrease and finally become approximately the same as the quickly-developed portion. Again, the same amount of detail in the under-exposed portion of a negative is found when development with different developers is carried on till the action ceases, whilst at the same time there is often a great difference in the density of the correctly-exposed portions. Also very slow plates often show the weak detail much colder in colour than the stronger portions.

That the image is not necessarily solely formed from the silver haloids which have been acted upon by light has been shown practically by Sir William Abney, who succeeded in obtaining an image on a film added to the plate after the exposure had been made. (*Treatise on Photography*, 1878, p. 99.)

The present paper may be taken to be a continuation of one on "Standard Plates and Some Causes of Apparent Alteration in Rapidity" (*"Photographic Journal,"* January, 1895, p. 118), followed by "The Two Latent Images (Organic and Inorganic): Development before and After Fixing" (*"Photographic Journal,"* 1898, p. 264), and in both of which, as again now, it has been assumed as a working hypothesis that the action of light upon the sensitive film is definite, and should any well-established law appear to be broken, this must necessarily eventually be found to be due to secondary causes. It has also been assumed throughout that at first the action of light is purely molecular, the later liberation of the halogen counteracting development.

In the *"Photographic Journal"* for August last will be found a communication from Mons. Léon Vidal "On the Utilisation of Old Sensitised Plates which have been Fogged," the discussion upon which showed that there was a great difference of opinion upon the action of potassium bichromate upon the development of the latent image, and this difference could not be said to have been factually solved by the suggestion that the results obtained by Mons. Vidal were due to the dilute solutions used.

As expected from experiments made at various times, it was found upon repeating his experiments that the statement that the latent image was not destroyed, but only its development delayed, was fully proved, a 10 per cent. solution used for five hours not showing any destruction of the most minute detail.

If not carefully washed between the bichromate bath and the development, it is true one would for practical purposes consider that the image had been destroyed, but most comes back again, as stated, with the washing, though not exactly as before, and in some cases the colour of the deposit is found to be materially changed.

We must now take the opposite extreme, and consider what is the effect of developing the plates with some of the bichromate purposely left in the film, as this has led to the results to be described commencing with a slow plate, slide 1 shows plates which have had equal exposures in the Chapman Jones Sensitometer, A showing normal development, B the same development after treatment with weak potassium bichromate, but without the thorough washing given by Mons. Vidal. The scale of gradation is totally different, square 1 in A being about equal in density to square 1 in B, and none of the halation of A is shown in the other. The whole gradation of B has been entirely altered, taking double the number of squares to

reach density of 8 in the other. If we explain this by saying that the time of development of B treated with the bichromate has been too short, we are met with this fact that squares 15 are alike in both. We will, therefore, follow this further with comparative trials, tabulating measured densities. To facilitate experiments, standard negatives have been used, made up with layers of fogged cristoid films. This method was adopted so that all exposures should have the same duration, the intensity being varied only. The importance of this was fully dealt with, *"Photographic Journal,"* 1895, pp. 124-127. The exposures have been calculated from the measured densities, and are approximate only, as an average printing factor of .8 has been taken for all plates as suggested by Messrs. Hurter and Driffield (*"Relation Between Photographic Negatives and Their Positives,"* *"Journ. Soc. Chem. Ind.,"* February 28, 1891). Any error only affects the development factor obtained equally in each case, and with which we are not at present concerned. Six, or even more, strips could be cut from the same plate after the one exposure had been made, comparative results being thus obtained readily.

A plate, slide 2, was given an exposure under the negative, and separate portions thus treated:—

- A. Normal developer, 1 minute.
- B. 1 per cent. potassium bichromate, 1 minute, washed quickly, development 3 minutes.
- C. 5 per cent. potassium bichromate, 2 minutes, washed quickly, development 3 minutes.

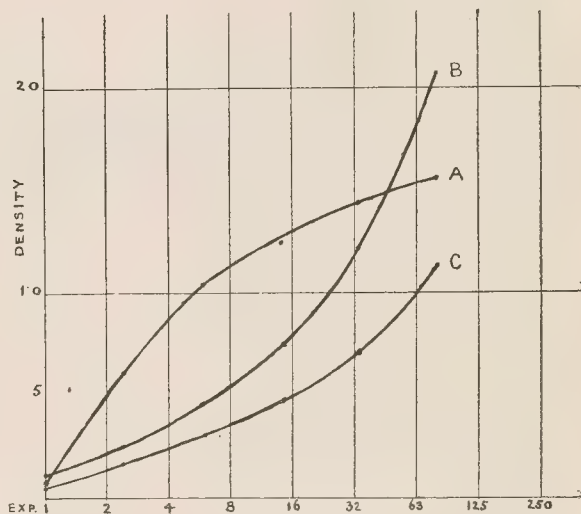


Diagram 1.

The first point to notice is the approximately equal density of the shortest exposure in all three cases (the development having been timed to secure this result), and the wide divergence of the last.

The development of C has been delayed much more than B by reason of the stronger bichromate and longer time of immersion.

This effect will be better considered by plotting the curves (Diagram 1), when we find that the first effect of a weak solution of bichromate in the film is not to destroy the exposure, but to push back the correct and even over-exposed portions into one long under-exposure. (A, normal, compared with B and C treated with bichromate).

Comparing curves B and C, it will be seen that whilst in B there is practically no straight or correct portion, in C, owing to the more severe treatment, the earlier exposures are coming again into a straight line, thus indicating that with still further treatment a still better result could be obtained.

Before considering the effect of stronger solutions of bichromate or other agents such as chromic acid, permanganate of potash, etc., which give similar results, it will be as well to trace the action already obtained further into the over-exposure period, and thus

clearly show that we are dealing with other influences within the films beyond the simple action of light.

Diagram 2, Curve D.—Normal Development, 1 minute.

Diagram 2, Curve E.—1 per cent. potassium bichromate, 1 minute; development, 1 minute.

Diagram 2, Curve F.—1 per cent. potassium bichromate, 1 minute; development, 2 minutes.

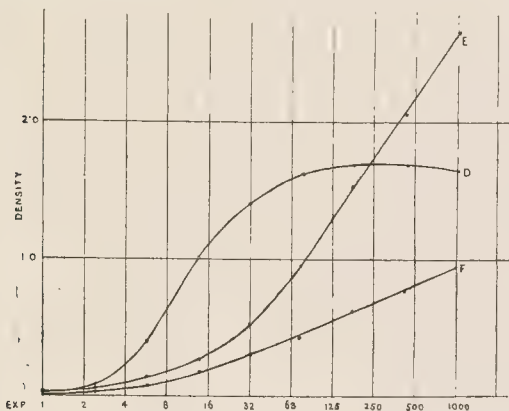


Diagram 2.

In both curves E and F, the under-exposed portion is followed by a correct period obtained entirely from the normally over-exposed portion of the plate. A new correct period has been obtained having a far greater latitude than that given by normal development.

Thus far, we have only obtained a similar result to that shown ("Photographic Journal," 1898, p. 273), when weak bromine was used between exposure and development and a long correct period of 1 to 4,000 was obtained. Now that similar effects are shown by the use of other agents, it seems probable that the bromine was acting in the same way, and not, as was then supposed, in rehalogenisation. What the precise action is does not as yet appear certain; oxidising agents and hydrochloric acid to some extent act well, and there seems to be something required beyond the mere neutralisation of the developer within the film, for apparently it is necessary to destroy or modify the developing agent, because success is more readily secured when the proportion of developing agent is kept low and the alkali high.

If what has so far been shown were all that could be done, it would only amount to a much simpler way of securing the correct rendering of very great contrasts than that previously given, but by continuing the action either with potass. bichromate for a long time, or using more powerful agents, such as chromic acid or permanganate of potash, fresh results are obtained altogether different.

Diagram 3 shows three curves:—

G.—Normal developer, 1 minute.

H.—10 per cent. bichromate of potassium, 10 minutes; development, 3 minutes.

I.—10 per cent. bichromate of potassium, 5 hours; development, 3 minutes.

With all plates, fast or slow, however completely the general reduction of silver may be checked or driven back, there is always something left which can gradually be brought out with prolonged development. As the action of the bichromate, chromic acid, etc., increases, the curve becomes gradually flatter, and thus curve I finally shows a new and practically correct period extending through all the exposures, and totally distinct from the normal, G, and the short application of bichromate, H.

This new curve usually has a period of under exposure commencing at the point of the first visible reduction by prolonged ordinary development, following by a long straight line of correct exposures extending to or even beyond the point where reversal is shown with ordinary development.*

* With any given plate the best strength and time of treatment with, say, 10 to 1 per cent. chromic acid must be found by trial. Potassium permanganate works well, but a bath of potassium metabisulphite is required to remove the oxide.

The curve thus found is so evidently related to the light received by the plate that, were it not for the curve of under-exposure, it would be all that is required correctly to represent the complete action of light. This will therefore be called primary development, and that which has been kept back secondary, whilst the two combined are shown by the Hurter and Driffield characteristic curve of the plate.

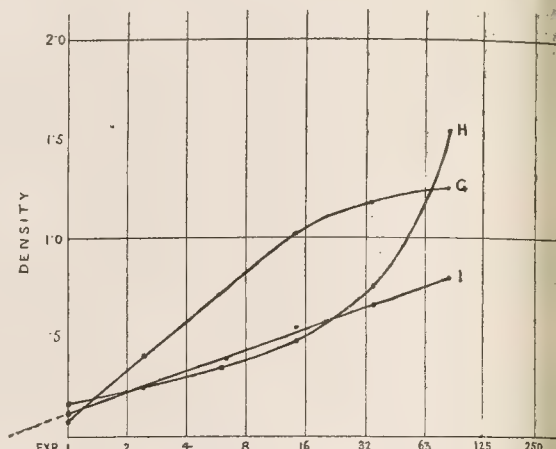


Diagram 3.

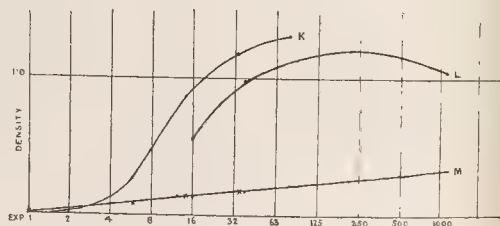


Diagram 4.

The desired action, however, requires that the straight line should commence at the point of first appearance of silver reduction, and continue until signs of exhaustion of the silver in the film become manifest, and to obtain the nearest possible approach to the ideal curve practically, the slowest plate to be found is the most likely to give the desired result.

Diagram 4 is obtained from an exceedingly slow lantern plate. Two exposures were made under the negative, the one being sixteen times as great as the other. Portions of each were developed at the same time. It will be noticed that curves K and L, developed in the ordinary way, do not coincide as they should do; this, as pointed out by Sir William Abney, being due to the very different effect of light of varied intensity upon exceedingly slow plates, the duration of exposure being proportionately altered. On the other hand, in curve M, giving the primary development, the two exposures, though obtained with different intensities of light, combine almost exactly, and a result is obtained as close to the ideal as one may expect to find. There is practically no under-exposure, the least light action shown is correctly represented, whilst anything less is not shown at all. The plate, which normally has but a comparatively short range of correct exposure, is now capable of rendering light intensities of 1 to 1,000 practically correct throughout. The one serious difficulty is that the primary development is so slight compared with the secondary that there is great difficulty in obtaining density.

Passing now to rapid plates it will be sufficient to give a single example, using the most rapid obtainable, as all others will be found to range between these two extremes.

The following differences are found:—

The strength of solution (chromic acid, etc.) used may be ten times great as for the very slow plate.

An under-exposure curve will always be found

The proportion of primary to secondary development, as might be expected, is very greatly increased. With the slow plate at least eight times as much development is required for the primary as secondary in order to obtain sufficient density to measure correctly. With the rapid plate the results of equal time of development are readily comparable.

The limit of the latitude of the most rapid plates has not been ascertained fully, but a correct rendering of light values from 16 to 1,000, or 1 to 2,000, is shown by Diagram 5.

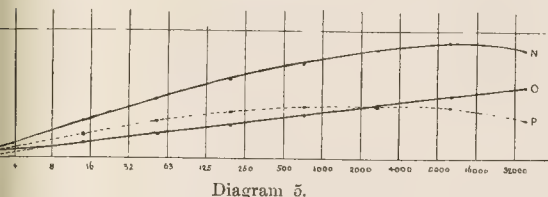


Diagram 5.

Curve N is the characteristic curve of the plate as given by primary development O that due to primary development, and the dotted curve P the difference between the two, which is the secondary development.

As far as exposure 200 the primary is proportionately strengthened intensified by the secondary, but from this point there is a falling off which rapidly increases, and eventually the curves N and O will cross one another, from which point there is no secondary development whatever.

Visible reduction by light alone begins about 8,000, and rapidly increases, and the halogen is undoubtedly liberated, as when a considerable surface is exposed it can be detected by the smell. Though the reduction is not visible before 8,000 it must have begun much earlier, and the liberated halogen seems thus to have hindered secondary development from about 250 in the same way that chromic acid, etc., has now been shown to act, as also bromine in the former papers. Reversal would, therefore, appear to be solely due to the prevention of secondary development in proportion to the amount of halogen released.

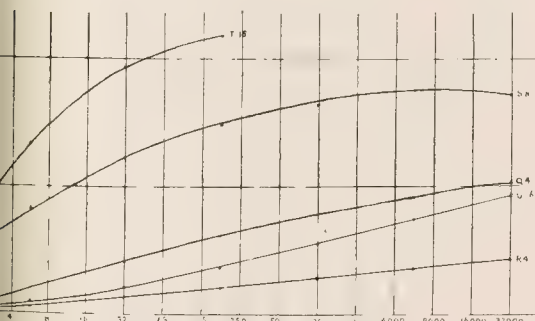


Diagram 6.

Diagram 6 is given to show the growth of the two curves with time of development.

Normal development, Q 4. 4 minutes. S 8. 8 minutes. T 16. 16 minutes. Primary development, R 4. 4 minutes U 16. 16 minutes. The primary 8 minutes is omitted to avoid confusion.)

The proportion of primary to secondary is much greater with short (R 4 and Q 4) than long development (U 16 and T 16), which counts for the latitude of a plate and general correctness of gradation always being found greater with short than with long development, so for reversal shifting its position as development increases, as shown by the curves.

We will now briefly consider in another way what light is thrown

upon the theory of the latent image, and finally what practical applications of the method are possible.

Taking Diagram 5, curve M, which gives the most perfect result attained, we find that there is a certain exposure (intensity of light x time) It, which photographically equals 0, and which varies with every emulsion. No intensity has ever as yet been found so small as to be without effect, if sufficient time be given to bring It to the particular value required by the plate in use, from which it would seem that the molecules revert at once to their original condition upon cessation of light action, whenever that particular value is not reached.

In the case under consideration, exposure 1 is approximately Messrs. Hurter and Driffeld's inertia i , which they describe as "that exposure which will suffice to change a particle of silver into the developable condition," and from this point the curve may be calculated by the formula which they give for the correct period of a plate. $D = \gamma \log \left(\frac{It}{i} \right)$, D being the density at any chosen value for It , the exposure, and γ , the development factor representing the amount of development.

This formula is now found to hold good beyond the period of reversal shown by ordinary development, and apparently would extend far further still. Of course, it must begin to fail when the exposures are very greatly increased.

On the other hand, the curve of secondary development (Diagram 6, curve P) obeys no certain law, as it can be easily altered by varied treatment of the plate. It bears some resemblance to the curve obtained when development follows fixing, indicating always a less speed value than the primary ("Photographic Journal," 1898, p. 267), but there does not seem to be any evidence of connection between them.

The intensification of the primary from the surrounding haloids seems to be the more probable action. How far the admixture of different haloids in the plate affects the results has not been investigated.

So far as has been tried with a few developers such as paramidophenol, adurol, amidol, glycin, etc., the different action found is due apparently solely to their varied influence upon the secondary development.

The fact that the silver reduced by primary development is less readily attacked by ammonium persulphate than the secondary, will account for the peculiar action sometimes found with this reducer ("Photography," April 18, 1901, pp. 270 and 271).

With respect to practical applications, that which is most easy to work will probably be found the most generally useful, viz., the control of the gradation in bromide paper printing.*

Papers of the Velox and Gravura type require very thin negatives; but the application of 1 part in 1,000 of potassium bichromate for one or two minutes between exposure and development, will so alter the gradation that a good print may be obtained from a negative specially developed for carbon printing. Very slow lantern plates in the same way will give soft positives from strong negatives.

Passing now to negative making, it is evident from Diagram 2, E and F, that the time and strength of the solution may be adjusted to give any desired latitude and yet secure all the density required, but this must be experimentally worked out first. This and the closely correct result shown in Diagram 5, O, are certainly not much needed in ordinary photography, but should prove specially useful in astronomical work when the contrasts are very great. There are, of course, difficulties to contend with beyond the ordinary method of working, but they do not by any means appear to be insuperable.

JOHN STERRY.

THE Southern Exhibitions.—The dates of the following exhibitions have been arranged:—Hove Camera Club, November 23 to 26, hon. secretary, A. R. Sargeant, 55, The Drive, Hove; Southsea Photographic Society, December 2 to 8, hon. secretary, F. J. Lawton, 20, Clarence Square, Gosport; Southampton Camera Club, December 15 to 20, hon. secretary, S. G. Kimber, Oakdene, Highfield, Southampton.

* "A Simple Means of Controlling Gradation in Bromide Prints and Lantern Slides," *Photography*, Jan. 30, 1904, p. 84.

"SHINING LIGHTS"

A Novel. By Thomas Bedding. 218 pp. Price 1s. London: Published by Strangeways and Sons, Tower Street, Cambridge Circus, W.C.

In this latest addition to the realms of modern fiction one intuitively recognises the method of a master of phraseology, free alike from mannerism and imperspicuity, a method that makes exceedingly pleasant reading.

Dealing with the shining lights of the little Surrey borough of Weyford, Mr. Bedding has in an agreeable manner manipulated his puppets to not only frequently tickle the reader's sense of humour, but to fully regale the fancy for conjecture inherent to the modern novel reader. The character drawing is good; so good, in fact, that we seem to have met with and recognise the types to which the author introduces us. The intrigues of Mr. Fox, the matrimonial affairs of Mr. and Mrs. Armesteen, the domestic infelicities of Sir Rupert Gage, the love passages of Mrs. Dappleton, and the rocket-like ascent and fall of Mr. Varnick, the most brilliant light of them all, have all their prototypes in real life, and, indeed, from the author's ingenuous confession in the preface, are probably to be found in the immediate vicinity.

The reader will soon find out for himself that the story is pleasantly told, with a purity of diction and wealth of expression that has a truly Dickensian flavour. Take, for instance:—

"Joseph was Mr. Minter's Christian name. Mr. Minter himself was a solid, square, middle-aged person of lugubrious demeanour, attired in old-fashioned broadcloth, who might well have passed for an undertaker or the common executioner. His profession possessed some of the chief features of both of those remarkable callings, for Mr. Minter was an auctioneer."

Or, again, the deputation to Mr. Varnick:—

"Shall I open?" said Mr. Redwood to Mr. Minter.
"No, I'll open; you close," said Mr. Minter to Mr. Redwood.
"Gentlemen," said Mr. Varnick, "I am entirely yours."

It was a beautiful spectacle. The Alderman, his right hand thrust into his waistcoat, the left gracefully deposited on the top of Mrs. Dappleton's chair, his head thrown back, and looking straight before him with majestic serenity; Mr. Chantrey standing at a respectful distance, ready with pencil and note-book to record the proceedings. The deputation, literally shoulder to shoulder, in deferential attitudes, and with heads slightly bowed before the chosen one. Alas! that there should not have been at hand, to pass a graphic representation of the episode down to posterity, a painter, a sculptor, or at worst, an amateur photographer. But the world, besides knowing nothing of its greatest men, is also kept pitifully ignorant of the most picturesque incidents that take place in it.

Mr. Bedding's intimate knowledge of the photographic world is betrayed on more than one occasion in the course of the story:—

"Robert had several bobbies, which helped to occupy his leisure moments and yield him in return instruction or profit. He belonged to a photographic society, which periodically met at a free library in South London, and whereat some mighty clever people were wont to assemble and air their own pet theories, to the ignominious confusion of all others, and the unacknowledged aggrandisement of pure knowledge, as distinguished from impertinent nonsense."

The author's easy familiarity with not only the inner circle of the little world he portrays, but his knowledge of matters outside, with a far deeper significance, discloses a keen insight into what is commonly described as "human nature."

The delightful discursive style of much of the work is, however, its chief charm, as the following excerpt testifies:—

"So one evening Mr. Varnick called upon the old man, whom he found unwell; and having referred to his association with Mr. Fox in the latter's venture, hinted that he had come specially to override his lordship's objections in his capacity as Mayor and Member, and was sure that upon reconsideration of the matter his lordship would join them."

The Viscount was (politely) sure that he would do no such thing.

But might Mr. Varnick suggest (looking round) that in his lordship's present unfortunate position the sum offered for the mere right of printing his name—for the chairman's duty would be less than nominal—this sum would be very acceptable?

The Viscount would be obliged to Mr. Varnick if that gentleman would be more explicit.

Mr. Varnick would endeavour to be so. His lordship was, as everyone knew, hard up. That is to say, he needed money, or rather, money's worth—clothes, food, tobacco, wine, and so forth. Now, here was a—

The Viscount would not trouble Mr. Varnick to pursue the matter. He desired to be undisturbed in the management of his own affairs, and was anxious that Mr. Varnick should withdraw from his (the Viscount's) house as soon as it was convenient to him (Mr. Varnick). Mr. Varnick was strongly of opinion that a proposition emanating from the Mayor of the town, who was also its Member in the Imperial Parliament, merited more respectful treatment.

The Viscount could not agree that an official position permitted the commission of confounded impertinence, and evinced his regard for the chosen member of Weyford by threatening his expulsion if—

Mr. Varnick believed that his lordship would be sorry for this. The Viscount requested that the gate might be closed after Mr. Varnick."

As regards the scheme of the book, Mr. Bedding seems also to have acquired the Dickensian trait, somewhat disconcerting times, perhaps, of dividing his dramatis personæ into two or more distinct sets with but a slight bond of union. After eliciting the sympathies of the reader very thoroughly on behalf of set A, the are deserted for many chapters to deal exclusively with the affairs of set B. All the threads are, nevertheless, neatly drawn together in the closing chapters, when villainy is duly unmasked and virtue emerges triumphant. Chapter XXII., "The Iconoclasts," with its dramatic intent, is quite the strongest in the book, and the author would have done better, perhaps, to have written "Finis" hereabouts. The succeeding chapters are much in the nature of a anti-climax for which we are not grateful. The story, however, possesses the desirable quality of holding the attention of the reader throughout, and it is with genuine regret one takes leave of the "shining lights" of Weyford.

We trust that their acquaintance may again be made at no distant date, when Mr. Bedding sees the way clear to take down and publish other occupants of that manuscript shelf in the little Thames Valley study he mentions.

F. J. M.

New Book.

"Jahrbuch des Photographen, und der Photographischen Industrie 1904." Verlag von Gussav Schmidt, Berlin.

We are glad to welcome the second annual volume of this excellent compilation issued under the editorship of Dr. G. H. Emmerich, the Principal of the Munich Photographic Technical School. The work comprises a review of the progress of the past year, with a description of new processes, apparatus, and scientific apparatus relating to photography. There is an excellently-arranged table of chemical indicating the mode of preparation, appearance, solubility, use, etc., and particulars of formulae in which they are embodied. Information upon legal questions affecting the photographer, particulars of the State organisation of the trade, details of the various photographic societies, and a vast quantity of other information, interesting to the professional photographer generally, are given. The volume contains about 500 pages, and is an excellently-arranged handbook not only for the German photographer, but for those who wish for information concerning the art in that country.

Patent News.

The following applications for patents were made between March 2 and April 2, 1904:—

Daylight Developing Apparatus.—No. 7,492. "An improved apparatus for developing and fixing photographic plates and films in daylight." Oskar Zwieback and Sydney Hall.

Bromide Printer.—No. 7,524. "Rapid bromide printer." Harry Jenkins.

Cameras.—No. 7,630. "Improvements in photographic cameras." Charles Howell and George Lloyd Moore, trading as the Midland Camera Company.

Printing Frame.—No. 7,799. "A photographic printing frame." Edward T. Darke.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Name of Society.	Subject.
Aberdeen Photographic Assoc.	<i>Holiday Sketches.</i> Illustrated. Mr. C. E. Campbell.
Everton Camera Club	Half-day Outing.
Bowes Pk. and District Ph. Soc.	<i>Wellington Films and Papers.</i> &c. Mr. W. F. Slater, F.R.P.S.
Burton-on-Trent Photo. Soc.	<i>Paper Negatives.</i> Mr. Woodhead.
Glasgow & W. of Scotland P.A.	Exhibition of X-ray Apparatus, with Experiments by Mr. John Trotter.
Camera Club	<i>The North-Western Provinces of Spain.</i> Mr. Edgar T. A. Wikram.
Glasgow Southern Photo. Assoc.	<i>A Few Jottings.</i> Mr. Wm. A. Frame.
Croydon Nat. His. and Sc. Soc.	<i>A Trip to Switzerland.</i>
Blairstown and Dis. Ph. Assoc.	<i>Snapshots in the Rocky Mountains.</i> Mr. Henry Coxes.
Birm'gham Photo. Society	Members' Lantern Evening.
Everton Camera Club	<i>Toning Bromides.</i> Demonstration. Mr. W. Tansley.
North Middlesex Photo. Soc.	<i>Exposure and Development.</i> Mr. A. H. Lisett.
Criklewool Photo. Society	<i>Orthochromatic Photography.</i>
Liverpool Amateur Photo. Assoc.	<i>Evening Portraiture by Artificial Light.</i> Demonstrated. Mr. Fred Anyon.
Richmond Camera Club	<i>Holiday Experiences in 1903.</i> Discussion opened by Mr. Richardson.
Southport Photo. Society	Annual General Meeting.
Camera Club	<i>Pictures from Birdland.</i> Mr. Oliver G. Pike.
Watford Camera Club	Members' Lantern Slides.
London & Prov. Photo. Asso.	Open Night. The Season's Novelties.

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

7.—Mr. Teape presiding.—Mr. H. W. Bennett, F.R.P.S., a lecture, entitled "Is Time Development Desirable?" The first portion of Mr. Bennett's lecture was occupied with a criticism of his critics, on his lectures and writings on this and other subjects, and disclaimed any intention of making attacks upon individuals, but only upon their teachings. He would be the last man in the world to say anything against mechanical development were it put forward as a guide to beginners, enabling them easily to grasp the rudimentary principles of development, and to be discarded when as they had learnt to distinguish between a good negative and a bad one, but, as the method has been, and is so strongly advocated with the array of scientific arguments and figures as the only method of producing the best possible negatives under all circumstances and conditions, therefore it behoves practical workers to fully examine the subject, and analyse the evidence supporting the theory that is so totally opposed to all their experience. It is highly significant that none of the advocates of mechanical development are experienced workers, and that all of its strongest opponents are well-known for the high technical quality of their work. So the question naturally arises, What value can be attached to the teachings of those whose work is of the poorest description, who deride practical science, and the methods whereby the expert arrives at his results? These mechanical methods are so perfect, why are the results of those who evolved them so poor in technical quality? The methods advocated are all contradictory to each other; one method being to stop all plates for the same length of time, in the same solution, irrespective of exposure, subject, or conditions, only making a variation in time of development when a more vigorous or a thinner negative is required to suit some particular printing process. Another method is to develop for a fixed multiple of the time of the appearance of the image in a uniform solution, varying the multiple if a stronger or weaker negative is wanted. It is also contended by all mechanical advocates that no gain can result from varying the proportions of the ingredients of the developer, that the results obtained by so doing are identical with those given by longer or shorter treatment in a standard solution. As a proof of the non-practical and superficial character of Hurter and Driffeld's experiments and deductions, their method of measuring the amount of light reflected by white and black paper respectively, and their assumption that white paper and black paper would give the whole of the contrast of an ordinary subject, was cited. H. and D. gave the result of that measurement to be 30—as representing the whole amount of contrast the photographer had to deal with; but, as a matter of practical experience,

it would be easy to demonstrate that this assumed maximum is many times greater, and that it varies from at least ten to one up to several hundreds to one, and any one who has studied development practically is aware that subjects that vary in contrast to any great extent, this variation must be compensated for by modifying the composition of the developer, and that it cannot be done by varying the time of immersion in a standard solution. These points were illustrated by the projection of slides of subjects with varying contrasts, not two of which could possibly be developed in the same solution.

Lantern slides of a river scene, a woodland scene, and an interior were projected to show the relative amount of contrast such subjects had, such contrasts influencing the practical man as to his method of dealing with them. Various diagrams were projected, the curves showing that the whole of the image does not appear at the same time, the high lights appearing first, the shadow detail following later. That the image does not grow uniformly, density increasing quicker in the shadows, proportionately, than in the lights; over exposure requiring less time than correctly exposed.

Unfortunately, Mr. Bennett did not conclude his lecture till too late for a good discussion.

Mr. Drage was delighted with the way Mr. Bennett had handled the subject, and had always opposed time development.

Mr. Becket and Mr. Grant entirely agreed with the lecturer. Mr. Rapson could not agree with Mr. Bennett, but, at that late hour, was barred from advancing his arguments. Standard exposures and solutions were very good servants, but had masters.

Mr. Bennett, in replying to the vote of thanks, was sorry not to have met with opposition. As an aid to the beginner, time development was useful, but it failed when dealing with different subjects; it was not possible to develop portraits and landscapes in the same dish and get good results.

All advocates of mechanical development—Hurter and Driffeld, Abney, Sterry, and Watkins, all had different systems, and contradictory one to another.

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

A MEETING of the General Committee was held at 51, Baker Street, W., on Friday, 8th inst. Present, Messrs. Alfred Ellis, Wm. Grove, F. A. Bridge, H. Edmonds Hull, A. Mackie, Lang Sims, Martin Jarolette, Edgar Scamell, Percy Lankester, and H. C. Spink. Mr. Alfred Ellis, President, in the chair.

A letter was read asking the association to support a member of the public in his defence against a claim made by a photographer for photographs supplied, on the ground that the price charged was unreasonable. The Hon. Secretary reported that he had replied that it was against the general policy of the association to assist the public against members of their own profession, even when not members of the association, unless the case involved unprofessional conduct, and that as the case in point was merely one of price, it could be fought out on its merits. The Committee approved of the Secretary's attitude.

A letter was read from a member asking the Committee's opinion upon a charge made for taking and supplying proofs of two groups and two portraits, all of which had been returned. The Hon. Secretary was instructed thereon.

Other letters asking advice and opinion were also read.

Derby Exhibition.—A report was made as to the promises that had been received to send pictures to the exhibition, and it was decided that as there would still be some spaces to spare, a few of the leading members of the profession should be specially invited to contribute.

The Committee then further considered details of the proposed "Examination of Assistants," and further progress was made.

SOUTHAMPTON CAMERA CLUB.

APRIL 11.—Mr. W. R. Kay gave an illustrated lecture on "The Bernese Oberland." The lecturer conducted his audience from Berne, via Thun, Interlaken, Grindelwald, Meiringen, and Lucerne, to Righi, describing the chief mountain peaks, etc., en route. The lecture was graphically illustrated by a large number of artistic lantern slides, and was full of interest throughout.

RICHMOND CAMERA CLUB.

MARCH 31.—Major Latham gave the club a very interesting lantern lecture on "Scenes in South Africa during the War," embracing a series of views commencing with his departure from this country and terminating with his arrival and decoration at Cardiff. He described the great difficulties a soldier experiences in carrying on photographic work during a campaign owing to his liability to being ordered to start on expeditions at very short notice, the short allowance of water, sometimes limited to one pint per man per day for all purposes, and the small amount of baggage that can be carried when on the march. The gallant Major showed first, pictures of the steamer leaving dock with her decks crowded with men of different regiments, views of Capetown, De Aar, Vryburgh, etc., pictures of horse lines, armoured trains, and numerous arrangements and incidents of the war, all of which he graphically and lucidly described. He gave interesting accounts of hairbreadth escapes and plucky work done by himself and his men. One picture showed a battery he had built which he had only twenty men to serve, covered by the guns from a fort in the rear. During this operation a shell from the fort fell among them. The Major immediately lay down on the ground, and ordered the men to do the same and to await results. Happily the shell did not explode, and it was afterwards discovered that both cartridge and shell were defective. He secured the shell, and had it mounted as a candelabrum. On one occasion, being short of guns, an old-fashioned forty-pounder was sent for his use, but without men to serve it, and the Major had to train men for the work. He showed a photo of the gun taken immediately after firing. The exploding shell could be seen at a distance of four miles—an explosion which caused the death of seven Boers. Four British officers were depicted directing operations, all of whom were wounded within a quarter of an hour after the photo was taken. Another photo showed a Boer who acted as a British scout. On one occasion, when this man was out scouting accompanied by an English scout, they came across some Boers. One old man immediately ran for his horse, and the English scout raised his rifle, but his companion called to him not to fire as the old man was his father, and galloping after him, he secured him, and brought his own father in as a prisoner. Some good views, both above and underground, at the Kimberley mines were shown, including the gun made at the mines, and the tower raised upon the head gear of one of the shafts, from which Colonel Kekewich directed the defence of Kimberley, and which the Boers never succeeded in hitting, although the shells destroyed all the surrounding buildings. Another picture showed the tree under which Dr. Livingstone is said to have proposed to Miss Moffat, and which bears a brass plate recording the occurrence affixed to it by a native admirer. Other interesting views showed the makeshift houses in which the Major lived on the field, in the construction of which old biscuit tins played a useful part. Major Latham concluded his photos with pictures of native women in their national, but somewhat scanty, costume, including two daughters of King Khama, one of whom wore nothing more than a pair of soldier's puttees, and whose value is assessed at forty cows, and after his lecture he showed some interesting relics, including pieces of shell, unexploded shells, bullets taken from wounds, emergency rations, Mafeking siege notes, specimens of native carving, etc.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

THE annual general meeting of this society was held on Wednesday evening, April 6, in Collyer Hall, High Street, Peckham, the President, Mr. Maurice Howell, presiding. The secretary, Mr. W. Calder Marshall, in reading his report, gave an excellent resumé of the society's work during the past year, showing that the South London was in a flourishing condition. All who were present knew what an excellent and most popular secretary Mr. Calder Marshall had proved himself to be, and they were very sorry to hear him state that owing to the increased demands of his own business affairs he would have to relinquish the secretarial post. His resignation was eventually accepted with much regret. The reports of the excursion and portfolio secretaries having been received, the treasurer, Mr. C. Churchill, presented his report and accounts for the year ending December 31, 1903, showing a very satisfactory balance on the right side. Several items of expenditure were, however, attacked by various members, and a long—and, at times, heated—discussion took place;

two resolutions embodying more or less drastic reforms being put to the vote during the evening, and rejected—one by a majority four only. Under the present régime of the Society the President is elected annually by ballot. The announcement that Mr. C. Dickinson had received the largest number of votes, and was the first President for the ensuing year, was received with much applause.

The new President, in addressing the members on the policy should pursue during his term of office, said he was afraid that with regard to a number of the functions of the society some of the members were very apathetic, and he would consider it his duty to awaken them from their lethargic condition, so that they might realise their responsibilities as live members to uphold the prestige of the society had gained in the past, and to help it achieve further successes in the future.

As a mark of the society's appreciation for the work of Mr. Calder Marshall and Mr. C. W. Walker (who had much to do with the success of the 1903 exhibition), these gentlemen were elected vice-presidents—a perpetual post of honour.

The new secretary is Mr. H. C. Beckett, of 44, Edith Road, Peckham.

THE KODAK EXHIBITION OF PHOTOGRAPHS OF THE FAR EAST.

THE Kodak Co., with their usual perspicacity have made the current interest in the affairs of Japan, Korea, and Russia the excuse for bringing together at their Gallery, 59, Brompton Road, S.W., a very presentable collection of pictures illustrative of life and customs in these far-off regions. So far, the Press censorship and delay in transmission have been responsible for the fact that no spoils of war have filtered through from the seat of war, so, although the intention of the present collection is mainly ethnological and geographical in character, and beyond the representations of various battleships and an occasional military type, the motif that distinguishes the pictures is undoubtedly a peaceful one. Of course, the chief claim for attention to the collection is that the pictures were taken on Kodak films with Kodak cameras, and, needless to say, the ubiquity of the firm's goods is again amply demonstrated. The pictures included in this exhibition are all enlargements made on Kodak bromide papers of various grades, and although a slight variation has been made to the plan adopted in the Kodak itinerant exhibition—i.e., the framing and selection of printing process show more variety—the result is even now a trifle monotonous. The original negatives from which the prints are made were taken principally by Messrs. Walton Hill, Percy B. Rowe, J. L. Sudbury, D. Vaughan Cornish, and Dr. H. W. Bayley. The exhibition, which remains open for some time, is well worth a visit, and every visitor will receive every attention.

MESSRS. C. ABLARD AND Co., photographic dealers have been compelled, on account of increase of business, to remove from Colebrook Row, to larger premises at 240, Upper Street, Islington (opposite the Agricultural Hall), London, N.

MR. JOHN B. HADDOW, the well-known manufacturer of cinematograph films, has recently joined the British Mutoscope and Biograph Company, of 18 and 19, Great Windmill Street, London, W., in a managerial capacity. We wish Mr. Haddow success in his new position.

WE are in receipt of a comprehensive little price list from the London and District Photographic Co., 16, West Ella Road, Willesden, N. The company makes a speciality of printing and enlarging, and an excellent specimen of their work—a first class portrait on Wellington rough bromide paper, adorns the inner cover of the price list.

CEYLON at St. Louis Exhibition.—Mr. A. W. Andree, of the Houton Studio, Ceylon, is well represented at the St. Louis Show. He is contributing seven fine specimens of photographic work—typical of Ceylon, and as perfect and finished as could be found in any modern studio. All are of important size, the largest, representing the return of a pearl-fishing fleet, taken off Marichchikadde, 50 in. by 40 in., and is finished in colour, and none are smaller than 40 in. by 30 in. They should prove not the least attractive and alluring of the many advertisements of our island colony to be exhibited in the Ceylon Court at St. Louis. Mr. Andree is to be congratulated on the excellent work he has turned out.

Correspondence.

Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.

We do not undertake responsibility for the opinions expressed by our correspondents.

"CINEMATOGRAPH PATENTS."

To the Editors.

Gentlemen,—In your issue of April 8, under the heading of "Cinematograph Patents," you take occasion to comment adversely upon my name to be the original inventor of the cinematograph, and mention my inventions as anticipating my own in this line. I am surprised at a journal of your standing should mention Beale's Choreutoscope, Phenakistiscope, and Muybridge's Cameras as cinematographs. They are not cinematographs in any sense, which you should know. Beale's Choreutoscope did not use photographs at all, but painted figures, similar to those used in the old Zoetrope, and the process of producing and showing these figures was entirely different from that used in my cinematograph. The same remarks apply to the Phenakistiscope. Muybridge simply used a series of cameras, which took successive pictures of an object in motion. The vital difference between his invention and mine is that all of the photographs taken by my cinematograph are taken from one point of view, by merely turning a handle, whereas Muybridge's pictures were taken from different points of view, and did not produce an animated picture as we see it in nature, which my camera does.

Possibly you would kindly tell me how you would produce a modern cinematograph picture without making use of my invention. For my part, I do not make use of any of the inventions you mention in producing my results. It may be true in a sense, that, as you say "the principle of the modern cinematograph machine" is found in some of these inventions. On the same theory the "germ of the steam engine" is said to be in the tea kettle. If this astonishing doctrine was carried out, there are no real inventors in modern times.

I therefore feel that I am entitled to claim to be the original inventor of the cinematograph, and that my patents of 1889 and 1893 are the basic patents on this invention. Until you bring some more cogent arguments to bear, I will continue to make this claim. You intimate that statement that celluloid was not made in long lengths prior to 1889, therefore could not be used for cinematograph films is unwarranted. I know of no firm or person prior to that date who made celluloid in long lengths or used amyl acetate for joining short lengths together. If you do I would be pleased to have you give names. You intimate in your article that I am trying to belittle the inventions of others. That statement I resent as unwarranted and unjust. I have never wittingly claimed the benefit of another man's invention, but have cheerfully acknowledged my indebtedness to anyone who has even suggested an idea which I have perfected. On the other hand, I have resented and surprised and grieved to think that a journal of your standing should make such unwarranted insinuations as you do in your article referred to. In justice to me, I trust you will give this letter the same publicity as you have given to your own.—Yours, etc.,

W. FRIESE-GREENE.

Millbrook," Dovercourt, April 8, 1904.

SOME NOTES ON THREE-COLOUR WORK.

To the Editors.

Gentlemen,—I am obliged to Mr. Baker for pointing out my obvious error of "red" for "blue," as he does on p. 289 of your last issue, in his article under the above title.

I am in rather a quandary as to whether the rest of the article is to be taken seriously or as a mere trifle thrown off in an idle hour; whilst referring to "guides" and "authorities," Mr. Baker himself claims, possibly unconsciously, to be an authority, particularly when he states that dry-plate should undoubtedly be panchromatic. To me this is as the authoritative statement that the one-plate system is the only one, but this is not universally admitted.

The next paragraph, beginning "a great deal of confusion, etc.," is, I do not help thinking, somewhat egotistical, and the latter half shows ignorance of facts, without which it would otherwise border on the

impertinent. On the principle that "qui facit per alium facit per se," Dr. Eder, as the head of the famous photographic school in Vienna, has probably done more than any other man living not only to give us new sensitizers, but to prove their practical value; yet Mr. Baker wants Dr. Eder's experiments proved or disproved.

We now come to the use of Wollschwarz 4B, and other dyes, and it is a pity that, having Dr. Eder's recent work, by which, I presume, your correspondent means "Die Grundlage der Photographie mit Gelatine-Emulsionen," 1902, that he did not refer to it before he wrote his article; and that having von Hübl's "Die Dreifarbenphotographie," he did not refer to this also. Dr. Eder states, in a foot-note, on p. 190 of the said book, at the conclusion of his notes on the sensitising action of the dyes in question, "The numerous three and four colour prints which the K.K. graphische Lehr u. Versuchsanstalt of Vienna exhibited at the Paris International Exhibition, 1900, and which showed very correct colour effect, were produced by the sensitizers here described; the plates behind the red filter were sensitised with nigrosine, wollschwarz, or diazoschwarz."

Baron von Hübl in his work, 1902 edition, p. 122, says: "There is no doubt that the results obtained with a diffraction spectrograph, render possible a correct opinion as to the practical colour sensitiveness of a plate, but the spectrum is rather faint, and the little action of a plate, but the spectrum is rather faint, and the little action of the less refrangible rays, which directly interest us, can be easily overlooked. If, for instance, a red sensitive commercial plate is exposed to the diffraction spectrum, its red sensitiveness does not show at all, so that one might consider it a non-orthochromatic plate, and yet behind a suitable filter and sufficiently long exposure it may reproduce red pigments distinctly."

As regards Mr. Baker's statement that both his plates were foggy, Dr. Eder includes in his original treatise, a foot-note to his formula, which I did not abstract, to the following effect:—"Many bromide plates give fog with ammonia in the dye bath; then this addition should be omitted and cleaner but less sensitive plates are obtained. The preliminary ammonia bath is, however, then all the more necessary, and ought not to be omitted." Obviously, therefore, Mr. Baker used an unsuitable plate.

I leave to Mr. Baker the task of explaining why, if cyanine is such an extremely satisfactory sensitizer, so many experiments should be made to get rid of its use. Again it is fair to drag in orthochrom T., which, in 1902, the date of Dr. Eder's treatise, was unknown.

Turning now to Mr. Baker's own work in the shape of the spectrograms, I admit at once that it is extremely unfair to judge from half-tone reproductions, but as he has published these as proofs we must accept them as the basis for criticism. In the first place the only indication as to the colour distribution is that "the red end of the spectrum is on the left-hand side," we have neither millimetre, nor wave-length scale. We have no spectrogram of the undyed plates, nor results by Dr. Eder's formula, no cyanine results to substantiate the statement that wollschwarz gives only a fraction of the sensitiveness of cyanine, and no measurements as to the relative densities in any section of the spectrum, and fig. 2 simply shows that this particular spectrogram has a higher development factor, or that the light varied, or that the plate has not been sensitised at all.

If Mr. Baker will find a suitable plate and make a series of experiments supplying all the necessary data which are certainly missing in his article, as to the uselessness of the dyes he mentions, I might—perhaps—accept it against the evidence of such expert experimentalists as Dr. Eder and Professor Valenta, and against the three and four colour prints produced by the Vienna school with plates sensitised with these dyes.—Yours faithfully,

E. J. WALL.

Foots Cray, April 9, 1904.

"KEEPING QUALITIES OF DRY PLATES."

To the Editors.

Gentlemen,—In "Cosmos' Jottings" in your issue of March 25, I observe you ask for further experiences of the keeping qualities of dry plates. I obtained a packet of 5 x 4 Extra Rapid from R. W. Thomas and Co. a great many years ago. Batch No. 7,928, but as I had not written the date of purchase on the box when I received it, I could not now tell the year. However, I wrote Messrs. Thomas, and enclose their reply. The box had been opened and some of the plates used within a few weeks of purchase, and the rest had been put aside without any special care.

After reading your notes I exposed one of the plates on a white marble mantelpiece and enclose a print from the negative; it has been rather under-exposed, but there is no fog except a very little on the extreme margin of the plate. It was developed with pyro ammonia. I have still three or four left of the batch, and will have no hesitation in using them. My experience is that the dry plates made by reliable makers ten or twelve years ago were possibly more carefully made, with a view to keeping qualities, than many of those now put on the market, when the tendency is to cheapen the price at the expense of quality. Some ten years ago I laid in a considerable stock of Wratten and Wainwright's "Ordinary" (slow) to take away for a trip, which, however, did not come off; these I am using regularly now, and find them as clear as if newly made; indeed, I use them for making enlarged negatives from 4-plates, and they are without a single fault; the latter firm I find have more paper wrappers round them than any of the others use, and possibly this prevents deterioration.

I have found that the earliest make of Iso plates do not keep well, but perhaps this is remedied now, but time will show.—Yours truly,

DAVID IRELAND.

12, Douglas Terrace, Broughton Ferry, N.B.

April 8, 1904.

[COPY.]

To David Ireland, Esq.

Dear Sir,—In reply to your letter of yesterday, we regret to say we cannot give you the exact date of manufacture of the plates in question, as we do not preserve the records after ten years, but as far as we are able to say, the batch you mention was made about twelve or fourteen years ago.—Thanking you for any trouble you are taking in the matter, we are, dear sir, yours truly,

R. W. THOMAS AND CO., LIMITED.

Pall Mall Factory, Thornton Heath.

[We have examined the photograph sent us by Mr. Ireland and find it shows no signs of having been taken on a stale plate. The print is apparently from a clean and crisp negative, showing good gradation and lack of fog.—Eds.]

PICTURE POST-CARDS.

To the Editors.

Gentlemen,—We notice in current issue of your paper, under "Answers to Correspondents," a reply regarding picture post-cards to "W. M." We beg to inform you for your future information that we are pleased at all times to purchase negatives of suitable subjects from photographers. We shall be pleased to supply you with any particulars at all times.—Yours faithfully,

THE PHOTOCROME COMPANY, LTD.

35 and 36, Hosier Lane, Snow Hill, E.C.

April 12, 1904.

THE INFLUENCE OF THE CHEAP HAND CAMERA.

To the Editors.

Gentlemen, Do you not think it would be about time now to sound another tune from what we have been accustomed to hear lately? Nothing but praise has been heard, especially in the advertisement columns, about instantaneous or detective cameras. Without wanting to detract anything from their usefulness in some respects, and for some purposes I think they have come to be looked upon as something universal, not to be improved upon. For portraits they are just the thing, and as good as any specially constructed camera and lens; for views nothing can excel them, always in focus giving depth and sharpness. For architectural subjects, any child can, with one, take a cathedral or a castle, interiors, etc., just as well as any professional can do after years of experience. As for instantaneous views of railway trains, steamers, jumping horses, etc., who will admit that he has not done it or can do it at any time? The only difficulty is in getting the subject in the right place on the plate or film, but I think the party unable to do this is not born yet, or maybe he is dead long ago. The fact is, however, that very few do really succeed with this instantaneous business, and the parties who have bought the outfits if they want to meet with good success and want to go on in that line, use a tripod and study their exposures, and then, after a little practice, get a larger and increasing percentage of good negatives. Experienced parties know very well that it is a very difficult matter to expose not only correctly but about correctly when one has to take views in all

kinds of weather or wishes to take these views even when they are all exterior views in open air. And particularly so when one has two or three diaphragms in the lens, and exposures varying from 1/10 to 1/100 of a second. In print it sounds all very well, but how different reality. I have seen, and probably others also, individuals taking views with detective cameras in winter at 4 p.m., of a train passing, another one will take in dark weather a 'bus at full speed, and a clever party try his luck with one or two seconds exposure, camera in hand on an old and dark painting in a room.

Who is to blame for this? This is a big question to answer. Of course one cannot say all this to a customer who wants to buy cheap or inexpensive outfit, and wants, after all, to spend as little as possible generally, and have a light camera containing all improvements possible and sometimes impossible. The manufacturer wants to sell and supply the demand, let afterwards happen what may. The retail dealer wants also to sell as much as possible, and general knows more or less (rather less) about what he sells, says everything as easy as can be, receives his money, and says good-bye. Sells future a few extra films, some chemicals, sometimes develops a certain quantity of failures, prints some foggy and out-of-focus proofs, and that ends it for that party. I am not poor yet I am not rich, but how often I think, I only wish I had the one-hundredth part of the money that has been paid out for outfits which, after a very short trial have been discarded and put in the garret, if not in the cellar, to rot.

The fact remains that this demand which has been created by advertising such "good-for-everything," detective, or other similar cameras, has spoiled the demand for good, real good, and useful portable cameras to be used with tripod, to such an extent that not only no improvement on such is made, and the demand for them diminished, but the manufacture of them has been abandoned by some first-class firms, so I have been told.

Is photography really improving with such a state of things. I have my doubts about it. A few shillings, and maybe pounds, are made by it, but in the end what will be the result? It should be borne in mind that all things pass, especially novelties. Everything has its time, and, as they say in France, "Un clou chasse l'autre." The next novelty will push this one (instantaneous boxes) in the shade, more or less, if not altogether. But not to go to extremes, let us admit that it will remain as it is now for say ten years more. What will be the result photographically? Large and fine photographs will not be seen anywhere, except as mere curiosities, and by large I do not speak of 15 x 12 or 12 x 10, but probably as low as 10 x 8 or 8½ x 6½. Who nowadays willing to carry a camera as large as 6½ x 4½? Very few indeed, and 3½ x 4½ is more commonly met with than anything larger. Result, an army of pigmy photos. There could be a possible salvage point somewhere if these views would be sharp in focus, and could be enlarged, at least to 10 x 8, but how many will stand this trial? Mighty few, and these lessened yet when the foggy ones, over-exposed, or under-exposed ones, out of focus or out of range, are deducted. Of course all modern cameras have lines marked for different distances, but these are not marked with each lens as they should be, every lens having a different focus (if not, why ask 10s. more or less for pairing stereos). Supposing this marking to be correct, what is the man that can say exactly straight in front of him ten yards from twelve or eleven, or, better yet, twenty to thirty. Then, where is sharp focus for enlargements. Supposing that this is judged correctly (a first-class instrument being used of course) taking now, for instance, rather high building. How can the tilting of the back be judged correctly by the finders and kept so for exposure. In this case the many things to be looked at to get the picture just right is certainly more troublesome than the use of a light tripod to make sure and certain of a good and first-class picture. We all have seen the beautiful results that can be obtained by any one (even by animals) allowed to press the button with So-and-so's cheap outfit of only a few shillings, and you can start and have equally good results. And so it is. The proof of it are the pictures shown you, and which have invariably been taken with an outfit similar, and just by chance by an amateur on his first outing, developed and printed by himself, and which has graciously offered it. You don't doubt this. Do you? It never enters your mind that this or these views shown to you as beginner's results may have been made with another camera, and another lens, on tripod, by a good operator. No it does not, and it must not, as it is not the case. Amen! But supposing you do not succeed as well as the samples shown, who is to blame but you. You may not think so, but

u don't know better to answer not being acquainted enough with photography and its "tours de batons," and try and improve, or, as d before, put the whole thing aside. The moral of this should be. Everything in its place, and for special work use special cameras. Instantaneous cameras are very good for special purposes and results wanted, t they are not and cannot be universal. If you want good instantaneous views of moving subjects, then an instantaneous camera and is a necessity, however not necessarily without a tripod. But if u want landscapes and seascapes from shore, buildings, interiors, t, then a regular camera with bellows and variable focus is certainly ch superior to the former. I may even add that it is much easier to with a regular camera, swing back and rising front and a finder, all t can be made with any instantaneous camera than the reverse.—I main, dear sirs, yours very truly,

ALBERT LEVY.

4, Avenue Pinel, Asnières (Seine), April 7, 1904.

THE ENSIGN FILM COMPETITION.

To the Editors.

Gentlemen,—We shall be glad if you will draw the attention of your orders to the fact that the Ensign Film Competition, for photos taken any camera with the "Ensign" or "Ensign Vidil" daylight loading film, closes on May 30 next. One hundred pounds divided into ninety-two prizes of from 10s. to each will be distributed among the various classes. We shall be d to send full particulars and entry forms to any of your readers who d send us a post-card.—Yours truly, HOUGHTONS, LTD. 88 and 89, High Holborn, W.C., April 11, 1904.

KEEPING PROPERTIES OF FILMS.

To the Editors.

Gentlemen,—It is frequently stated that films will not keep good long as plates, but the following shows that some films, at any e, will keep in good condition quite as long as any plate. In July, 1889, I had sent me a sample packet of two films, by e. Place, 13, Bull Street, Birmingham, of "Anthony's Climax ative Film," sensitomer No. 28. No instructions for developing e given, and as I was at the moment developing some Imperial inary plates, I used the same developer for the films. The subject was the same for each, a copy of a photographic portrait myself, exposure 15 seconds at f.32 for the plate, and 30 seconds f.32 for the film, the exposures being made immediately one after other, in a fairly bright light, by the vertical method, in front a window. The resulting negative was almost as good in one case as in the er, indeed, in some respects, the film gave the better results. I did not take any special pains with either negative, the only ect being to see how the films kept during the fifteen years I d had them. Probably these films are no longer to be obtained, as I do not them quoted.—Yours faithfully, J. H. BALDOCK. Croydon, April 12, 1904.

PSYCHIC PHOTOGRAPHS.

To the Editors.

Gentlemen,—I quite think with you that the cause of truth will be t served by open correspondence respecting the alleged photographs spirit forms, and if Mr. H. Blackwell or others can kindly give us y definite information as to how to obtain results similar to those has secured it will be very interesting. Not being acquainted with ritualistic matters I cannot conceive how Mr. Blackwell can know y spirits find it necessary to wrap themselves in an "aura," nor do now anything of animal magnetism, but when a collection of alleged rit photographs was published a while ago, I knew enough of rography to see at once that the originals had been lighted by a m of light in the orthodox studio manner, with lights and shades as al when sitters in the flesh are photographed, which, to say the est of it, is very remarkable. The statement that results are scme- es obtained by simply holding a plate in the hand without the use of camera (in which statement I suppose the non-use of any lens is

included, also that the plate so held is in darkness), is very upsetting to my optical ideas, and seems to prove that the ghostly visitors have some wonderful power of impressing their forms on photographic plates quite different from our everyday practice. Possibly a photo- graphic plate is unnecessary also, and I would suggest that the spirits be supplied with plain white paper on which they may draw their images with far less difficulty than having to impress them on a photographic plate without a lens to focus the rays or emanations, or whatever it may be that is supposed to render the silver bromide of the plate capable of development. Perhaps, however, I am wrong in supposing development is necessary at all. Can it be possible that the spirits have the strange power of impressing their images in a visible manner on a photographic plate simply held in the hand in darkness? If so I fear the suggested demand for cameras (with lenses) will be small, as if I could only find a way to obtain the images of my mortal sitters without the bother of focussing expensive lenses and carrying a bulky camera about, I should be very happy to dispense with such encumbrances. Hoping that much light may be thrown on this dark subject, I remain, yours truly, E. WILLIAMS.

REMBRANDT Art Company, Limited.—This Company has been regis- tered with a capital of £1,250 in £1 shares. Object, to acquire the business of a portrait painter, photographer, and fine art publisher carried on by J. W. Jameson at 8, Peck Lane, Nottingham, as the Rembrandt Art Company. No initial public issue. The first directors (to number not less than two nor more than five) are J. W. Jameson and A. Waddams. Qualification, £50. Remuneration, £5 each per annum. Registered office, 8, Peck Lane, Nottingham.

AUTOMATIC Cinematograph Advertising Syndicate, Limited.—The above-named Company has been registered with a capital of £10,000 in £1 shares. Object, to acquire the benefit of certain existing inven- tions, to adopt an agreement with R. G. Fothergill, and to carry on the business of cinematograph and automatic machine proprietors and manufacturers, advertising agents, etc. No initial public issue. The first directors are H. Mann, F. Allen, and R. G. Fothergill (managing director, with £350 per annum). Qualification, £100. Remuneration, £50 each per annum and a share in the profits.

CROWN Art Society, Limited.—The above-named company has been registered with a capital of £2,000 in £1 shares (1,500 Preference). Object, to acquire and carry on the business of fine art dealers, photo-reproducers, photographers, electrotypers, printers, publishers, etc., now carried on by A. B. Nielsen and A. L. Ponting at 9, Regent Street, W., as the Crown Art Society. No initial public issue. The first directors (to number not less than two, nor more than three) are A. L. Ponting and A. B. Nielsen. Qualification, £1,000. A. L. Ponting and A. B. Nielsen are joint managing directors with £100 each per annum. Registered offices: 50, King Street, Regent Street, W.

HULL Photographic Society.—The twenty-first annual report of this society is to hand, and shows steady progress made during the past year. The books record a total membership of 289, and the finances of the society are in a satisfactory condition. The officers for the ensuing year are: President, Mr. W. S. Parrish; vice-presidents, Messrs. R. E. Johnson and G. F. Bristow, junior; hon. treasurer, Mr. D. L. Cockcroft; hon. solicitor, Mr. R. E. Johnson; hon. lanternists, Messrs. W. Dalton and T. Frazer; librarian and editor, W. Gilleard, 11, Clumber Street, Hull; hon. curator of en- larging, Mr. H. Strong; hon. secretary, Mr. A. E. Hindson, 6, Free- hold Street, Hull; Council, Messrs. Rev. C. O. Stewart, F. Atkinson, T. J. Hards, F. Woollons, and Hewat Fraser. The summer syllabus is to read, one meeting first Thursday in each month, and an excu- sion every alternate Saturday afternoon. Much time and care has been expended upon fixing up the latter so that they will suit all members as far as possible. It is the intention of the President and the Council to do all in their power to encourage the younger members in the pictorial element and composition, as well as maintain the social side of such outings. There is every possibility of the Hull amateurs having a good and profitable time during the summer of 1904. The first excursion is on April 23 to Wakefield, to the annual meeting of the Y. P. U. Then follows: Westella, Ferriby and Welten, Barrow and its haven, Howden, Burton Constable (picnic), Flambro and Bridlington, Fountains Abbey (all day), Newbald and Houghton Woods, Burton Stather, Beverly, Pauli, and Patrington.

Answers to Correspondents.

- All matters intended for the next portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.
- Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.
- Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.
- For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

- J. D. Shiels, 9, Marchmont Street, Edinburgh. Photograph of *Str Robert Cranston, V.D.*
 E. Smith & Sons, Quorn, Loughborough. Photograph of *Quorn Hounds.*
 H. J. Penny, Fairfield, Leatherhead. Photograph of *A. Shrub.*
 E. G. Harries, Alma House, Bishop Street, Londonderry. Photograph of *Band of 1st Royal Inniskilling Fusiliers.*
 P. H. Hilson, 4/A, North Street, Brighton. Photograph of *Drawing, Land'slip at Blackrock, Brighton.*
 A. F. Dawkins, 12, West Cliff Road, Ramsgate. Photograph of *the Colonnade at Ramsgate, now Demolished.*

JAS. CULNAN.—There cannot possibly be any objection to the change of name.

COPYRIGHT QUERY.—S. T. W. You will find the subject of your letter dealt with in an article in another column.

PICTURE POST-CARDS.—"BROMIDE" says: "Will you, please, tell me if you can recommend a reliable 'bromide printing machine' suitable for post-card work?" In reply: Messrs. Marion and Co., 22, Soho Square, London, we believe, supply a bromide printing machine. Other large dealers, no doubt, do so as well. Write them for particulars.

BROMIDE PROCESS.—"WORKER" asks: "Would you kindly let me know by what process the enclosed midget is finished, as you will notice the name and address is printed with the photograph." In reply: The process by which the print was produced is the gelatino bromide. It is simply printed on a paper of the "Velox" type, and developed in the usual way.

ADDRESS WANTED.—J. SPENCER writes: "There is a maker of photographic burnishers either in Germany or Austria, called Carl Seel. I will be much obliged if you can oblige me with his address." In reply: We regret that we cannot give the address as we do not know it. Perhaps some reader who does will be good enough to supply the desired information and oblige our correspondent.

RADIUM.—"RADIUM" asks: "Would you kindly inform me whether the 'metal radium' is a thing that can be seen, and whether there is any book published on the subject, as I am anxious to have one?" In reply: You should consult the new book entitled "Radium and All About It," by S. R. Bottone. Published by Whittaker and Co., 2, White Hart Street, Paternoster Square, E.C., at 1s. nett.

TINTING PAPER.—"GELATINE" asks: "(1) What is the best soluble aniline dye, unaffected by acid, most suitable for tinting mauve and pink, gelatine P.O.P.? (2) Also, what will best remove the natural yellowy tint of the gelatine, for white P.O.P.?" Reply: (1) Any of the soluble colours will answer, but get a list from any of the agents for coal tar colours, and from that make your selection. (You could get the addresses from any dye works.) We are not in the secrets of the paper makers, if there is any secret in this? (2) If you use a colourless gelatine there should be no yellow tint.

COPYRIGHT OF DESIGN.—J. C. BROWN says: "I have been thinking of a new mourning envelope, and my idea is this: Instead of a

black border to have simply three, two, or one black line (according to degree) across the top left corner. Will you kindly say, through your 'Answers to Correspondents,' if I could copyright this, or if it would have to go through the patent office. If it was the latter, I am afraid it would not be worth it? I enclose an envelope to show my meaning." Reply: "You might possibly register the thing under the Designs Act, or even patent it, but we are not sure on the point. We have the idea that we have seen the same thing before.

PHOTOGRAPHY IN SOUTH AFRICA.—"ASSISTANT" writes: "In your last issue 'A Scotchman in Natal' gives an interesting account of 'Photography in South Africa,' but some information as to living expenses would also have been valuable. He mentions the case of an assistant who went out to Natal under a three years' agreement, but who received three months' notice to quit, presumably after being there a short time. Surely his references, etc., would have been a fair guide as to his ability before the South African firm decided to transport him 7,000 miles from England. Is the agreement no protection to the assistant?" Reply: We, of course, know no more than is contained in the letter of the Natal writer. We presume that, as in England, an assistant misrepresents his abilities an agreement for service may be cancelled in South Africa.

LENS QUERY.—F. N. says: "(1) I have a well lighted studio; not too light; length from sitter to camera, farthest distance, 21 ft. What sort of a lens would you advise me to get for portraits? I should prefer a very quick lens. (2) Should I require different lens for head and shoulder work, groups, young children, etc. (3) The one I have been using I fancy is too slow. I can only get satisfactory results in a first-class light, and seem at a loss if the light is only moderate. Can you tell me if it should be suitable for my work?" In reply: (1) The most generally useful lens in a studio of that length would be one of about twelve inches focus. (2) No, except, perhaps, for very small pictures, when a shorter focal lens would come in useful. Or if large heads are desired, one of longer focus would be desirable. (3) The lens you have is very slow as compared with a portrait lens. It requires about four times the exposure necessary with, say, a quick-acting cabinet lens.

PRICES.—C. J. K. writes: "(1) I should be much obliged if you would give me your opinion of my work, of which I enclose three specimens (1, 2, 3); also if you will answer the following: I have been asked to supply a printer with 1/2-plate photographs of various buildings, in different places, for reproduction as post-cards. (2) What do you consider a fair price (travelling expenses extra) for 1/2-plate architectural photographs, interior and exterior, the work being of same standard as enclosed No. 1? (3) Ditto, ditto, for animal studies." In reply: "The prints sent are good. (2 and 3) We really cannot undertake to tell photographers what they should charge for their work. They are certainly better able to assess its value than we possibly can be, seeing that so much depends upon circumstances, time occupied in travelling, etc., etc. Why not become a member of the Professional Photographers' Association? Full information will be found in 'Photography for the Press,' obtainable from any dealer in photographic literature.

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EX CATHEDRA.

Testing the Result.
It is sometimes remarked of a person who shows symptoms of irritation without any apparent cause that he, or she, must have "got it out of bed on the wrong side." Perhaps this accident may have happened to the writer on the staff of the "Times" whose lot it was to review the action of the Worshipful Company of Spectacle Makers in instituting a diploma in the art of sight-testing. He devotes quite a third of a column to denouncing the scheme, and towards the end of his fulmination writes that "it would not be unreasonable to require that the power to issue 'diplomas' of any sort should be subject to the control of some responsible body in the State, and should not be exercised at their own discretion by trade companies, even after they have been approached in the manner indicated." The sting of his last line lies, like that of the wasp, in its tail, for "the manner indicated" refers to the several well-known names. Now what have the Spectacle Makers' Company been guilty of to earn this abuse? After a long inquiry by a Committee which was presided over by Sir George Faudel-Phillips, a Committee which had the assistance of Counsel and of Professor Sylvanus Thompson as assessor, a Committee which took evidence from representative medical men and members of the optical trade; after the opinions of this Committee had been backed by a memorial which was signed by Lord Kelvin, the Earl of Rosse, Sir William Crookes, Sir William Abney, and other known scientific men, the Company decided to institute the diploma. If this Committee, working under the conditions described,

did not constitute "a responsible body," it is difficult to understand what is meant by that term. And, after all, the diploma does not give the opticians more power than they had before. It simply means that those who hold it are skilled men, as distinguished from quacks, and it is for the protection of the public, and not for the sake of the opticians, that the diploma has been instituted. Why the writer of the "Times" should have taken up an antagonistic attitude on this question, except on the wrong-side-of-the-bed theory, it is very difficult to discover.

* * *

Unreliable Shutter Speeds.

A little while ago we called attention to the unreliability of the speeds, as marked on the indexes, of the majority of the shutters fitted to hand cameras. In our last issue we reproduced an article, by Dr. Hans Lehmann, in the "Instrumentenkund," on the speed measurement of shutters and the method of testing adopted by the author. The paper will be found on page 310 ante, and it proves the discrepancies there are between the asserted speeds and the actual ones even in the shutters of the best makers. The method of testing adopted by Dr. Lehmann is a somewhat novel one, and it may be a somewhat open question as to whether it is really better than some other methods of testing shutter speeds. But as all those examined were tested under similar conditions, it seems to show that their speed indexes are not to be depended upon for the actual time the plate is exposed. The table appended to Dr. Lehmann's paper is interesting as showing the wide difference there is between the index numbers and the actual speeds of some of the most renowned makers in Germany, America, and England; and it is satisfactory to learn that the palm is taken by an English one—Newman and Guardia's. Of this the author speaks very highly, which, he says, "had been in constant use for two years, and the figures given show that it was the only one of those measured that worked to its indicated speeds." Although, of course, it is most desirable that the marked speeds on the indicator should be correct and reliable, which most of us know is seldom the case, still, as we said in the previous article on the subject, it matters very little in actual practice whether they do so or not so long as the worker knows that when his shutter is set at a certain alleged speed he gets the exposure he desires, whether that be a tenth, fiftieth, or the hundredth of a second. One often sees on pictures exposure so many fractions of a second, but what actual information does that convey beyond the fact that the index of the particular shutter used was set for that speed? And the user assumes that it is correct, while, as a matter of fact, the actual exposure the plate received might be widely different—above or below—as practical speed tests usually prove.

Foreign Chemicals.

In its last week's issue the "Pharmaceutical Journal" refers to a rumour that in the forthcoming Budget the Chancellor of the Exchequer would probably put a tax on foreign chemicals, or such of them in the manufacture of which alcohol is employed, although they may not contain any spirit. Our contemporary, after commenting on the fact that in Germany duty-free spirit is allowed to be used in manufactures, and this costs but twopence a pound, whereas the British manufacturer has no such privilege, and has, perforce, to pay two shillings and threepence a pound for the same thing. Of course, under these conditions, the English manufacturer is very heavily handicapped. The "Pharmaceutical Journal" points out that no new law would be required for this tax, as it will only require the enforcement of an Act already twenty-eight years old, namely, the Customs Consolidated Act, 1876. One clause of this Act reads thus: "Upon the importation into Great Britain and Ireland of any article in the manufacture of which spirit has been used there shall be charged in respect of such quantity of spirit as shall appear to the satisfaction of the Treasury to be used in the manufacture of such articles a duty equivalent to that which would be chargeable on the like quantity of spirit on its importation into the United Kingdom." At present there are only about eight articles which are taxed under this clause, but there are now a large number more that could now be so taxed—some of the coal tar colours, for example. If that were done the Customs revenue would be increased, while the British manufacturer would the better be able to compete with the foreigner as regards price. At present a large proportion of the chemicals used in photography come from abroad—most of the new developers, for example, and also our old friend pyrogalllic acid. At one time this was almost exclusively made in England. Now—we think we are safe in saying that—none is made here, or, if it is, the quantity is very small indeed. Colours from coal tar were an English invention, and a few large fortunes were made with them, but the trade has almost entirely drifted to the Continent. In the manufacture of some of these alcohol is largely employed, but in some cases methylated spirit cannot be used. Hence it follows that if the British manufacturer has to use duty-paid spirit and the foreigner can get his spirit free of duty the former cannot compete with the latter, however much enterprise he may possess. There is yet another reason why there is so little of the coal tar colour made in Great Britain, which has been due to our patent laws. If, for example, an English inventor patents his invention here, and, say, in Germany, according to the German law the invention must be worked in Germany within a certain period from the date of the patent or it lapses there. But if a German patents his invention here he has no such restriction. He simply obtains his patent, and thus secures a monopoly for the term of the patent and produces the thing in Germany and supplies the English market. Under the Patents Act of 1902 this state of things is modified in a somewhat half-hearted way. Now, a patentee, whether English or foreign, is bound to grant licences to work his invention on proof being given that the reasonable requirements of the public have not, after three years, been satisfied, or the patent may be revoked. So far, so good; but there is little question that the enterprising German will keep the English market well supplied even without the fear of his patent being revoked.

Talking Pictures.

The idea of wedding photography with some kind of talking apparatus, so that the figures seen on a lantern screen could be made more lifelike, is an old one, and some people may be apt to think that it was a natural outcome of the invention of

the cinematograph. In that case it could not be so very old, but, as a matter of fact, the suggestion was made prior to the era of animated photographs, and occurred to the fertile imagination of a Transatlantic reporter when Edison first startled the world with his phonograph. In order that there may be no mistake on this point, we will quote from the notice to which we have called attention which is dated December 22, 1877:—"When it becomes possible, as it doubtless will, to magnify the sound, the voices of such singers as Parepa and Titiens will not die with them, but will remain as long as the metal in which they may be embodied will last. The witness in court will find his own testimony repeated by machine, confronting him in cross-examination; the testator will repeat his last will and testament into the machine, so that it will be reproduced in a way that will leave no question as to his devising capacity or sanity. It is already possible by ingenious optical contrivances, to throw stereoscopic photographs of people on screens in full view of an audience. Add the talking phonograph to counterfeited their voices, and it would be difficult to carry the illusion of real presence much further." (The allusion to the voices of the singers named remaining in "the metal" refers to the circumstance that in the original phonograph the record was made in tinfoil, and not in wax, as it is to-day.) Later on, when the phonograph emerged from the experimental form, and cinematography became possible, we were promised operatic performances by the combined instruments, and, if we remember rightly, Edison or his representatives had a special theatre constructed in which actors and singers went through complete performances, so that sound records and pictures could be made. But the hopes thus aroused were doomed to disappointment, and, so far as we know, these elaborate experiments bore no fruit whatever. We presume that the failure was due to the circumstance that although the phonograph will register with marvellous fidelity the strains of the band of instruments, it will not take up the more tender tones of the human voice unless the singer's mouth is close to the instrument. Since the time of these pioneer efforts to make the cinematograph and phonograph act in concert, there have been many minor attempts to do the same thing. The notion has once more been revived, and an instrument bearing the terrible name of Biophotophon—the invention of which is credited to Herr Oscar Messter, of Berlin, and M. Gaumont, of Paris—was tried the other day at the Fulham Theatre, with a view to test its suitability for a music-hall "turn." In this case the cinematograph is allied to the gramophone, and we may soon expect to see this double-barrelled machine employed at some of the music-halls, and we trust that it will prove more successful than its predecessors. We have heard of one or two carefully-tended phonographs give results which place them on a level with musical instruments, but it must be confessed that the rank and file of these instruments recall to the mind the voices of Punch and Judy rather than anything of a more classical nature. This has hitherto been one of the bars to success in dual performances of the kind referred to.

MESES-GORIS AND FILS' Baryta Papers, sold by Mr. Otto Rosenfield 104-105, Cheapside, E.C. The above firm, which successfully brought on the market their Baryta Papers some time ago, has submitted us now samples of their post-card paper coated with baryta, and owing to the excellent surfacing of both the matt and brilliant paper should be certain of obtaining the same success as their former papers. The firm has given their special attention to this post-card paper, which is supplied in several thicknesses, and which should be of interest to all the photographic paper makers and professional photographers making their own sensitized paper.

GAS BURNERS, AND ELECTRIC LIGHTS.

our gas burners, the flames they give, the gas they consume, the waste or economy that may attend their use, it is not to be said, notwithstanding the virtual universality of coal gas, it can by no means be said that the schoolmaster is abroad, for, if there is one thing more than another about which the English householder, not to speak the photographer, is in a state of crass ignorance, it is the working machinery of the material that supplies him with his daily artificial light. He is, too, in a state of chronic antagonism to the gas companies, all of whom are engaged in a colossal conspiracy to defraud him by charging him for gas he is quite sure never used. It is useless to point out to him that his gas-bills always show the readings of the meters, so that he can check for himself the quantity charged for as shown by the meters. So much the worse for the meters is his reply; he is charged twice as much as last quarter, and he knows quite well he burnt no less gas than more. But he does not avail himself of his legal rights, which entitle him to have his meter tested without charge if it proves to be inaccurate. He takes his illogical stand on the fact that he has to pay the examination should the meter prove to be in correct condition. He prefers to hug his grievance, imaginary as it is, as a rule, and goes on grumbling. In view of the frequent employment of gas as an illuminant for portrait work in the studio, every photographer who has such an installation should be on terms of friendly acquaintance with his gas meter, and thus be able to check waste and calculate the cost of his exposures. To read a gas meter is so ridiculously simple that we will not insult the intelligence of our readers by explaining it; but we do advise them to consult it more frequently than we believe is usually done. The presence of defective burners would be readily indicated by the consumption of gas in proportion to the light obtained, and, in the rare event of a meter actually giving incorrect indications, this fact would most probably reveal itself. It is quite possible, for example, for a No. 6 burner in bad condition to give more light than a No. 5 in proper order, and what that means in the gas-bill is readily understood when it is remembered that the number which is always stamped on a burner, although often invisible through sooty deposits, is taken to represent, very roughly, the number of feet of gas per hour consumed. We know of one establishment where the ordinary fishtail burners are renewed annually as a matter of routine; an old burner does not have the same value as a new one, and the insignificant cost of new burners scarcely interfere with the economy of the arrangement, which also is further largely governed by a judicious attention to the pressure. Undue pressure gives more light at increased cost. Particularly should these things be attended to in the dark room, where a maximum of light and a maximum of products of combustion would naturally be sought. When Welsbach mantles are made use of, the question of pressure is of paramount importance, especially with the older type of burner. If the pressure is at all excessive, it is often possible to more than double the light given by turning the gas down considerably, thus making a gain of over 300 per cent, and having a large number of burners are in use, as in portrait work, by gaslight, what this means to the gas-bill needs no explanation. It is now well-known, though the knowledge is not always put to practical use, that light obtained by Welsbach mantles cost about a third of the sum that would have been paid for the same amount of illumination by the best fishtail burners. In this connection a very bold suggestion was recently made at a meeting of the Manchester and District Junior Gas Association, by Mr. F. A.

Sinnatt. He said gas engineers seemed to forget that there were two ends to the gas-pipe, and they did not pay sufficient attention to the "flame-end." He thought the lights should be superintended by the gas engineer, and he urged that what was wanted was a perfect incandescent mantle, which should last a year with ordinary usage, cost not more than sixpence, and give a high candle-power. A gas of high heating power and low luminosity, costing not over two shillings per thousand could be burned, and he made the further suggestion that every user of gas for illumination should be compelled to use incandescent burners. Possibly before any such consummation is arrived at the use of electricity may have become universal. The initial cost of bringing the current into the premises stands most in the way, as landlords—though they will, where there is an electric installation in the neighbourhood, willingly wire their premises instead of putting in the accustomed gas-piping—will not replace existing gas fittings for electric wiring; and, although, light for light, electricity may be—though we doubt it—dearer than gas, the convenience and the saving of cost of decoration, through the absence of the dust that accompanies the use of gas, more than outweighs any loss. Further, the easy switching on and off of the light from the handily-placed switches lends itself to economy by putting out the light in cases where with gas there would be waste from unnecessary burning. As regards the cost of various illuminators, an interesting set of figures is published by Mr. J. W. Bradley, Engineer to the City of Westminster, and they possess a special interest to photographers who contemplate artificial-light portraiture, as they deal with the more powerful type of lamp, such as probably we used in the studio—that is to say, street lamps. He finds, including all costs—maintenance, interest on capital, sinking fund, etc.—that Sugg's high-pressure lamps in Parliament Street come out at 7.65 pence per year for 1 candle-power. The electric arcs on the Westminster Supply Corporation come next at 8.73 pence. When, however, the average of six tests were taken, this order was reversed, arcs being 8.7 pence, and the incandescent gas 9.85 pence. The triple flat-flame burners in the Strand worked out at 47.5 pence, and the arc lights varied, according to charges of the various companies supplying it, the exact figures being 8.7 pence, 11.5, and 15.1 pence per candle-power for a year. We think we have said enough to show that economy and efficiency will go hand in hand with the use of common-sense in the employment of gas or, indeed, any form of artificial illumination.

THE Royal Photographic Society of Great Britain.—Technical meeting to be held at 66, Russell Square, on Tuesday, April 26, 1904, at 8 p.m. "The Artistic Aspect of Photography," by Mr. F. C. Tilney.

THE Austin-Edwards Monthly Film Negative Competition.—The prize camera for current month has been awarded to Captain H. G. L. Mesurier, R.E., Dean Stadwell House, Weyland, Penn., for his pair of negatives "Crabbed Age and Youth."

WE learn that Messrs. Gold, Smith, and Co., Photographic Mount Manufacturers and Dealers in Photo Requisites, have turned the whole of their premises, 4, Victoria Bridge, Manchester, into stockrooms, and have taken additional premises at 44, Chapel Street, Manchester, which are now opened as offices and showrooms.

A MIRACLE!—Had this happened in the middle ages it would, doubtless, have been regarded as a miracle. Some nights ago the back of a photographer's in Holborn caught fire, and the flames were not extinguished before a great number of valuable prints and paintings had been destroyed. Among the latter was a large and beautiful picture of the "Ecce Homo" type. Searching among a mass of charred fragments of prints and pictures the salvage men discovered that the figure of Christ in this picture was undamaged though everything around it had been burnt to tinder.

JOTTINGS.

"To sit in solemn silence in a dull, dark" Court, watching the dispensation of justice, as was my fate last week, is to me very like becoming for the time being an inhabitant of another world, where the principal occupation of the people is that of daily dancing on the Decalogue. The one point of photographic interest in the long-drawn-out family squabble to which as an uncalled special juror I was compelled to listen in Court III. (King's Bench Division) up till Friday afternoon, was the attempt to prove that the handwriting of an alleged libellous telegram was that of a person prominent in the case who had signed somebody else's name. Enlarged photographs of the "wire", and some letters were made the subjects of expert examination and evidence, and the characteristics of letter formations and peculiarities were minutely discussed by the learned gentlemen engaged in the case. In the end the authorship of the telegram was admitted by somebody quite different to the person suspected. It is extremely awkward when the resources of science are unsuccessfully utilised to prove that Smith did a thing for which Brown was responsible. For the credit of photography a different ending to the case might have been desirable. A breakdown of this kind is apt to make people look with growing suspicion upon evidence that does not lie. By the way, I wonder what offence can be laid to my charge in a previous state of existence that regularly each spring I should be hauled off to the Royal Courts of Justice to contemplate other people's troubles? I would rather be afloat, especially if I were certain that I should be followed on my journey by such remarkable and whole-hearted appreciation as that which seems to be available in Liverpool.

The association of the name of Dibdin with marine matters is quite appropriate. Charles Dibdin wrote sea-songs which are still popular, and will perpetuate his name. The fame of Mr. E. R. Dibdin is perhaps equally as well assured, although he has chosen different means to his namesake to reach the same end. As a marine interviewer he scores a very striking success; I am not for one moment suggesting that either party to the now celebrated interview is talking in a manner suitable for reception by those mysterious warriors known as "Horse Marines." The purely personal part of the interview is amusing, and nothing more, as the following extracts will show. The interview opens in this fashion:—"Glad to go? Well, yes and no," said my unsuspecting victim. "The trip has its attractions, of course; but I am so unaccustomed to running off and leaving the island to take care of itself, that I can't help feeling anxious as to how matters will go on in my absence." E. R. D.: "You will be able to comfort yourself daily by observing with what equanimity the captain goes below and leaves the first officer in charge of the ship." A. H. H.: "True; but he knows he will always be within call if required; I won't. During the eight or nine years I have conducted the 'A. P.' I have never deputed the passing for press for more than a single week's issue, and have prepared almost everything in detail. During all the time I've never allowed myself a complete holiday; even when I go off ruralising, or judging, or photographing, I take the 'A. P.' with me, or, rather, it pursues me by post. Letters, proofs, and all sorts of matters connected with business of the paper reach me daily, and I am still seated on the editorial chair though in a seaside lodging, a North-country hotel, a steamer's saloon, or a fisherman's cottage on the East Coast marshes. I've even corrected proofs and written letters on a Yorkshire moor." E. R. D.: "Well, I'll see what I can do about sending you a few disquieting 'Marconigrams' to cheer your loneliness. However, you must admit that if you have been on the stretch for such a long period, a rest, however unpalatable, will be good for you." A. H. H.: "I suppose I

am doing too much. An American editor recently described me as probably the hardest-worked journalist on this side." E. R. D.: "His reservation is quite characteristically American." A. H. H.: "If he meant photographic journalist, I guess he is about right. I don't suppose anyone knows how much work I actually do. I couldn't do it if my hands were not in it. To judge by my own experience, any amount of the work you love is wholesome. I thrive upon incessant occupation. Sometimes I have a whiff of neuralgia, and always regard it as a danger signal, and make a point, when it is quite cured, of going to bed not later than 2 a.m." E. R. D.: "No doubt they have agreed to wait until you have made your fortune, which, I should think, must be at an early date!" In the first number of the recently founded "London Opinion," that very successful and readable journalist, Mr. T. P. O'Connor, puts in a plea for the personal side of journalistic records; that is to say, he would have even the sober columns of the "Times" enlivened by those agreeable touches of description and detailed reference which you see in sprightly publications of the "M. A. P." and "T. P.'s Weekly" class. Hence perhaps the foregoing extract from Mr. Dibdin's interview will prove of interest to those who have not seen the original paper—the columns of your esteemed contemporary and neighbour the "Amateur Photographer."

Avoiding any comment upon this delicious morsel of journalistic fare, one passes to the reflection that your modern photographic editor is in the majority of cases neglectful of obvious opportunities for publicity which are at his command, and no doubt Mr. Hinton will earn general thanks for pointing out how easily admiration of this kind may be obtained. If Mr. Dibdin's attentions should have the effect of securing his "victim" an offer by the leaders of the New York F. H. Hundred, to be temporarily included in their august company, nobody will be surprised. Other, and what one may term business, parts of this interview as distinct from the extracts that have been quoted, touch some remarks of my own which appeared in this column on March 25, 1904, and must, I suppose, be regarded in some sense as an answer. My complaint on that occasion was that no official systematic attempt appears to have been made to secure a thoroughly representative display of photographs from leading British workers, at the St. Louis Exhibition. The reply to that from Mr. Hinton through Mr. Dibdin, is that "imaginative persons have declared in print that the work was done secretly and suddenly by a committee whose origin was as mysterious as its proceedings." Then follows a long account of the steps taken by the Royal Commission, culminating in the management of the British Photographic Section of the St. Louis Exhibition, placed in purely irresponsible hands. This is not a question of personal fitness or qualification, but one of principle, and the principle that many fellow-members of the Royal Photographic Society also wish to reach is that the whole of the British Photographic Section at the St. Louis should have been directly under the control of the one representative photographic society in this country; the one only representative national photographic society, namely—the Royal. The explanation given as to why this was not done is to satisfy Mr. Hinton, but probably nobody else. There seems to have been a blunder somewhere, and it has not been repaired by paying the Secretary of the Royal Photographic Society the compliment of placing his name on the committee. Mr. Bartlett himself should have been at St. Louis, or, failing him, somebody else should have been officially deputed to represent the Society and do the work of selection, and hanging.

the time has gone by when your heaven-born judge of pictorial photography was an essential factor in exhibition organisation and management. There are in the Royal Photographic Society scores and scores of men quite as competent to undertake the work at St. Louis which Mr. Hinton by comparison finds so very, very arduous. After all said and done, he need not have gone there had he not wished to; and being there, and I hope having a good time, it should, I think be made quite clear that he only represents himself in the matter; but I can dismiss this part of the subject to revert to the main theme of discontent, namely—the mismanagement of the matter by the Royal Commission, which seems to have passed over the Royal Photographic Society in the matter. Much the same sort of mismanagement characterised the photographic section at the Paris Exhibition. There was a small and privately organised pictorial section, illustrating merely one particular school of work. The individual exhibitor had to do the best he could himself, which was a very best indeed. There was a great deal of discontent at the time, that apparently did not have the effect of educating those responsible in the Royal Commission to their very obvious error in the matter.

I hope nobody will think that in dealing with this Dublin review in these pages I am animated by a desire either to get a cheap copy out of it, or am at all jealous or envious of the gentleman who has gone afloat. My path in life lies in a different direction to that of my former adversary, Zolius. Pictorial photography nowadays affords few opportunities for purely controversial treatment. My object chief on this occasion is, whilst regretting that the publication of such childish nonsense should have the effect of throwing ridicule upon the reputation of the one most immediately concerned, it should also be the means of creating a false impression as to the position of the general body of members of the Royal Photographic Society as regards the British demonstration at St. Louis. Some of us have devoted years of effort to make the Royal Photographic Society worthy of its position, and, to say the least of it, it is galling that that Society, instead of being to the fore, actually, officially, and primarily, at St. Louis, should occupy a position in the background. A test was called for, and is hereby made, and after that I think the matter can be dismissed, as it is too late to do anything now. I am making no suggestion of bad faith, but of carelessness, or at any rate carelessness, there undoubtedly was in regard to the position of the Society in the matter. COSMOS.

THREE years ago the Empress of the French, accompanied by her son, Count Primoli, came to the grounds of the Tuileries to see once more the spot on which had stood her Imperial home and the garden in which her little son once played. There is a flower-bed near the gateway, and the Empress, wishing to take away a souvenir of her visit, stooped and plucked a blossom. Count Primoli, an ardent amateur photographer, had his camera with him. He thought it would make a pretty picture, and was about to take a snapshot when a sergent de ville appeared, and, laying his hand on the shoulder of the Empress, arrested her. Count took the snapshot, and still has the picture—the arrest of the Empress for picking a flower from the garden that once her own. When Count Primoli hastened forward and told the policeman who the lady was, the man saluted, and exclaimed, "Take your flower, Madame, and grant me your pardon."—Dagonet The Referee."

A NEW OPTICAL BENCH.

[Translated from Eder's "Jahrbuch für Photographie und Reproduktionstechnik," 1903.]

IN the "Jahrbuch" for 1902, p. 151,* I described a method of determining with exactitude certain errors in lenses and at the same time sketched the outline of an optical bench which would be of use in making such observations. Professor Eder at once instituted experiments according to the proposed method, and, having satisfied himself of its utility, had an optical bench of the kind made, for the Imperial Technical School, by the firm of O. Toepfer and Son, of Potsdam. This apparatus is now ready, and I take this opportunity to give a short description of it. I will give a more complete description of the apparatus, together with a full account of the examination of a lens by its means, in another publication, as soon as a second has been constructed for the Astrophysical Observatory at Potsdam, and brought into use.

A horizontal table, cast in one piece, is supported upon an iron column, the foot of which rests within the circle A (Fig. 1). Upon this table, to the left, is a slide groove 1 metre

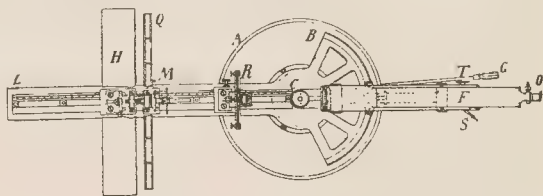


Fig. 1.

long, LC, which is projected to the right through the sector, B, comprising an angle of about 120 deg. A strong arm, with two friction rollers, supports the astronomical telescope F, and it is made to turn upon the centre C, within the sector. The arm can be clamped firmly to the sector at one part, by a screw, and its position may be read off the divided circle correctly by a vernier, to three minutes of arc. Single minutes may be estimated. The telescope has an object-glass of 75 m.m. aperture and 90 c.m. focus. It has a draw-piece 40 c.m. long actuated by the pinion T, and its extension may be read to 1 m.m. by the mirror S. By means of a bayonet joint, at the eye-piece, the micrometer O, a dark-slide, or a small spectroscopic slit with a prism of 60 deg. may be attached. These three appliances may be used in two positions differing from each other by 90 deg. For example, the micrometer may be used with the screw in a horizontal or vertical position. In front of the eye-piece is a revolving plate carrying glasses of different colours, and a small train of prisms for direct vision can also be attached. The carriers R for the lens under examination, and M, for the test object, slide on the swallow-tail shaped rail LC. Fig. 2 shows a perpendicular section of

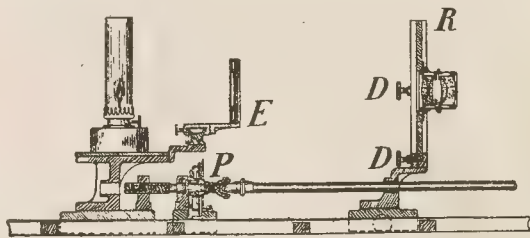


Fig. 2.

* See "British Journal of Photography," February 20, 1903, p. 146.

this portion. The lens-carrier R is of simple construction. It is formed of a strong cast-iron frame into which a square board may be slid at the top. The board is provided with a flange, for holding the lens, the same as on a photographic camera. By means of the screws D, the lens may be centred and fixed. If desired, the simple carrier R may be replaced by a more complicated one, which permits of the lens being turned upon a horizontal axis to test the centring of the several surfaces, and upon a vertical axis to determine the principal points by the well-known swinging method.

The test-holder M consists of two parts sliding on the rail L.C. That shown to the right in Fig. 2 serves as a fixed support for the head of the micrometer screw P, which is actuated by a rod, with universal joint, terminating at the handle G, so that it may be manipulated at the eye-piece. When the right division of the sliding part is clamped to the rail L.C., the left division may be moved micrometrically by turning the screw. The latter carries the swallow-tail shaped rail Q, placed at right angles (Fig. 1), upon which the frame E (Fig. 2) may be moved. The platform H, behind the rail Q, is provided to carry an illuminant. Both rails, Q and L.C., are divided into millimetres, and the position of the sliding parts upon them may be read off accurately to 0.1 m.m. Small differences in the distance between the lens and test object may be accurately measured to 0.001 m.m. with the micrometer screw P, which has a pitch of 1 m.m.

To adjust and test the apparatus, it should be set up so that it is possible to see its full length through the telescope. After removing a check screw, the micrometer O may be swung not only 90 deg., but round an entire circle. The telescope is then sharply focussed upon some distant object, and the wire of the micrometer is moved until it exactly covers some point in the image, whilst the micrometer is revolved. When this adjustment is made, the wire cuts the geometrical axis of the telescope, or, in other words, the optical and geometrical axes coincide. This position of the micrometer screw may be called zero, and the reading on the drum should be noted.

Next the optical axis of the telescope must be made parallel to the runner L.C. The draw of the telescope should be extended until a very distant object is sharply focussed in the plane of the wire. A plate with a circular aperture of about 2 m.m. aperture is placed in the frame R. A similar plate is also placed in the frame E. The carriers M and R are brought as close together as possible, and the plates are shifted till the two apertures coincide. The frame R is brought up to C, and M is moved as far as possible in the direction of L. The line between both apertures should then lie parallel to the runner L.C. If a lamp be placed behind the aperture at E, the ill-defined circle of light visible in the eye-piece O should be halved by the micrometer wire standing at zero. With the micrometer wire upright, the telescope is turned upon the point C until the circle of light is equally divided. This direction of the telescope may be taken as zero, and the corresponding reading upon the sector of the circle B should be noted. When the wire is turned to its horizontal position the circle of light should also be equally divided, but as a rule the mechanism will have ensured this. If a slight correction appears necessary, it may be done by placing tin-foil under one of the supports of the telescope. Lastly, the frames M and R, and especially the transverse runner Q, should stand perpendicular to the optical axis at its position at zero. For this adjustment an accurately worked mirror should be placed in the frame M, for examination of the reflected image of the micrometer wire illuminated by a glass plate, placed at 45 deg. to the optical axis, between eye-piece and eye (Gauss eye-piece). The image should then be covered by the wire, which may be effected by altering the direction of the runner Q. The position of R may be adjusted similarly.

The object glass of the telescope may be examined in the following manner.* About 100 m. from the object-glass stop, with a small circular aperture, is set up. Behind this sodium flame is placed. The telescope is set so that the point of light may be seen in the centre of the field, and the sector B is then clamped. A stop, belonging to the apparatus is then placed in front of the object-glass. This stop has a row of circular holes, measuring 1 to 2 m.m. each, pierced across the diameter, and, as may have been seen from Fig. 3, these holes

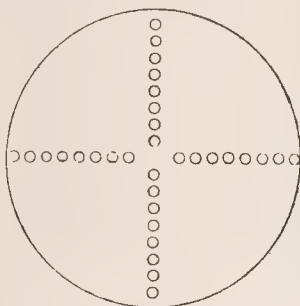


Fig. 3.

are arranged symmetrically to the centre of the lens. The draw of the telescope is pushed in, until the images of the holes are seen distinctly separated in the eye-piece. Their position is then measured with the micrometer. If m and m_1 be the readings upon the drum, when two holes, situate symmetrical to the centre, are focussed, and if r be their distance from the centre, the difference may be expressed by $e = m - m_1$. The reading at S, on the draw of the telescope, where the measurement was made, may be denoted by A_1 . After the series of measurements has been made, the draw of the telescope is pulled out beyond the picture plane, where the images of the holes run together, until a point is reached on the other side of the focus, where all the apertures are again separated from each other. The measurements made here, position A_2 of the draw-piece, give the distance e for the same holes. If both quantities e_1 and e_2 be taken as positive, the reading A_0 , when the plane of the micrometer wire coincides with the picture plane, may be calculated by the following formula:—

$$A_0 = A_1 + \frac{e_1}{e_1 + e_2} (A_2 - A_1).$$

By proceeding in the same manner with each other pair of holes, the exact position of the image for the different zones of the object-glass may be ascertained. After this examination has been made for the horizontal diameter of the object-glass, those for the vertical and the two diagonals situate at 45 deg. should be made. In this manner spherical aberration, zone errors, and astigmatism at the centre may be accurately determined for monochromatic sodium light. A similar examination is then made with the draw-piece fully extended and the object at very short distance. In this way the necessary figures are obtained to find the position of the image of an object at infinite distance.

The chromatic aberration of the object-glass is ascertained in the following manner. Behind the stop, placed at a distance, a source of light emitting rays of different known wavelengths is used instead of the sodium flame. A mercury arc lamp is suitable for the purpose, but a good substitute may be found in sufficiently luminous Geissler tubes, or an electric

* The first communication concerning the method of extra focal measurements which I have used since 1899 with much success, even for testing large telescope object glasses, appeared in the "Zeitschrift für Instrumentenkunde" (1900, p. 51).

lamp with Bremer or Siemens carbons, impregnated with metallic salts. If these sources of light, which give line-spectra, are replaced by an ordinary flame giving a continuous spectrum, the chromatic error can only be ascertained by several groups of rays, such as "red," "green," etc. A stop, with only two symmetrically placed apertures near the margin, is then placed in front of the object-glass. If these apertures are on the horizontal diameter of the stop, the direct-vision prism should be placed in front of the eye-piece, so that its refracting edge lies horizontally. With the prism in this position, it will still be possible to sharply focus the wire of the micrometer through prism and eye-piece. If the micrometer is returned to the extra-focal plane at position A, a glance through the eye-piece will at once disclose the nature of the achromatism of the object-glass. Two symmetrically placed spectra, facing each other, are seen in the field of view, each of which is an exact picture of the colour curve of the object-glass. Focussed at A, the spectra of an optically achromatised object-glass have the form of Fig. 4, and if

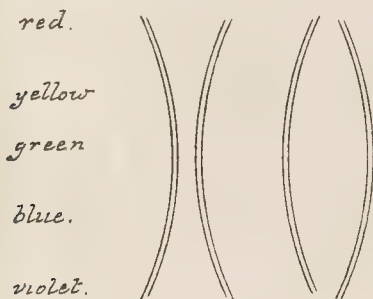


Fig. 4.

Fig. 5.

focussed at A, the form of Fig. 5. If the sources of light were those mentioned are used, these spectra show their corresponding colours, and in order to ascertain the exact focus for each of the rays, it is only necessary to measure with the micrometer the distance between both spectra at the corresponding position, and from this the value F may be obtained by the formula already given.

When the colour-curve for various zones of the object-glass is thus determined, the chromatic difference of spherical aberration may also be arrived at.

To follow the colour-curve further into the violet and ultra-violet region of the spectrum, the spectrograph is attached to the telescope instead of the micrometer. Two spectrograms are then obtained in precisely the same manner as we have already described, their forms being as in Figs. 4 and 5, and by measuring the position of the foci may be ascertained. Of course an allowance must be made for the difference in the distance between the slit and the micrometer wire, in relation to their juncture with the telescope. This must also be done in the position of the dark-slide, when direct photographs are taken.

The focus of the telescope object-glass, or, to express it more exactly, the distance between its second nodal point and the wire of the micrometer wire, for a given tube extension A, may be ascertained by measuring with the micrometer an object subtending a known angle, as, for instance, a metre measure set up at a definite distance. Or, better, the image of a plate in the dark-slide may be measured accurately. These extra-focal measurements, which have already been described, will also give reliable information as to the focal length, if they are made by setting up the object at widely different distances.

After the apparatus has been adjusted, and the object-glass examined in the manner described, the instrument may be used for testing other objectives. As it would require more space than is at my disposal, I cannot enter into a detailed description of the many applications to which it may be put, but I will make a few short remarks concerning them.

The lens to be examined is placed in the frame R, as shown in Fig. 2. The centring is corrected by observing the reflex image of the stop inserted in the carrier M. The frame R is brought sufficiently close to C to permit of the front surface of the lens standing perpendicularly above the axis C. To facilitate focussing, a short piece of tube is placed on the cap of the telescope, to bridge over the space between the object-glass and C. The aperture of the lens is then brought close up to the end of the tube and the position of the sliding part R is read off the scale. The sliding part is pushed back for removal of the lens cap, and, after uncovering the telescope glass, the part is brought back to the original position. For the reasons given, the telescope is then focussed for infinity and the carrier with the object moved forward until the image of the stop at M can be sharply seen at the eye-piece. The stop is then situated at the focus of the lens under examination.

The tests for spherical and chromatic aberration are made in precisely the same manner as when the telescope object-glass was examined. The sodium flame is placed behind the stop, with small aperture, inserted at M. The stop shown in Fig. 3 is placed in front of the object-glass of the telescope, and the measurements are made for the two extra-focal positions in the telescope. In this way the combined zonal errors of the two lenses are obtained as one, and, as those of the telescope objective are known, those of the lens under examination may be ascertained by the methods described in the "Jahrbuch" for 1892 (see B.J.P., February 20, 1903). The colour curve of the lens may be determined similarly. If it be desired to ascertain generally the achromatic correction of the lens, an ordinary lamp may be placed behind the stop M, instead of using the eye-piece prism, the spectrograph, and the monochromatic source of light. The focus for the different colours may then be ascertained by using the coloured glass stops placed at the eye-piece, as described in the "Jahrbuch" for 1902. To ascertain the position of the astigmatic picture planes, a glass plate with a series of parallel lines (ruled screen) is placed as a test object in the frame M. The telescope is focussed for infinity, and so used for the entire series of measurements, as the micrometer screw P is much more serviceable for finding the exact focus. The telescope is swung on the sector B over intervals of 5 deg., and the frame M is slid on the runner Q to a corresponding extent. After sharply focussing, the measurement is read off the drum of the screw P each time. The ruled screen is used first vertically and then horizontally, and thus the location of both astigmatic planes may be determined. By suitably shortening the extension of the telescope and increasing the distance MR, the aberrations of the lens and the position of the picture planes for infinity may be examined in the same way.

The focus of a lens may be determined in various ways by the instrument. The telescope is focussed for infinity and the 2 m.m. stop is put in the frame M. The diameter of the stop is known to one-thousandth of its value by microscopic measurement. After it has been brought into sharp focus by the screw P, the diameter of the image is measured with the micrometer, the screw of which has a thread of 0.25 m.m. If f be the focus of the lens under examination, F that of the telescope, b the diameter of the stop, and B that of its image, it follows that $f = \frac{F \cdot b}{B}$.

To obtain an exactly defined value, sodium light may again

be used, in which case the value of F should be taken from the data obtained in the preliminary examination.

Instead of the above, a point-shaped stop may be placed exactly at the focus, and the micrometer wire focussed sharply upon the image of the stop in the zero direction of the telescope. The position of the telescope is read off the divided circle B , and that of the frame M , off the millimetre scale of the runner Q . The frame M is then shifted a short distance (about 5 c.m.) sideways and the telescope is swung upon the sector and refocussed sharply upon the stop. If the frame M has been shifted d millimetres and the telescope swung through the angle ϕ , then $f = d \cotg. \phi$.

A third method of determining f is given in the "Jahrbuch" for 1902.

The equation $f = \cotg. \phi$ is also used for determining distortion. If the focus be taken in the manner described for larger values of d and ϕ , we obtain, for example, at a greater distance from the optical axis, the reading ϕ , for the focus of d , and the amount of distortion may be ascertained by the equation $V = d - f \tg \phi$.

The diameter of the effective aperture of the lens and its various stops may be obtained very accurately in the following manner. The 2 m.m. stop is brought into focus in the way we have already described several times. A lamp is placed behind it, and, after the room has been darkened, a photographic plate is placed with its film against the lens. The black circle obtained upon development is exactly the size of the effective aperture of the lens. The angle of view may be measured by placing the lens on the centre C and using the divided circle B . In this way, however, only the extreme angle through which the lens transmits light is ascertained. If it be desired to ascertain the extent of field of useful definition, it should not be done in this way, but deduced preferably from the positions of the astigmatic planes.

The apparatus is not intended to give immediate data concerning those technical properties of a photographic lens which primarily interest the purchaser. These are mostly inexact defined and very elastic conceptions, as for instance, depth of focus, sharpness of image, extent of usefully defined field, etc. They will always be found best by direct trial exposures. The apparatus is intended rather for opticians and scientific institutions that they may obtain quantitative information concerning the fundamental properties of an optical system, such as has hitherto been obtained approximately by calculation. By comparing the results obtained by the apparatus with those of the computation, the optician is provided with a means of testing and perfecting his work.

Dr. J. HARTMANN.

Astrophysical Observatory, Potsdam, April, 1903.

MESSRS. EVANS, SONS, LESCHER, AND WEBB, of 56, Hanover Street, Liverpool, have sent us their illustrated price list of photographic apparatus and materials, etc. It is very complete, and contains nearly everything wanted by the amateur and professional. A copy will be sent to any person upon application.

We have just seen the current issue of the "Birmingham Magazine," edited by W. J. Spurrier. It is a praiseworthy production in every way, well printed on high-class paper, illustrated in lavish style. Special attention appears to have been devoted to the production of the half-tone blocks, and the subjects dealt with, although avowedly of local interest, make very good reading for outsiders. The magazine is worthy of the go-ahead city it represents.

HOOD AND CO., of St. Bride Works, Middlesbrough, have sent us a specimen of their wall sheets, which are being specially prepared for photographers to hang in their places of business in order to show customers different examples of photo engraving. The wall sheets are very high-class productions, printed in various colours on plate paper. A space has been left for the photographer to print his own name, and thus push the sale of half-tone blocks from his own subjects.

RADIUM AND CANCER.

THE Paris correspondent of the "Morning Post" gave on Monday an interesting account of Dr. Jules Rehn's experiments with Radium. He says:—

"Dr. Jules Rehn, of the Pasteur Institute, who is the fortunate possessor of a minute quantity of radium, has supplied me with some interesting particulars of his researches into the influence of this remarkable substance on cancer. His conclusions, so far as they go, are encouraging than those of the London hospital surgeons, who recommend condemned radium as ineffectual in this form of disease. He claims to have completely cured a mild form of external cancer, and to have produced marked effects, amply justifying further investigations, in two internal cancerous growths, one of which was in an advanced stage before the treatment was begun.

"Dr. Rehn operates with ten milligrammes—the sixteen-hundredth part of an ounce—of bromide of radium, enclosed in an ebonite tube resembling the small end of a telescope, with a film of dark brown talc in place of the lens. The talc prevents the passage of only one of three varieties of rays emitted by the radium. The others pass through it as if it were non-existent, and produce identical results on the skin of man and of animals.

"Before proceeding to deal with the effect of these rays on tumours it may prove interesting to note what follows when radium is used on normal skin. Five minutes' application of Dr. Rehn's little box causes absolutely no pain, but twenty-four hours afterwards a red mark marks its appearance, lasts for a fortnight, fades, and ends in a scar resembling that of a burn. If the application be continued for ten minutes instead of five the mark becomes visible in eighteen hours. In neither case does there any pain or ulceration. The latter phase does not occur unless radium has been applied for at least an hour. If the spot thus caused is treated medically suppuration may be prevented and the wound cured in six weeks or two months. If uncared for it gathers, becomes painful, and lasts an indefinite period not yet ascertained. Some of these wounds or burns caused three months ago by an hour's application of radium still show no signs of healing. Moles can be destroyed by applying radium for ten minutes.

"CASES TREATED WITH RADIUM.

"We now come to the first instance of the effects of radium on cancer. The case was one of the mild variety known as papillary epithelioma and the seat of the growth was in the corner of the eye. The radium was kept for half an hour on each of several different points of the cancer. Ulceration appeared on the tenth day, cicatrization on the twentieth, and the result was a complete cure. In passing it may be remarked that the substance was tried for an hour on the eye of a blind patient, but failed to revive the atrophied nerves. The inference were it allowable to draw conclusions from one experiment, is that radium is not likely to restore sight to the blind.

"A cancerous ganglion in another patient's neck was subjected to radium rays half an hour a day for fifteen days. When the ganglion was afterwards removed, it was found that the cancerous tissue inside the capsule had undergone complete decomposition. The corresponding ganglion on the other side of the neck, which had not been treated with radium, presented the ordinary characteristics.

"The worst case treated was one of cancer in both groins. A surgical operation had been performed last August, but it was impossible to remove the whole of the growth, and the patient's death was therefore only a question of time. The effect of radium was to stop the development of a shoot which had made its appearance under the skin on one side. The cancer on the other groin was very large, but its extension has been prevented by frequent applications of radium, lasting for half an hour to an hour, and effected by the patient himself without assistance from doctor or nurse. Cancerous tissue is still present, but in a condition of the patient—who, but for radium, would now be in a grave—is stationary.

"ADVANTAGES OF THE METAL.

"Dr. Rehn is about to treat a cancer in the stomach with radium through the skin, the great penetrative power of the rays being quite sufficient, he considers, to justify the experiment.

"The effects of radium rays on the tissues of the body are similar to those of the X or Röntgen rays, but the metal has the great advantage of being extremely easy to use, whereas the Röntgen rays require considerably in intensity and require skilled manipulation. Radium moreover, never wears out, and can be applied by the patient.

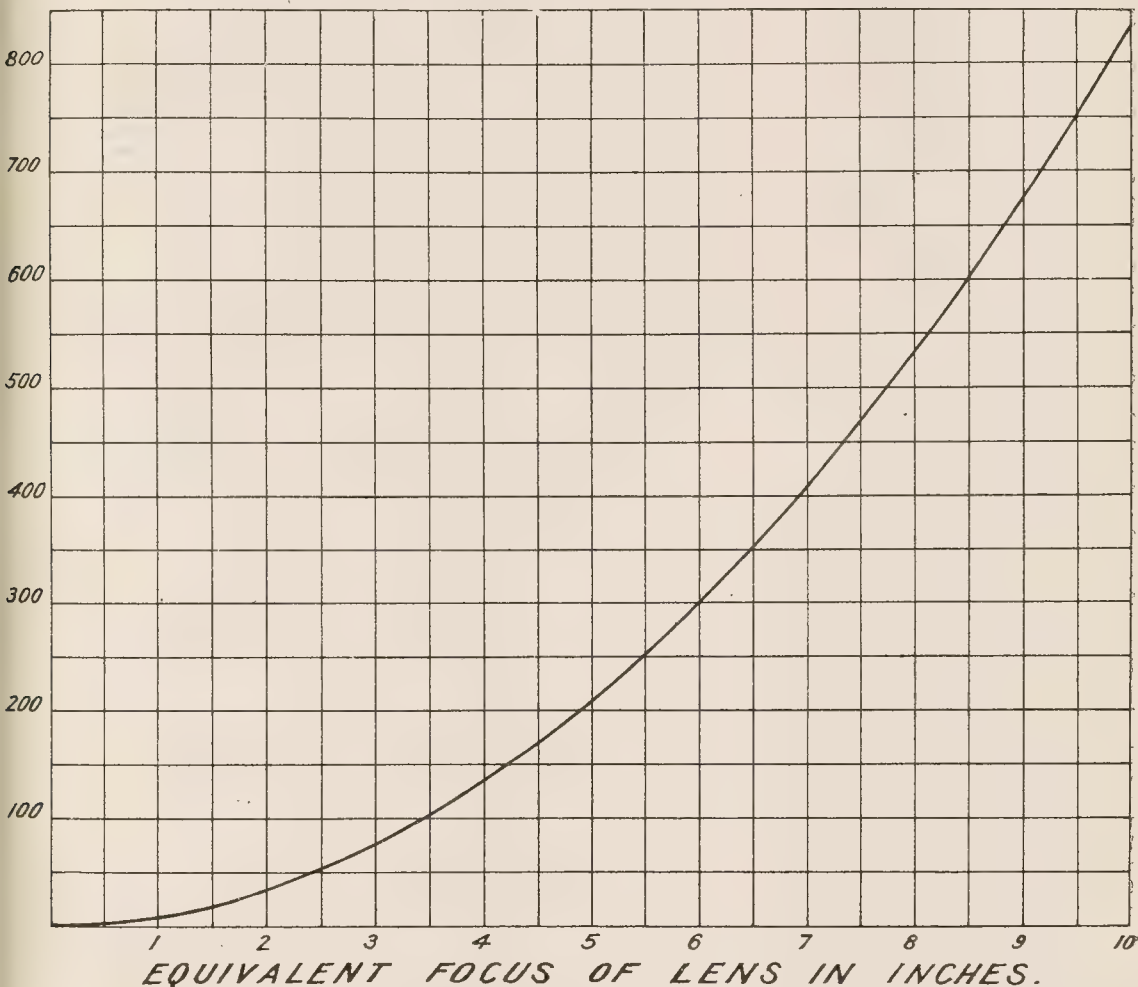
"To sum up, Dr. Rehn's experiments show that radium does produce curative effects on cancer, even internal, and may prove to be a valuable remedy when these effects have been thoroughly observed and investigated."

ABOUT "INFINITY FOCUS."

is frequently useful to know the distance at and beyond which all objects will be in focus when using a lens of own focal length and a given stop. To obtain the requisite information most photographers have recourse to the published tables—if they are at hand—but the writer suggests a simpler method which he worked out, and has now used successfully for some years. It consists in marking each lens with its "constant," which only requires to be divided by the

The following is a list of constants calculated for a confusion disc of 1-100 in. :—

Equivalent focus of lens in inches.	K.	Equivalent focus of lens in inches.	K.
3	75	6.5	352
3.5	102	7.0	408
4.0	133	7.5	469
4.5	168	8.0	533
5.0	208	8.5	602
5.5	252	9.0	675
6.0	300	10.0	833



number of the stop to give the so-called infinity focus or distance beyond which all objects will be in focus.

The constant of any lens is obtained thus :—

Let f_a = focal aperture or stop,

F = equivalent focus of lens, in inches,

K = required constant ;

Then :— $\frac{F^2 \times 100}{f_a \times 12}$ or $\frac{K}{f_a} =$ infinity focus in feet,

and $K = F^2 \times 8.33$.

Example :—

Required, constant and infinity focus of 6 in. lens at f_6 .

$K = F^2 \times 8.33 = (6 \times 6 \times 8.33) 299.8$ (say 300).

Infinity focus = $\frac{K}{f_a} = \frac{300}{6} = 50$ ft.

The infinity foci for other stops will be :—

Stops f_6 f_8 $f_{11.3}$ f_{16} $f_{22.6}$ f_{32} f_{45}

Infinity given in feet 50 37.5 26.5 18.7 13.3 9.3 6.6

Graphic curve of constants.

E. T. RUTHVEN-MURRAY, M.I.M.E., M.I.E.E.

ON THE HISTORY AND LIGHTING OF THE MAGIC LANTERN.

[A paper read before the Royal Photographic Society.]

I do not intend to deal so much with the question of the illuminants of lanterns of the present day, as with some of the more obsolete methods of illumination. There is no doubt that the first conception of the magic lantern was by one Kircher, a Jesuit priest, who lived nearly two hundred and fifty years ago. He discovered a method of producing strange effects by means of shadows, an idea which was largely carried out in the older forms of the optical lantern. In 1802, a Frenchman, named Phillips, astonished people of London with what was known as the phantasmagoria lantern. M. Phillips held the lantern under his arm, making the pictures larger and smaller, according to the distance from the sheet. There is a description of the performance in "Chambers' Journal" of April 28, 1849, and an amusing description of the phantasmagoria lantern also appeared in a catalogue published in 1848 or 1850, by Carpenter and Wesley. The Argand Pot lamp, invented in 1769, supplied air in large quantities to the interior as well as to the exterior of the ring of flame, creating a fierce draught by means of a chimney, and causing the combustion of the unconsumed carbon which otherwise would have escaped into the air. This was improved upon by placing a brass cone over the flame. The lamp was filled with a thick oil, tallow, or lard, and a circular wick, similar to that used in the Argand lamp, or a rough piece of cotton, was employed. The tallow or fat had, of course, to be made hot before one could use the lamp. There was a hole in the centre by which a draught was created to supply the oxygen, and the lamp was about the same size and shape as a lime tin. This lamp was modified, I believe, by Mr. Frederic Newton in 1851, when that known as the Fountain Argand Lamp was produced. In this lamp, the glass chimney was contracted about an inch above the flame in order to increase the light, but this gave way to the brass cone, as used in the old Argand lamp. The contraction of the glass chimney caused a similar contraction of the flame, and gave in consequence a whiter light. This lamp did duty from, he believed, 1851 to about 1874; its light was white and gave no trouble; the supply of oil was conducted from a cistern by a piece of wire, reaching to the bottom, fresh oil being supplied until it was exhausted. Then followed the lamp of Mr. Marcey, of Philadelphia, called the Sciopticcon, which was introduced into England by the late Walter Woodbury. This lamp gave a very white light, the combustion chamber being part of the lantern, which was a disadvantage. This lamp has lasted until the present day, and is the groundwork of all the petroleum lamps. Mr. Marcey used petroleum and two parallel wicks, the hood being part of the lantern. The heat was intense, and some difficulty was experienced owing to the smallness of the combustion chamber. Two small pieces of glass which came in front were used to produce perfect combustion. The rear one, however, was liable to get broken, and there was some difficulty in replacing it. These difficulties were overcome when Mr. Newton, in 1876, introduced a separate lamp of the same character, with two wicks. This was quickly followed by the three-wick Refulgent lamp, which enjoyed much favour. When three wicks were put into the lamp, the heat of course was increased enormously, and with it the difficulty of the breaking of the glasses. All sorts of expedients were tried in order to overcome this difficulty; by annealing the glass, or making holes in the top of the hood to let the hot air out. They could not for a long time, prevent the glass from breaking. There was an enormous draught when the chimney was put on, and this drew up the flames so that small jets of vapour came out and played on the glass, causing it to crack. Nevertheless, this lamp did duty for a number of years. The lamp had a glass at one end, and the other end

of the hood was closed with a metal reflector. The next lamp that was placed upon the market was one which entirely obviated the breaking of the glass. It was found that a piece of sheet glass bent on a hot cylinder would no longer break whatever the heat to which it might be subjected. The reflector was also put outside, so that it could not be burnt. The lamp had four wicks and, to make the combustion complete, a long chimney. But the greater the flame, the more heat there was; and the larger the wicks, the greater the draught, as was necessary to create a good draught or the combustion would not be complete, nor would the light be good. Five wicks were experimented with, but the result was only an increase of heat with no corresponding advantage.

The lamp invented by Stocks was small, convenient, and nicely made. The question of combustion was carefully studied in order that a maximum amount of light could be obtained with a minimum amount of heat. The ordinary amateur lanternist would not go far wrong with a lamp having fixed quantities, but with an instrument or lamp like this, in which the height of the chimney and wicks have to be carefully regulated, he will surely make mistakes. The chimney is in three parts, one with a rack and fine adjustment for getting the maximum light. When lighting a lamp of this kind, it will be found that the more the chimneys are raised, the thinner and whiter the flame becomes, while there will be reduced liability to getting "shadows" due to the flame being whiter than the other part of the disc. One other matter concerning oil lanterns is important, namely, the cotton that is used. The lamp is often simply filled with oil, without thought of the displacement of the cotton, and then we wonder why the light is not good. Cotton for ordinary oil lamps, and also for petroleum lamps, should be perfectly dry, and should fit the holder properly, with no space to spare. Cotton for oil lamps should be soft and loosely woven; but for paraffin lamps the wick should be closer. Since 1876, very little advance has been made in regard to the lighting of lamps.

I do not propose to say much about the modern incandescent gas lighting, nor do I intend to speak at length about acetylene. The incandescent gas light is convenient for people who have a gas supply in their houses, and who do not care for the bother of an oil lamp. The light of an incandescent mantle is not, however, so good as that of a proper lamp. Acetylene has come into considerable use; it is very convenient, simple, and cheap. The only objection I have to acetylene is on account of its smell, but this can be overcome with care. Generator should be made so that the action of the water on the carbide can be stopped at will; with some patterns, one must exhaust the whole charge of carbide, before the generation of gas can be stopped. I now come to lime-light. I have been trying to collect examples of the earlier methods of lighting by lime light, and believe I have before me a fairly representative series. Professor Robert Hare invented the oxy-hydrogen blow-pipe in 1801. A description of this blow-pipe appeared in the "Philosophical Magazine," 1802, Vol. IV., under the title "On the Supply and the Application of the Blow-pipe." Professor Hare explained that the hydrogen should be first turned on, and the oxygen turned on afterwards. He pointed out that the flame thus obtained was smaller than that of a candle, and proceeded to speak of the intense light emitted when the flame was brought to bear upon certain refractory substances. Here, then, we have described nearly as good an oxy-hydrogen jet as we can get at the present day. As a chemist, Hare tried more particularly to fuse refractory substances by his blow-pipe, than to make use of the intense light obtained; but it is apparent that he produced what is known as the lime-light. Lime and magnesia are extremely difficult to fuse, not because they are the most refractory substances in nature, but because of the difficulty of preventing

from being blown on one side of the flame. Sir Humphry Davy was the first, I believe, to apply the blow-pipe to the lime, and he recommended its application for distant signalling. I have here an early form of blow-pipe without an inter-mixing chamber. I do not think that any particular improvements have been made in regard to the blow-pipe, up to the present time, except in the matter of adjustment. It is hardly necessary to say that when mixed the two gases give a much more intense light. In 1826 Lieutenant Drummond invented a method of signalling by means of the lamp. In this lamp there is a flame of spirit, over which was suspended on a platinum wire a small ball of lime. A jet of oxygen was brought up through the spirit flame to the lime. In the Argand Fountain lamp the jet of oxygen passes up through the wick-holder to the centre of the flame. The ball of lime is suspended over the flame about $\frac{1}{2}$ diameter, for it is necessary to envelope the oxygen, in order to make it incandescent. This lamp, you will see, gives a remarkably fine light. It was a lamp of this kind—the Fountain Argand, with oil and lime ball—which Canon Beechey used, fifty years ago, for his trioptic lantern, because the light could be gathered from the three sides, for the whole of the ball was bright, not as in the case of the cylinder. The images in Canon Beechey's lantern were projected from the three fronts and made to register on the screen by means of prisms. There is a great difference in the qualities of lime. The best limes come from the kilns of Nottingham. Artificial limes have been made, but they do not give nearly so much light.

We now come to a device which has gone quite out of fashion, namely, the rotation of the lime by means of clockwork. The rotation of the lime seems a great advantage, because one may turn the clockwork and turn on the gas, and the lamp will not require attention as does one in which the lime has to be turned by hand. Some early types of the oxy-hydrogen lamps with clockwork attachment are before you. Another method of lighting is that known as the oxy-calcium light. In the original form there was a methylated spirit-lamp, with a piece of wick in the front, and a blow-pipe, attached to its side, which blew through the flame. It was at first necessary to keep the lantern level, or the spirit would not flow, but this difficulty has been obviated in the lamp on the table, which allows the projected image to be raised by tilting the lantern without disturbing the level of the spirit-holder. Other interesting specimens of lamps are shown on the table, relics of the days when the lanternist was obliged to carry with him, his own gas-bag, and pressure board, and many amusing stories could be told of the difficulties of lantern lecturing some twenty years ago. As regards mixed gas jets, in 1832, Mr. J. Hemmings, who lived at Camden Town, brought to the notice of the Society of Arts a jet which he called the Safety Chamber. Previously all the jets had been made without a safety chamber. In this jet there is a long tube packed with brass wire, 1-120th of an inch in diameter. The pieces of wire are about four thousand in number, and are driven in very tightly, to prevent the gas from firing back. Firing back with the mixed jets was a frequent occurrence, particularly when bags were used, and firing back occasionally occurs in the present time. This is due to unequal pressure on the gas burner. An excess of hydrogen be maintained there will be no trouble in this direction, but if there be an excess of oxygen and a minimum of hydrogen firing back may occur. The wire packing in Hemmings's jet had the effect of resisting the flame if it endeavoured to run back, causing it to go out. This jet was in use for a considerable time, until, in fact, the makers omitted to squeeze the wires sufficiently tightly, and then the jet got a bad repute. The chamber was next packed with gauze, and I have seen, again and again, the whole of the gauze give way, owing to firing back due to the slackening of the pressure

on the hydrogen, with the consequence that the whole thing was melted. Then there was invented a safety valve which was supposed to close up immediately the pressure was taken off, but this again seems to have disappeared. The ordinary method of packing jets at the present time is by means of a series of perforated plates. The object of the packing is that the two gases shall be perfectly mixed before they leave the jet. The perforated discs which effect the mixing of the gases are separated by metal rings and are contained in a small chamber which is completely filled by them. The two pipes through which the oxygen and the hydrogen come, meet in this mixing chamber, and the gases passing through the holes in the plates become perfectly mixed. If perfectly mixed, the gases, when lit, give a steady and quiet flame. One of the secrets of jet making is that there shall be no resistance to the passing of the gas, for which purpose the interior of the nozzle is very finely finished. I now show a jet having an adaptation suggested by one of the members of this Society, Mr. Andrew Pringle. It is a jet from which, I believe, one can get as much light as it is possible to get. It has what is known as the "Pringle" cut-off. Having adjusted the lamp, for, say, photomicrography, or an ordinary lantern demonstration, one has only to come back and turn up the light to find it correctly adjusted. In the case of photomicrography, after an exposure has been given one can go away and come back after a time, turn up the gas, and find exactly the same quality of light as before. There is also the blow-through jet, which is so well known that I need not refer to it beyond pointing to some examples upon the table. I have also a few jets, showing methods of turning the lime. In the case of the old blow-through jets, one had to open the lantern for this purpose, sometimes every few minutes. Some people like the flat form of lime, but I prefer the cylindrical form, because it allows a fresh surface of lime to be brought in contact with the gas.

There is a great difference, as I have said, in the qualities of lime, but for the oxy-calcium or the blow-through lamps I do not think anything is so good as the ordinary soft lime. For the mixed gas lamps, however, it is necessary to have the hard variety. Some time ago a preparation of zirconia was put upon the market as a substitute for lime. The makers expected it to overcome the difficulty of the breaking of the lime, but it flaked and discoloured. It had the advantage, however, that, when broken up, it could be pounded and used again. It was not affected by the atmosphere, however, would last a long time, and was handy for some kinds of work.

The optical lantern has stood for over a hundred years and shows no signs of losing its popularity. Considering the extent of science teaching by means of the lantern I think we shall soon find the term "magic lantern" connected only with lanterns bought for children in toy shops.

T. E. FRESHWATER, F.R.M.S.

FORTHCOMING EXHIBITIONS.

May 24.—Bristol Eisteddfod. Photographic Section. Hon. Secretary, Arthur B. Cleaves, Westbury-on-Trym, Bristol.

May 11-18.—Plymouth Photographic Society. Hon. Secretary, Wilfred Grist, 105, Old Town Street, Plymouth.

May 16-28.—Photographic Society of Ireland. Hon. Secretary, E. Webb-Smith, care of Royal Dublin Society, Kildare Street, Dublin.

May 24-28.—Devonport Camera Club. Hon. Secretary, A. J. Catford, 78, Charlotte Street, Devonport.

June-October.—Glasgow Photographic Exhibition. Secretary, Art Gallery and Museum, Kelvingrove, Glasgow.

November 23-25.—Hove Camera Club. Hon. Secretary, A. R. Sargeant, 55, The Drive, Hove.

December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.

December 13-20.—Southampton Camera Club. Hon. Secretary, S. G. Kimber, Oakdene, Highfield, Southampton.

Exhibitions.

CROYDON CAMERA CLUB. SEVENTH ANNUAL EXHIBITION.

THIS Exhibition, held in the Art Galleries, 16, Park Lane, Croydon, from 6th to 13th April, has proved as successful as its predecessors, and a good show of work was on view. The exhibits numbered 322, and included work by many well-known photographers. Demonstrations, recitals, and lantern shows were given every evening during the run of the Exhibition, and in addition to the competitive exhibits a collection of pictures, kindly lent by Dr. C. F. Grindrod, and a trade display by the Autotype Company, added interest to the show. The judges—Messrs. Fredk. H. Evans and Fredk. Hollyer and Rev. F. C. Lambert—made the following awards:—

Members' Work.—Section A (any subject): Silver plaque, W. H. Rogers; bronze plaque, Fred. W. Hicks. Section B (any subject, open to members who had not gained an award at any of the Club's annual exhibitions): Bronze plaque, C. Drew, C. H. Austin, and C. H. Austin. Section C (lantern slides): Bronze plaque, H. P. C. Harpur. Open Classes.—Section D (any subject): Silver-gilt plaque, H. Burkinshaw; silver plaque, D. W. Filshil; bronze plaque, A. Bedding, F. J. Mortimer, and H. P. C. Harpur. Section E (lantern slides): Bronze plaque, F. G. Tryhorn, F. J. Mortimer, and Dr. Geo. H. Rodman.

WEST SURREY PHOTOGRAPHIC SOCIETY.

THE West Surrey Photographic Society held its eighteenth annual exhibition at the Railway Hotel, Battersea Rise, on the 13th, 14th, 15th, and 16th inst. Although the meeting-room of the Society, where the exhibition is held, does not possess the best of accommodation for the holding of an exhibition, even one which is small in the number of exhibits, the Society always compensates for its disabilities by providing a collection of pictures which is worth a careful inspection. This year's exhibition was no exception, and although the pictures as a whole did not show any marked improvement over those which occupied their place last year, the standard was at any rate maintained. A picture by W. T. Marriott, which received one of the awards for its pictorial qualities, was particularly interesting from the fact that it was an enlargement from a negative taken with a pinhole. Of course, such are not rare, but it was another example of the pleasing kind of softness of definition to be obtained in this way. Several winter pictures of the London streets by A. Lockett were noticeable for the good rendering of the effect of mist, but the working on the prints in some was rather too palpable. F. G. Tryhorn seemed to have put his best efforts into architecture, and his cathedral interiors were all examples of careful work, and it was for the "Cloisters, Salisbury," that he received an award. "North Aisle, Peterborough," was perhaps the best of W. G. Rowse's architectural studies, but he had an effective landscape in "The Creek." "A Reedy Stream," by F. Cooper, had some good points, but he had not quite made the best of a good subject. R. H. Bartlett's "Tacking" possessed considerable pictorial quality, and among his other exhibits a large proportion were of more than average merit. "Across the Heath," by Chas. A. Clear, which was adjudged the best picture in the exhibition, was constructed upon the most simple lines, and was independent of any particular features of the subject for the pictorial qualities it undoubtedly possessed. "Nature's Mirror," by V. Serin, a decorative composition of tree trunks and their reflections, had unfortunately placed lights, otherwise it was very original and impressive. Two studies of Florentine architecture, by Dr. Pelham Webb, were characterised by extreme delicacy, and pleasing on that account, though not without minor defects. Mrs. W. H. Goy shewed some rather ambitious attempts in portraiture, and these, with a few pictures of children by J. T. Price, constituted the Society's efforts in this branch of photography. The exhibition was open free to the public, and was well attended. The award took the form of a plaque, which had been specially designed. The judges were Messrs. Alexander Mackie and William Rawlings. Awards:—

Members who have not received an award for three years.—Silver plaque, for best picture in Exhibition, Chas. A. Clear, for "Across the Heath"; bronze plaques, Dr. Pelham Webb, for Staircase in the Bargello, Florence, V. Serin, for "Reflections." Members who have received an award during the past three years.—Bronze plaques: W. T. Marriott, for "Flocks of Sunshine"; F. G. Tryhorn, for "The Cloisters, Salisbury."

REPRODUCTION OF MEDALS AND OTHER BAS-RELIEFS.

THE most faithful way is, strictly speaking, to photograph the medal etc., as it stands, in its bright, bare state; but in order to realise the little of the design and inscription is at its best from any one position of view, take your medal, or as a substitute a new coin of the realm, hold it quite still, and look at it, closing one eye. One instinctive shift of the position of such bas-reliefs upon bright metal so as to bring the position successively into the best angle of view for the different portions. Unless the medals under treatment can be dealt with in some way to remove their mirror-like surface, a quite false effect is the outcome, giving blackness where we expected brilliance, and white marks where dark tool-cuts should be seen.

Commercial requirements demand something more than fidelity to effect in a given position—not an untruth, but, shall we say, a little glorification of facts. The metallic glitter of a medal preserved in its condition means a few fine flashing points, but a large area of exaggerated blackness, which is always a source of disappointment to him who first essays to photograph burnished metallic articles.

The customary method of reproducing medals is to obtain a plaster matrix from the medal and a further plaster cast from this—or to obtain the second cast, working only from the matrix without reversal of the negative. Either of these methods is good as to results, but the appointment of a person delicate-fingered enough to deal satisfactorily with the moulding means perhaps inconvenience to workshop routine and undue consumption of time.

Treatment of the metallic surface by the fuming or sublimation method here described involves so little extra either in time or material that a couple of shillings or so beyond ordinary block prices means liberal profit for such work.

Again, medal-winners seldom like their hard-won trophies to be sent out of their town to strange firms for reproduction. Here lies the advantage of the present method; the local photographer can fume the medal or medals, copying and reproducing these in the form of silver prints which may be sent away to the engraver at much less risk.

The process is brevity itself. The medal to be treated is glued at its unwanted side, and a tab of tough thick manilla is attached, and in turn glued to an eight-sheet board. This is placed under a weight for any convenient length of time beyond a quarter of an hour, to ensure firm adhesion. Then a strip of magnesium about four inches long is burnt close beneath the inverted medal. That is all. The result is a surface of delicate grey with the tiniest relief and detail showing magnificently. Stick the supporting card to the copyboard with two drawing pins and let the operator fire away, treating the coat of medals as though they were platinotypes as to time of exposure. Obviously, to show the relief to good advantage, a strong acute-angle side light is necessary, the darker side being devoid of reflector. This fuming method, by the way, does no injury to the medals, the clinging oxide of magnesia being perfectly innocuous to gold, silver, and bronze. It is removed by the gentle application of a jeweller's brush, an old and soft tooth-brush serving as an excellent substitute.

HAROLD HOOD.

BIRMINGHAM AND THE ELECTRIC LIGHT.

(The article referred to by Mr. Spurrier in his letter.)

THE "forward" part played by Birmingham in the perfecting of the electric light is so little understood, that we think it to be of more than usual interest at this juncture to place the facts on record and in due sequence.

The invention of the "incandescent electric lamp" is generally supposed to be of such recent date that few would age it at even twenty years; but it was clearly indicated as far back as 1836, when both in 1841 and 1845 patents were obtained for incandescent lamps. It is in the last we are interested, for the inventor, Mr. Starr, after finding it too costly to get electricity chemically from a voltaic battery for his lamp, was driven to the conclusion that for practical illumination electric machinery driven by power must be used. Mr. Starr designed a dynamo and came to Birmingham to get it made as the first dynamo was made in Birmingham in 1844 under Worrich's patent of 1842. Mr. Starr also perfected a magnetic "regulator" for arc lamps such as has been re-invented and is now in general use, and in Birmingham, in conjunction with a Mr. Peabody, made

other incandescent lamp. Overwork brought about Starr's untimely death in 1846, aged twenty-five.

Starr's lamp passed into the possession of Mr. Mattieu Williams, co-worker (who died in 1899), who showed it in action in the Town Hall here and many times to his pupils at the Birmingham and Midland Institute.

Councillor R. F. Martineau, who has taken great interest in electric lighting, remembers seeing the lecture experiment just referred to, and later on we are able to give his impressions upon seeing the first electrical lighting-up of the Town Hall.

Not only does the honour belong to Birmingham of being the home of electro-plating, but also of the practical obtaining of electricity from magnetism—inventions which have already revolutionised many industries and much of the work of the world.

For thirty years little progress was made in electric lighting, and even not with the incandescent lamp, which seems to have been lost sight of, mainly from the difficulties in the way. However, in 1847 Mr. J. W. Swan, of Newcastle, attended a lecture at Sunderland where an incandescent lamp was shown, and thus interested he took the subject, but the necessary objects and processes had to be invented. In 1860 he made an incandescent lamp with a carbon rod, but still there was not the electricity to light it.

But progress was being made: Professor Crookes (an Englishman) invented his vacuum tubes, which later on were the means of discovering the wonderful X-rays, and Sprengel his air pump, and, most important, dynamos were made sufficiently effective. So Mr. Swan again commenced, in 1877, his experiments for the production of an incandescent lamp with a carbon filament, he having become convinced that metal (with which other inventors were at work) was not suitable. Mr. Swan made the acquaintance of Mr. Stearn, of Liverpool, a scientific amateur who had acquired great expertness in working Sprengel air pump, and the latter engaged the services of Mr. Watson, now well-known here for his lectures on these subjects at the Birmingham Technical School, who had much to do with signing the apparatus for making the lamps. With this combination of experts and apparatus, Mr. Swan was able in 1878 to make a successful experimental lamp.

About this time Mr. Edison, who was at work on electrical inventions, including lighting, directed his attention to these experiments, and went with his usual indefatigable energy and produced a workable carbon filament. To him is due the credit of making known and putting the electric light upon a commercial footing.

But the difficulties of the carbon filaments were overcome by Mr. Swan, 1878-9, who made them from cotton thread, Mr. Edison's bamboo carbons not being so successful. In 1883 Mr. Swan discovered an ingenious chemical process for preparing the carbon filaments from a cotton, i.e., cellulose or anyloid, which is a fluid made by treating cotton wool with acids.

To carbonise the cellulose is an operation of the most extreme delicacy, and upon its perfection, as of the vacuum, the life of the lamp depends.

Still, without the dynamo (which was first made in Birmingham) the lamps would be useless. The Woolrich machine, of which we give a photograph, was made in 1844, by Messrs. T. Prime and Son (Mr. Prime was mayor in 1869), for electro deposition at their magnetoelectric works in Northwood Street, which it did for many years, until superseded by one of modern type, when they presented the original to the Corporation, and it is now in Aston Hall. It was constructed on the principle of Faraday's great discovery of induction, and when the late professor visited Birmingham he went to see it, and expressed his intense delight at seeing so early and practical use of his discovery. Then—the current was obtained from permanent magnets, but now from electrically induced ones. This original machine was loaned by the Corporation to the World's Fair at Chicago, 1893, where it was awarded the official ribbon, etc. Messrs. Elkington (see vol. I. page 24) also had an early dynamo; it had a number of magnets arranged on a circular frame, and was in use in their plating works from 1848 to 1860. An illustration of it will be found in *Thompson's Chemistry*.

The first use of the electric light in Birmingham was upon September 30, 1878, when Fred Maccabe had an arc lamp as an unique novelty at the entrance to Curzon Hall. On October 28, a football match was played at night at the Lower Grounds, Aston, the kick-off being placed at 7 p.m.

New Apparatus, &c.

The "Night Hawk" Perfect Rapid Bromide Printer (Regd.), made by H. Jenkins, Pier Terrace, Lowestoft.

This piece of apparatus, which has been designed primarily to facilitate the production of a series of prints from one negative, appears to carry out in a practical manner all that its maker claims for it. In construction it is a light box, 14 in. by 18 in. by 18 in., with two interior electric glow lamps, which can be connected with any convenient source of electric supply. One of the lamps is positioned behind a red glass panel, and serves the purpose of a ruby lamp for developing, and a safe light for enabling the paper to be correctly placed for exposure. The other, which is fixed by a thumb-screw to a rod with a universal movement, is the exposing light, and can be fixed at any convenient point to suit the character of the negative. This light can be switched on for any period to make the exposures, while the bromide paper is in contact with the negative, and long strips of sensitive paper can be rapidly drawn across the film side of the negative, with recurring pauses of a few seconds while the exposure is being effected. The printer is particularly useful for rapid post-card printing—as many as 400 per hour having been exposed with it. It takes negatives from 12 by 10 to stamp size, and will do all contact bromide printing, including vignetting. The price, including electric lamps, carriers, masks, fittings, etc., is not great, and we understand that Messrs. Marion and Co., 22, Soho Square, London, have taken up the sole agency.

New Book.

"Dictionnaire de Chimie Photographique." By G. and Ad. Braun fils. Librairie Gauthier-Villars, Quai des Grands-Augustins, 55, Paris.

This work is in course of publication in eight parts of about seventy pages each, and may be subscribed for at a fixed price, or the parts may be bought separately at an increased rate. The important operations in photography are described as well as the chemical reactions. Each substance or compound has its formula noted, and its properties and uses are given. One of the principal features of the work is the excellent description of the more important photographic processes, and for this reason it should be of great use to the amateur, if not the professional, photographer. We are particularly impressed with the clearness and precision of expression of the authors. These qualities are of great value in a work of reference. We translate one of the small references to give our readers an idea of the book:—

Hyposulphite of ammonium ($(\text{AzH}_4)_2\text{S}_2\text{O}_3$, (Thiosulphate of ammonium.)

Chemistry.—Deliquescent crystals of very large size and sulphurous odour, obtained when hyposulphite of barium is treated with carbonate or sulphate of ammonium. Hyposulphite of ammonium is very soluble in water, and insoluble in alcohol.

Photography.—This salt would be preferable to hyposulphite of soda for certain photographic purposes, if the price did not exceed that of the latter, as it has the property of being removable by washing with more ease and rapidly than hyposulphite of soda. It has often been recommended in 20 per cent. solution for fixing dry-plates, and it may be used in the preparation of numerous combined baths for toning and fixing.

"THE Photo Miniature" for this month deals in its typical exhaustive manner with "Who Discovered Photography." After a clear run of sixty consecutively comprehensive numbers, each of undeniable practical value, it completes its fifth volume on this side track, but with the encouraging announcement of improvements and an additional 16 pp. per number for the next volume.

THE "Imperial Handbook for 1904" is to hand, and well sustains the character of its predecessors. In addition to the usual collection of useful formulae, etc., articles on "How Plates are Made," "How to Gauge Exposures in Enlarging," "Gaslight Printing," and "The Use of Stops and how to Focus" add to its attractiveness. A postcard to the Imperial Dry Plate Co., Ltd., Cricklewood, will secure a copy.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

April.	Name of Society.	Subject.
22.....	West London Photo. Society...	<i>Platinum Printing.</i> Mr. E. Walker.
22.....	Watford Photographic Union	<i>A Trip to the Pyrenees.</i> Dr. C. H. Hall.
23.....	Aberdeen Photographic Assoc.	Business Meeting.
25.....	Oxford Camera Club	<i>The Delhi Durbar and a Short Tour in India.</i> The Misses Aitchison.
26.....	Southampton Camera Club	Lantern Slide Competition.
26.....	Camera Club	<i>In a Kewish Hop-garden.</i> Mr. S. W. E. Schriwell.
26.....	Glasgow & W. of Scotland P.A.	Annual Lecturette Competition.
26.....	Nottin'gham Camera Club	Slide Criticism.
26.....	Glasgow Southern Photo. Assoc.	Third Annual General Meeting.
26.....	Craydon Nat. Hist. and Sc. Soc.	Microscopical.
26.....	Birmingham Photo. Society	<i>The Multiple Gum-Bichromate Process.</i> Demonstrated. Mr. Jas. Gale.
27.....	North Middlesex Photo. Soc.	<i>Motifing Gradation in Bromide Prints.</i> Mr. J. Sterry.
27.....	Woolwich Photo. Society	<i>Bromide Paper.</i> Mr. C. Churchill, F.R.P.S.
28.....	Bath Y.M.C.A. Camera Club	Annual Exhibition.
28.....	Richmond Camera Club	Print Competition.
28.....	Liverpool Amateur Photo. Assn.	<i>The Scottish Borderlands.</i> Mr. H. R. Oakley.
28.....	London & Prov. Photo. Assn.	<i>Some Experiments with Tricolour Filters.</i> Mr. A. G. Bull.

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION (LIVERPOOL BRANCH).

APRIL 8.—Mr. G. Watmough Webster in the chair. The Chairman proposed that a hearty vote of thanks be tendered to the late Honorary Secretary, Mr. A. F. Mowll, for his past services. The work of organising this local branch had been undertaken chiefly by Mr. Mowll, who had called them together and enabled them to spend many hours to their mutual advantage and in pleasant companionship. Their meeting together, and exchanging ideas and experiences, had been useful to them all, and he hoped, in some measure, to the profession generally. Co-operation was no less healthful in this than in other businesses and professions. There was more work attached to the formation of such a society as theirs than many were aware of, and this had been willingly and capably undertaken by Mr. Mowll, a fact which he was confident all of them appreciated, and it gave him the greatest pleasure to tender to Mr. Mowll this vote of thanks.

Mr. A. Priestly seconded the proposition, and begged to endorse most heartily all the Chairman had said, knowing it was echoed by all the members.

The vote was received with acclamation by the members, and carried unanimously.

Mr. Mowll thanked them sincerely for their kind recognition of his services, which he had given with the greatest pleasure to the society. He had tried to make their branch a success, and though his efforts had not met, he was sorry to say, with encouragement from all the photographers he had been brought in contact with, nevertheless he thought they had to congratulate themselves that they had achieved so much towards forming a representative body. He thought they had a grievance against those photographers who were holding aloof from them at this period of their existence, who were waiting to see whether they were likely to be a power in the photographic world, and to offer immediate advantages. Such men were avoiding their duty; he felt sure he used the right word, and it was regrettable, not alone from the loss of the one man, but the effect of his example on other photographers. He thought, however, that they were firmly established now, and come to stay, and make their existence felt for the good of the profession and everybody in it. Again he thanked them most heartily for the vote of thanks.

Mr. Webster wished to call the members' attention to the sending out of proofs not paid for. He had learned from a firm who were doing amateurs' work for them that they were continually having proofs to finish, tone, and mount, and finished proofs to copy. Photographers were not generally aware, perhaps, of the extent to which they were defrauded in this way, and he hoped they would bear it in mind, and devise a safeguard of some kind.

The question of the examination of assistants then came before the

meeting, and, after a long and interesting discussion, during which various members gave their views on the matter, it was resolved to send to the parent Association the outlines of a scheme drawn up by Mr. A. F. Mowll, as a suggestion from their branch, which, it was hoped, might be helpful to the Committee in London.

It was suggested, re "issuing certificates of qualification to assistants" —

That local centres be appointed by London Committee of P.P.S. to consist of not more than five members, who shall act in the district only.

That a form of question, theoretical and practical, be drawn up by London Committee; the candidate to answer correct two-thirds to qualify.

That all candidates to pay on application for examination a fee of 5s.

That a certificate be issued to local examiners, who will fill should candidate qualify, and return to London to Central Committee, who only can use official stamp.

Any candidate who fails to satisfy examiners cannot present himself again for examination under six months from former examination and must pay on application for re-examination a further fee of 5s.

All fees to be remitted to London Committee.

This concluded the business of a very successful meeting.

THE CAMERA CLUB.

ALTHOUGH it was not exactly a photographic subject, no one could complain that Mr. Alan H. Burgoyne's paper on "Submarine Boats and their History," delivered on Monday, the 11th inst., was not opportune and up to date. But it had a photographic interest well, for many of the excellent pictures thrown upon the screen were shown for the first time in public. Most of us thought that submarine boats were so new to the navies of the world that the numbers could almost be counted upon the fingers of one hand in each country. But Mr. Burgoyne, who has made a study of submarines his hobby, was able to show that the number of such craft afloat or on the stocks is close upon two hundred. With our usual conservative notions, this country lays behind, and although we have by this policy the advantage of profiting by the experiments of other nations it is not a policy which can always be commended. Of course, Mr. lecturer had something to say about the unfortunate *A1* submarine which lately sank to the bottom with her devoted crew. He described this vessel as one of the worst models yet conceived, with a conning tower of exceptional height, which led to the disaster which cost the crew their lives. Whether the submarine came up close to the line in order to show what she could do, or whether she became unmanageable and drifted in the liner's way, will perhaps never be known, but it seems certain that by aid of the periscope the man at the look-out should have had no difficulty in seeing the big vessel approaching. The construction of submarine boats has been kept by different countries as a secret not to be divulged, and the various naval authorities would have been considerably astonished if they could have seen the photographs which Mr. Burgoyne has collected. They showed the outside, and in some cases the inside, of submarines belonging to the different nations, and if there be any secrets they are divulged, to some extent, by these pictures. The historical section of the lecture was interesting, as showing that methods of existing in submarine structures were troubling men's minds as early as the time of Aristotle — twenty-three centuries ago.

On Thursday, the 14th, a very different subject came before the club, the title of the lecture, which was given by Mr. J. A. Formoy, F.R.A.S., being "Suns, and their various stages of Development revealed by the Spectroscope." Possibly, if absent members could have known what an excellent lecture this would be, they would have attended in larger numbers, but Mr. Formoy's audience, if small, was certainly appreciative.

Commencing by showing a continuous spectrum on the screen, Mr. Formoy gave an interesting account of the manner in which the mystery of the Fraunhofer lines was gradually revealed to the pioneer workers with the prism. It is one of those charming fairy tale sciences which have the advantage of being true, and only fairy-like in their near approach to that which has been deemed to be magic.

He told how the bright lines exhibited by an incandescent metal found their counterpart as dark lines in the solar spectrum, and how it was ultimately proved that these lines of darkness showed where absorption took place by the presence of the cooler vapours of the same metals. He showed how these lines were always in one definite position on the spectrum, and how they varied in number, sodium being represented by the well-known double D line in the yellow, while iron on the other hand had about 460 lines as witnesses to its presence. It was Kirchhoff who first submitted the vapour theory of the dark lines to direct experiment, which he did by employing an iron tube five feet long which was closed at each end by a plate glass cap. In this tube he placed fragments of the metal sodium, and exposed the whole to the heat of a furnace. The sodium was reduced to the state of vapour, and by applying a prism to the end of the tube it was found that this vapour turned the bright lines into dark ones. This experiment gave the clue to the problem, and was soon afterwards discovered that the dark lines of the blue spectrum revealed the presence in our luminary of most of the metals which are known on this earth.

It was Father Secchi who noted that the planets gave the same spectrum as the sun, as might be expected, seeing that they borrow their light from him. But when he turned the spectroscope to the distant stars he found a very different state of things. Each star was found to give a different record, but some seemed to have a family likeness, and it therefore became possible to group them into four classes. For the first time it was realised that the orb of day, our beautiful sun, which had hitherto been looked upon as the principal luminary in the heavens, besides being the ruler of the solar system, was not alone in his glory. Indeed, it had to be admitted that he was only one sun amid millions, and far from being the finest, actually belonged to an inferior order of suns. The stars were stars no longer, but vast luminaries, some like our sun, some almost inconceivably hotter, like Sirius, and some which apparently were inferior to our sun. The spectroscope was able to distinguish between these various groups of suns—the brightest, like Sirius, being identified with four dark lines, due to hydrogen. The second order of suns gave a spectrum like that of our own luminary; the third order was found to give a spectrum similar to that of a sun spot, and it includes the variable stars. The fourth order of suns give a very faint spectrum. They seem to belong to a lower group than the others, and have a deep red tint.

Mr. Formoy then dealt with the development of stars from nebulae, and he showed a very beautiful photograph of the Pleiades which had nearly seventeen hours' exposure. Whereas this well-known cluster of stars seems to consist of about nine to the unaided eye, his photograph contained no fewer than 421 distinct orbs, and the principal of these were enveloped in nebulous structures, which were invisible to sight even when aided by the most powerful telescopes. The lecturer concluded his remarks by paying eloquent testimony to photography as the helper of astronomy. Without the wonderful records which it gives, the work of the astronomer would have stood still. It is wonderful to consider how the photographic plate has advanced our knowledge of the stellar universe, and its useful aid is everywhere more apparent than it is in furnishing records of the constitution of these distant suns as revealed by the spectroscope.

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

APRIL 14TH.—Mr. Drage in the chair. As a reply to Mr. Bennett's criticism at the previous meeting that no advocate of lime development had or did exhibit work possessing technical excellence, the Hon. Recorder passed round an album of prints, the negative from which were made having been developed by the time method of development, the developer and time factor being modified to suit the subject and the result required. Mr. Becket did not think that Mr. Bennett condemned factorial development, but an extract from his lecture on the subject, delivered at the Camera Club twelve months ago, showed that he did. Mr. Fry was of opinion that a higher range of good results were possible with factorial development than any other method, that development by judgment often fails, and, regarding pictorial work, a far different method of treatment throughout has to be adopted than for ordinary work, as pictorial results were more a matter of personal feeling and selection than specimens of technical photography. The Recorder promised a paper at an early

date dealing with factorial or time development, promising not to speak later than nine o'clock, so that a good discussion would be possible. The affiliation lecture by Mr. S. T. Harris, F.R.P.S., entitled "Natural History Photography," was read by Mr. Freshwater, who incidentally mentioned that the supplementary base board so strongly recommended by Mr. Harris was his invention.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

APRIL 18TH.—The President, Mr. C. F. Dickinson, in the chair. Some discussion took place as to the competitions for affiliated societies and the position which it was considered the society should occupy in these events. Formerly the society took a very active part in such matters, and it was strongly pointed out that if the old interest was revived the South London could regain the place it previously occupied.

A lecture on "Majorca," written by Mr. G. E. Thompson (of Messrs. Elliott and Sons, Barnet), and illustrated by slides, was then read. The writer travelled by boat from Barcelona to Palma, which is a large town for so small an island. A number of views of the town and surrounding country were shown, curious windmills like gigantic spiders' webs, the old Moorish Palace, and the Stalactite Cave of Arta, where "the maiden-hair fern hangs in profusion from the roof."

RICHMOND CAMERA CLUB.

APRIL 14TH.—Ladies' Night.—Mr. Sargent gave a lecture at the Freemasons' Club on "Java, its People and Temples," illustrated by a large number of lantern slides. He first gave a brief outline of the successive occupation of the island by the Dutch, the English, and again by the Dutch. He afterwards gave a general description of the country and its climate, accompanied by views in town and country. He described its ranges of lofty volcanic mountains, and in connection with these he gave an account of the terrible Krakatos eruption in 1883, which occurred during the time of his residence in Java, and by which upwards of 37,000 lives were lost, enormous damage done to property, and whole towns and villages swept away. The lecturer described the agricultural work of the island in which most of its 22,000,000 inhabitants are engaged, and gave details of the cultivation of rice, sugar, and coffee. He gave particulars of the costume, customs, and mode of living of both Europeans and natives, and afterwards described and showed a number of views of the remarkable old Buddhist temples which abound in some parts of the country, the history of which has been entirely lost, but which are rich in fine carving and sculpture, and which constitute one of the most interesting features of the island. At the conclusion of the lecture a few specimens of the native hand-painted "sarongs," garments worn by the Javanese and adopted by Dutch ladies, were passed round for examination by the audience.

Patent News.

The following applications for patents were made between April 5 and April 9, 1904:—

Dish.—No. 8040. "An improved dish for use in photography." Robert Beel.

Developing Apparatus.—No. 8069. "An improved apparatus for the manipulation of photographic plates and films without the aid of a dark-room." Elea Luboshey.

Backing Sheet.—No. 8070. "A light tight envelope and backing sheet for one or more photographic plates and films, and suitable for daylight charging." Elea Luboshey.

Cameras.—No. 8132. "Improvements in or relating to photographic cameras of the character known as 'Magazine cameras.'" Complete specification. Charles Tyler and England Bros., Ltd., and Samuel Dunseith McKellen.

THE PICTURE POSTCARD.

"CANDIDATES for the new Geographical Tripos at Cambridge will be expected to show proficiency in identifying picture postcards of various places, scenes, and landscapes. Travelling students will have to forward to the Board of Studies complete sets of postcard views of all the countries they visit.

"It is no longer customary for callers to leave visiting cards. Postcards embellished with portraits of yourself or your family are distributed instead. Cards of humorous design, however, must be used with caution, unless they are intended as P.P.C. for good.

"A large extension of premises is about to be made at the British Museum. The new building, as well as the old, will be entirely given over to the storage and display of picture postcards. The previous collection of books, etc., have been sold *en bloc* to Mr. Pierpont Morgan, thereby defraying a part of the immense cost of the new national treasures.

"Sets of the more valuable cards may now be bought on 'The Times' Instalment System. You pay five shillings down and a guinea a month subsequently.

"A postcard 'Who's Who' will shortly be published, containing only those celebrities whose portraits have been thus immortalised. Such persons will be entitled to affix P.W.W. to their names, this distinction ranking next after the Order of Merit.

"The next General Election will be conducted entirely by postcards. Everyone will send a political specimen to everybody else. The revenue will thus be so vastly augmented that there will be no Fiscal Question left to solve. To this happy consummation the Cobweb Cartoons, the Little Loaflets, the Starvation Squibs, the Famine Fancies, and other alluring and alliterative sets, are expected largely to contribute. Candidates' addresses are to be printed on one side only of the cards, thus ensuring desirable brevity, if not wit."—"Punch."

News and Notes.

PHOTOGRAPHIC SURVEY OF THE COUNTY OF SUSSEX.—For some time past there has been a desire amongst members of the Sussex Archaeological Society that an effort should be made to record permanently the very many objects of interest which the county contains, or has contained, and to effect this it is proposed that a Photographic Survey for the county, similar to those already organised and working, *e.g.*, in Warwickshire and Surrey, should be inaugurated. The Sussex Archaeological Society has recently obtained about 400 negatives, 10 in. by 8 in., taken twenty or thirty years ago, of churches of Western Sussex; many of them are of churches which have been since rebuilt or much altered, and these furnish a sufficient proof of the great necessity for the preservation of a record of ancient buildings etc., still existing. This acquisition forms the nucleus of the collection which the Committee for the Survey hope to make. Professional and amateur photographers and societies possessing negatives, lantern slides, and prints of interest, either mounted or loose, are invited to furnish particulars of them to the hon. secretary, with a view to their being catalogued and for the provision of copies. The Committee would furnish a schedule of the objects to be photographed, and provide where necessary cards of introduction to facilitate access to the desired objects. At the same time, this schedule would not be considered exhaustive, but as open to addition or modification as circumstances or local knowledge may dictate. Full particulars will be gladly furnished by the hon. secretary, J. C. Stenning, Steel Cross House, near Tunbridge Wells.

THE Photographic Survey of Kent was well founded at the inaugural meeting held at the Museum, Maidstone, on Saturday, April 16. Mr. H. Snowden Ward, in outlining the history of photographic survey work in the kingdom, reported letters of suggestion and support from the National Photographic Record and Survey Asso-

ciation, the Photographic Survey and Record of Surrey, and many photographic and scientific societies within the county, and read a set of suggestions for rules and constitution. The objects of the record and survey were stated to be—(a) To obtain permanent photographic pictures of objects of literary, historical, archaeological, and scientific interest; of current customs, costumes, and events; and of prominent men and women within the county of Kent; and to deposit such pictures, with explanatory notes, in the County Museum, Maidstone, and in other places where they may be suitably preserved and readily accessible to the public under proper regulations. (b) To facilitate intercourse between photographic societies and archaeological or kindred societies, and to make arrangements for promptly photographing objects which may be only temporarily accessible. (c) To assist in the exchange of prints and in their acquisition by scientific societies wishing to make collections dealing with their own subjects. The provisional committee includes:—Mr. Golding (Sevenoaks), J. Rev. E. W. Banks (Longfield), Rev. Gardner Waterman (Loose), a Rev. C. E. Woodruff (Faversham), Dr. Abbott (Tunbridge Wells) (Sheerness), Harry F. Wingent (Rochester), H. Witcomb (Maidstone), E. W. Andrew (Bromley), Hubert Benstead (Bearsstead), Joseph Chamberlain (Tunbridge Wells), J. C. Dunk (Maidstone), H. J. Ellis (Maidstone), J. Hepworth (Rochester), Chas. Igglesden (Ashford), Jas. Roach (Sidcup), H. E. Turner, B.Sc. (Folkestone), Ben. G. Watts (Sheerness), Harry F. Wingent (Rochester), H. Witcomb (Maidstone), and Norman Wolters (Catford). A sub-committee of five members was appointed to deal with the rules immediately, and the meeting closed with thanks to the chairman. In the afternoon the sub-committee completed a draft of the rules, of which copies may be obtained by intending members on application to the provisional secretary, H. Snowden Ward, Hadlow, Kent.

THE New Gallery.—Mr. C. E. Hallé, Mr. J. Comyns Carr, director, and Mr. Leonard Lindsay, secretary, were on Monday evening entertained by the exhibitors at the New Gallery at a complimentary dinner at the Café Royal. Lord Monkswell presided over a large company which included, in addition to the guests of the evening, Sir W. Richmond, R.A., Mr. J. Sargent, R.A., Mr. C. Perugini, Mr. Spielmann, the Hon. J. Collier, Sir P. Burne-Jones, Mr. A. East, Mr. D. Carr, Mr. J. MacWhirter, R.A., Sir Wyke Bayliss, Sir J. Lint, Mr. C. Whymper, Mr. R. W. Allan, Mr. T. A. Brown, Mr. Brough, Mr. W. Crane, Mr. S. Mclen Fisher, Mr. J. Coutts, Mr. C. Hetherington, Mr. E. Parton, Mr. J. L. Pickering, Mr. C. Smithers, Mr. E. Stott, Mr. A. Stokes, Mr. L. Thomson, Mr. Thorne Waite, and Mr. G. Wetherbee. The Chairman, in proposing the health of the guests, said that exhibitors at the New Gallery wished to do them honour because of the good work they had done both for the New Gallery and for art in general. The institution of this gallery was due particularly to Mr. Hallé and Mr. Comyns Carr. The task which they then undertook was no small one, for they had to combat the ingrained philistinism of the British nation. It was founded for the delectation of the lovers of real and true art. It induced painters of the very first eminence to exhibit at the New Gallery, and, without offending anyone, he might say that the pillars of the new Gallery were, at any rate at its inception, Sir Burne-Jones, Sir L. Alma-Tadema, and Mr. Watts. The New Gallery was cosmopolitan, and opened its hospitality to foreign artists renowned. It had done much to inform and instruct public opinion in matters of art, and to a great extent it had done so successfully. The however, could not conceal from themselves that a great deal yet remained to be done. Mr. Hallé, who first responded to the toast, claimed that the New Gallery was the handsomest and best lighted of all the galleries in London. Mr. Comyns Carr, who also replied, said that he represented the lay element among the guests, the introduction of the literary element into art. He was not prepared to hide his idea about the literary spirit, or to make any confession of weakness in that regard. He believed that the literary spirit was never the condition of any artistic achievement, that unless a man was an artist the literary spirit counted for nothing, but that if a man was an artist there was no burden of the literary spirit which he could not bear. Every great master who had been a great general towering above his technique had, in his opinion, contrived, beyond the mere message of his art and the perfection of his technique, to convey some message of world-wide significance. Mr. Lindsay, replying, expressed the hope that the New Gallery might become a permanent institution.

Correspondence.

- * *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*
- * *We do not undertake responsibility for the opinions expressed by our correspondents.*

MODERN COMPETITION IN PHOTOGRAPHY.

To the Editors.

Gentlemen.—It is just a year ago (April 17th) I wrote you under this heading, quoting prices of chemicals fifty years ago—to wit, pyro per dram, hypo 3s. lb., bromide of potassium 4s. oz. I then promised at some future date to give quotations of prices obtained at that date, to enable the younger generation to compare. I will only give a few extracts from an old ledger—viz., 2 portraits, coloured water in Passepartouts, fifth size (i.e., half-plate), 15s. each; 2 portraits, second size, in cases, 3½ by 2½, 7s. 6d. each; then in 1856, stereo views of house, 15s.; 1 stereo of lady horseback, 4 copies, s.; 2 stereos of lady and dog, 10s.

It will thus be seen the rule was to charge all copies alike. Then I bought all chemicals direct from makers, and albumenised our own paper. As all the stereo work was done some miles from home, involving the necessity of appliances for preparing and developing on the spot being taken there, I think it will be seen how reasonable the prices were, and one asks, Were these times better than now? I say yes, for the photographer, because he had nothing like the present competition.

On April 24th, "Postcard" replied showing how he filled up his home, and stated photographers were largely to blame for the competition of the photo chemist and wholesale view publishers, rough confining themselves almost exclusively to portraiture, and stances one direction in particular—viz., postcards. He stated collotype postcards are supplied by these outside men at from 35s. to 50s. 1,000, while the local man can get them printed from his own negatives at from 18s. per 1,000.

Singularly, within a month, a traveller representing a large photographing establishment called on me to solicit orders, and put into my hand a circular with a large extract from postcards and letters, and on this I found quotation for postcards—viz., printed in sets of twelve, 1,000 each view, 18s. 6d. per 1,000; 500 each, 20s. Now from these figures I wish to point out where the photographer, as a whole, cannot compete. First, I would say, that single thousands can be obtained, produced by outside men, at considerably below 35s., while 50s. would represent coloured ones, i.e., from his own negatives; 35s. would represent those from the publisher's negatives, but he can buy these at 3s. per 100, not necessarily by 1,000. I am not writing by way of complaining personally. I only want to make my point clear re competition affecting the photographer, mainly, perhaps, in provincial towns. Competition is rife in all trades, but the photographer is more handicapped in his work than others at the present than he was fifty years ago. Then he could buy direct from the maker whatever he wanted at the best price ruling; now, if he does not happen to be in the ring, he has to pay at least 15 per cent. more than the local chemist, and, in some cases, 23½ per cent. more for the goods he is using every day, and yet he has to compete in some cases with the chemist in local views, postcards, and portraits, and in developing and printing for amateurs, and the P.P.M.A. would tell you the chemist should have more discount because he stocks goods. To this I reply: Yes, he does stock some, but it can be proved in many provincial towns his stock is most meagre. He may have one maker's plates and paper, but that is all outside of this. He can get them for you in two days." Yes, so can the photographer. I ask, then, Why should the chemist get more discount? What does it matter to the maker who uses his stuff? Let us, as a profession, have free trade and no favour; then would be seen who the cause of the largest sales, and the profit would go in the right pocket. This has gone to greater length than intended; perhaps a year's silence may atone a little. Thanking you for past courtesy. I am, yours,

OLD PROFESSIONAL.

April 19, 1904.

THE ROYAL PHOTOGRAPHIC SOCIETY.

To the Editors.

Gentlemen,—I am a simple country professional, and have for some years contributed my subscription to the Royal Photographic Society, not because it was any use to me, but that I thought an institution of that kind should be supported in the interest of all photographers. On a recent visit to London, I went for the first time to the headquarters of the Society, and the impression made on me was most unfavourable. I found the permanent collection hanging at various angles, dust covered, with the gloss coming from some of the frames, and many of them more or less open at the corners, seemingly falling to pieces. Then, inspecting the work-rooms, I found the same untidiness and neglect, to use no harsher terms. It seems to me that such a state of affairs is most discreditable to what should be our premier Photographic Association, and I cannot understand such evident mismanagement. It is very evident to me that I have been deceived in my belief of the character of the institution I have been supporting, and shall hesitate before renewing my subscription. I shall also dissuade a brother professional from becoming a member at present.—Yours faithfully,

A COUNTRY PROFESSIONAL.

[Our correspondent must have been singularly unfortunate on the occasion of his visit to the Royal Photographic Society's house, which, in an experience of it of several years, we have invariably found well administered and in good order. It is a very poor spirit indeed which sees in a little temporary untidiness a sufficient pretext for resigning from a useful and progressive society. We hope our correspondent's "brother professional" is endowed with sufficient independence of judgment to enable him to resist "A Country Professional's" silly dissuasion. We know of no society of the character of the Royal, which, in return for the humble subscription of £1 1s., gives its members such good value for the money.—Eds. B.J.P.]

THE PIONEER GLOW LAMP.

To the Editors.

Gentlemen,—I am sure you wish to do justice to the British inventor when he is first, so I enclose you the true account of the invention of the "Glow Lamp," more especially as it was Mr. Swan (who is mentioned in your paper last week). In fact, Mr. Swan very incautiously showed and explained his lamp before he should, and it was reported to Edison. That, of course, is a detail; the point is that Swan made the incandescent lamp possible, and I think that all photographers should know this.—Yours truly,

W. J. SPURRIER.

1, Stanley Place, Moseley, Birmingham.

April 15, 1904.

[The account to which our correspondent refers is reproduced on another page.—Eds., B.J.P.]

"CINEMATOGRAPH PATENTS."

To the Editors.

Gentlemen,—I had the pleasure to be operator to Mr. Friese-Greene in 1890, and can testify to the truth of his claim to be the original inventor of the cinematograph. During the early part of that year he told me concerning his ideas of producing living pictures, and I frequently developed the spools of films for him, which were taken with his camera.

As far as I can remember (although I never used it personally) this latter instrument was capable of making four hundred consecutive exposures per minute.

I feel it a duty to corroborate the letter of my past chief, who has ever my respect, both for his geniality as an employer and his remarkable scientific skill, which seems always to have surpassed his luck.—Heartily yours in the work,

A. WHITING.

April 15, 1904.

To the Editors.

Gentlemen,—In your last issue Mr. Friese-Greene, referring to a paragraph in a previous number, expresses his surprise "that a journal of your standing should mention 'Beale's Chœreutoscope,' etc., 'as cinematographs,' and he takes pains to point out that you ought to know better. He does not seem to have read the paragraph in question very carefully, for it merely says in reference to the chœreutoscope that "There is no doubt at all that the germ of the

modern cinematograph is found in this primitive apparatus." In support of this view, I beg to quote from the introductory chapter of "Animated Photography," by C. M. Hepworth (Hazell, 1897), in which it is stated that in the chrestoscope "was embodied a principle without which none of the cinematographs of the present day would be of any use." The pictures were "made to pass through the lantern in a series of jerks with a pause between each," and "immediately in front of the picture was a little shutter which descended and cut off the light at each movement, and immediately reopened again as soon as the picture had come to rest." If Mr. Green's machine did not embody this principle, it is difficult to see how he can maintain that all existing cinematographs are infringements of his patents, as stated in his letter of protest to the "Society of Arts Journal," which you reproduce at length on page 314.—Yours, etc.,

A CINEMATOPHAGER.

April 15, 1904.

SOME NOTES ON THREE-COLOUR WORK.

To the Editors.

Gentlemen,—I am truly sorry that Mr. E. J. Wall took my notes on three-colour work as a personal reflection on his translation of Dr. Eder's work. He being only the translator, I do not think he has any right to take the attitude assumed in his letter of last week's issue. Mr. Wall says, Why drag in orthochrome, which, two years ago, when Dr. Eder's notes were written, was unknown? I say, Why trouble, then, to translate an out-of-date article which, as it does not include present-day dyes, is of little use except to fill space? Possibly his translation is a mere trifle thrown off in an idle hour, and is not to be taken seriously!

Now, I do not for a moment claim to be an authority, but as I have put in six to ten hours a day at colour sensitising and three-colour work for the past two years, in a laboratory equipped regardless of expense, I think I can fairly claim to be in a position to write a few notes on colour work, and detail an account of the ways in which these purple-black dyes can cause confusion. My experiments, moreover, have all been done on a manufacturing scale, with a view to turn them to ultimate commercial use, and therefore I venture to think that an account of my own experiments is as valuable as that of a more theoretical nature.

With regard to giving no indication to the colour distribution in my spectrographs, the Zeiss scale which I invariably use in contact with the plates exposed was lost in the reproduction, but any man who is familiar with the spectroscope will be familiar also with the distribution of colour in the visible spectrum.

If Mr. Wall thinks my notes bordered on the impertinent, I offer my apologies. No one, I think, has more regard for Mr. Wall than myself, for he was the first to give me a helping hand in real photographic work. But for authorities—and he can include my humble self if he please—I care not one jot. Let the BRITISH JOURNAL OF PHOTOGRAPHY give us notes on colour work, on everything, that can be turned to practical account; we look upon it as a scientific and commercial journal, the journal for manufacturing and business photographers; and if on prolonged trial I can turn Wollschwarz 4B to practical account to my own satisfaction, the BRITISH JOURNAL will be the first to receive a detailed account of the work.—I am, yours faithfully,

T. THORNE BAKER, F.C.S.

1, Station Parade, Willesden Green, N.W.

PHOTOGRAPHIC BURNISHERS.

To the Editors.

Gentlemen,—In reply to the question addressed to you by J. Spencer, there seems to be no doubt that the maker of the burnisher he wants is Carl Seib, whose business is located at 5, Grillparzer Strasse, Vienna. The burnisher is called the "Fernande."—Truly yours,

P. EVERITT.

88, Evering Road, London, N.

PSYCHIC PHOTOGRAPHY.

To the Editors.

Gentlemen,—Apropos of your append to Mr. H. Blackwell's letter re psychic photographs, I may say I am as deeply interested in the so-called spirit-photography as I was in the early seventies. I daresay

many of your readers may remember what the late J. T. Taylor published in your pages, and of my experiments, that were also published in the "Medium and Daybreak." I may reiterate that I threw out many challenges to mediums and others offering sums of money, in some cases £20. None of my offers were accepted. I do not think I have had the pleasure of meeting Mr. Blackwell, but first I thought he was a tout to a professed spirit photographer; must be mistaken. If Mr. Blackwell means well and investigation I am willing to assist him or any number of mediums to the extent of £50 or £100, my opponents to select five experts, I to appoint five including myself, the conditions to be subsequently arranged. Show the majority of jurors decide that they have proved their case, will forfeit the aforesaid sum, to be given to some charity. On the contrary, I will expect the opposition to contribute a like amount to the said charity. I may mention that the late J. T. Taylor, at I attended, our first sances together, and we were in each other's confidences, more especially regarding my method of manufacturing shams. Conversations we had during his later years, tended to convince me that he wavered in his opinions regarding certain results. Apart from this subject, I have had an interesting and busy winter photographic campaign in Greece and Turkey. I hope to return home in about a month, when I will have pleasure in giving an exhibition of my photos.—Yours truly,

A. L. HENDERSON.

Corfu, Greece, April 11, 1904.

KEEPING QUALITIES OF PLATES.

To the Editors.

Gentlemen,—Having used gelatine dry plates since they have been introduced commercially, I think I can say that I have had some experience with them, and I must say that they have proved rather more satisfactory than not, so far. I have had, as probably so have others, occasional trouble with them, but I never could find a maker of them to admit that it was his fault or the fault of his plate so that I begin to look at the manufacturer as something like an infallible being, and I would like to continue on that line; but I would also be pleased to have some more rational explanation why plates do not keep as well now as they used to. I may admit that when one goes to extreme sensitiveness the keeping quality may be impaired, but this should not be the case with any ordinary sensitiveness, and by that I mean the plates that will allow the taking of views in 1-20th, or even 1-50th of a second, with an ordinary wide angle lens of say, 8in. focus. These plates used to keep very well and just as well as slower ones, not only in packages as sold but also when kept in the holder as long as one year, without the slightest deterioration. However, not making special trials to the effect, my experience has proved it to my entire satisfaction. I have found that edges, where separated by paper, showed marks on the plates, but this would not extend more than 1-16th of an inch further at least before 1895 or thereabouts, but since then this trouble began to show. Why? (I am always speaking of moderately rapid plates.) Not being able to explain this in a satisfactory way, it was hinted that the fogging of plates came from defective holders. These holders having some brass about them and some defective hinges and joints it could be believed, and may have been true in some or many cases, but with many holders whose shutters draw out only partially, this trouble may easily arise. This was then corrected more or less, and a remedy given until the question arose again, and then it was the fault of the interior finish of the holders and the wood. Then the question arose, why would old wooden holders, having no metal fittings, also on the plates in such a foggy way? I am using such holders, and they date back as far as 1875, therefore should prove dry and inert, and they have shown this to be the case until 1898, when at once plates would show foggy rims all around, from 4in. up to 2 1/2in. or more according to time they were left in such holders (size of plate, 10 by 12). The answer to this was given not very long ago and not secretly to me, but in the B.J.P., as follows:—Plate holders will fog plates, whether said plate holders were old or new, as there was no telling when these wily plate holders would put it into their heads to go back on the poor plate manufacturer first, and afterwards on the owner of them, and play false. Maybe that plate holders have minds of their own, and will admit of some plates and not others. Whatever the case may be, it remains to be explained why plate holders will remain good for 23 years 7 months and 14 days, and

the next day spoil Mr. So-and-so's plate, just in spite of—what? become unmanageable unless! Unless! and just here comes my question. As long as I used moderately rapid plates they would keep well in holders and in packages; now these will do so no more. As I am using now for convenience slow plates, they act just the same as they used to, and for years; they keep well, and just as well in packages as in the holders. Is it the fault of the plate, or the wood of my holders been restored to good health by some magic interference? Who can tell, in these times of spirits and phantoms? One thing I am sure and positive, no manufacturer of plates is to blame for this state of things; but who is?—Yours very truly,

ALBERT LEVY.

Amiens (Seine),
April 17, 1904.

"FALLOWFIELD'S Courier" is the title of the little publication to be issued monthly in the interests of photographic dealers by the well-known firm of Charing Cross Road. It will deal mainly with the latest trade novelties, etc.

The Marquis of Northampton will open for the British and Foreign Astronomical Society on Friday, May 13th, the Observatory and Equatorial scope, just completed by Sir Howard Grubb. This addition to King Edward VII. Nautical School is the gift of the late Louisa Ashburton. The inauguration will be followed by a conversazione astronomical lecture by Mr. E. Walter Maunder, of the Royal Observatory, Greenwich. The instrument is placed on the top of the Observatory's new headquarters at Limehouse, which was opened last year by the Prince of Wales.

The Travelogues of Mr. Burton Holmes.—The Travelogues, which have now the attraction at Queen's Hall for a short season, cannot be better described than the gist of a journey, leavened with information, seasoned with humour, fashioned in literary form, and embellished with pictures that would be hard to beat for both technical excellence and artistic beauty. Suiting the picture to the phrase, Mr. Holmes affords that universal yearning to see and know the wonder and variety of the earth-wide realm of the modern traveller. The telling of the story and its pictorial presentation move on in perfect harmony, producing the illusion of actual travel, which is considerably heightened by the realistic colouring of the fine photographic slides which are projected on the screen. These pictures are interspersed with a selection of animated pictures that help the delightful sense of "being there" amazingly. Mr. Burton Holmes' travelogues should prove as successful here as they have been in America. His present series includes "The Yosemite Valley," "The Yellowstone Park," "The Grand Canyon of Arizona," "Alaska," and "The Golden Klondyke." His illustrations, with a few exceptions, are from negatives made by Mr. Holmes himself, and the colouring of the slides, to which undoubtedly much of the success of their presentation is due, is the work of Miss Katherine Gordon Breed and Mrs. Helen E. Stevenson. Motion pictures made expressly for each travelogue are by Mr. Holmes and Mr. Oscar B. Depue, and speak well for the quality of taking and projecting machines employed. We understand the Kinetograph bioscope supplied by the Chas. Urban Trading Co., Ltd., is used by Mr. Holmes on these travelogue tours.

The Chronophone.—At the Grand Theatre, Fulham, on Thursday (April 14th), a private demonstration of speaking animated pictures—known as "the Chronophone"—was given before a full house, a very favourable verdict indeed was passed by those present on this latest combination of the phonograph and the cinematograph. Chronophone is the English edition of the Gaumont-Messter patents, already considerably exploited in Germany under the title of "the phonophone," and the secret of its success seems to lie in the perfect synchronisation between the talking and projecting machines. It appears to be perfect, and is, we are told, effected by electrical means. Every tone synchronises with its corresponding movement on screen in a manner that appears at first uncanny, but opens up possibilities in the way of production of not only single scenes, but entire plays. The programme presented by the Chronophone on the present occasion included many realistic scenes. One incident was the drilling of a number of soldiers, the words of command ringing out being immediately acted upon by the soldiers. A song from Lohengrin formed another item, and a laughing, jostling crowd at a race-course, a xylophone trio, and a comic coon song were other successful features. Given a really good phonograph, or gramophone, of sufficient power to aid the illusion, and the best films obtainable of the subjects portrayed, a successful future may be predicted for the invention.

Answers to Correspondents.

- All matters intended for the next portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.
- Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.
- Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.
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PHOTOGRAPHS REGISTERED:—

- H. E. Howorth, 16, Dock Street, Fleetwood. Photograph of Life-boat Launch at Fleetwood.
- W. Eastwood, 17, Market Square, Lytham. Photograph entitled "Lost."
- P. M. Bright, Chummen, Lansdowne Road, Bournemouth. Nine Photographs of Gipsy Smith. Photograph of Gipsy Smith with Wife and Daughter. Two Photographs of Gipsy Smith and Daughter. Three Photographs of Combined Photograph and Drawing of Gipsy Smith with View of Cabin and Tent.
- J. P. Blair, Crystal Palace Studio, Chapel Street, Petersfield. Photograph of a Tree Struck by Lightning.
- J. MacMillan, 513, Union Street, Aberdeen. Photograph Copied from Oil Painting of the "Doubting St. Thomas."
- E. T. Bush, 94, Spilott Road, Cardiff. Photograph of Miss G. Jenner.
- E. C. (Twickenham).—We regret we cannot give you the address you require, the letter having been destroyed.

J. H. REDWOOD.—We believe the print meter you mention was one made by the author of the article in question. We do not think it is on the market.

LENS QUERY.—B. JARROW writes: "I have a lens with the enclosed monogram on it. Would you kindly inform me who is the maker?" In reply: The maker of the instrument is, we believe, Valentin, Paris.

ADDRESS WANTED.—E. T. DENNIS.—We regret that we cannot give the gentleman's address as we do not happen to know it. We do not reply to correspondents by post. Why not write to the Editor of the journal that reproduced the pictures you mention?

"JOHANNES" asks: "Is there any book published dealing at all exhaustively with the investigations of Messrs. Hurter and Driffield?" In reply: "The Photo Miniature, No. 56," published November, 1903, deals with the Hurter and Driffield system.

J. W. COOK asks: "Would you kindly inform me where photographic caravan studios can be had on hire?" In reply: We are unable to say where caravan studios can be rented. Occasionally they are offered for sale in our advertisement columns. The best way would be to advertise.

BLIND QUERY.—"STUDIO BLINDS" says: "I should feel greatly obliged if you would kindly inform me as to what blinds I should require for studio with a north-east light? I am leaving sitters' end more at east of studio, and I understand I should want light reflected from other end. I can't take sitters at north end on account of door being placed to face the main road." In reply: For a north-east light pale green or medium blue blinds will be as suitable colours as any.

RESTORING STALE PLATES.—A. DEBENHAM says: "Will you, please, inform me if a number of plates, consisting of old stock, might be made reliable and the sensitiveness ensured by immersion in bromide or other solution, and if so, what would be the best?" In reply: In practice we think you will not find "the game worth the candle." You might try the following bromide of potassium two drams, chromic acid one dram, water one pint. Immerse the plates in this for from five to ten minutes and then thoroughly wash and dry. You must expect to find the treatment somewhat slow.

"DAFFODIL" says: "I have specimens of daffodils to photograph next Saturday, and I would be glad if you can let me know the following. I know they should be taken with a screen but I have not one:—(1) Daffodils being yellow, what colour background should I use? (2) Would Edwards' Iso Plates give sufficient detail in the yellow flower? (3) Using ordinary Iso Plate, Stop 16, and

background you suggest in good light, what exposure would be right?" In reply: A screen would certainly be of great help in securing the correct colour values. Why not get one? (1) A dark background would be best. Dark brown paper without creases would serve. (2) With full exposure, yes. (3) A lot depends on what you call good light, but approximately ten seconds.

SITUATION WANTED.—I have a cousin who wants to get a situation as lady receptionist at some photographer's in London, and also to learn some branches of the trade. Below are the questions which I should be much obliged if you would be so good as to answer:—(1) Is it necessary to pay a premium? (2) Is it not possible to get a situation at a small salary? (3) What are the best shops to apply to? They must be in London and not to live in." In reply: (1) It is usual if the lady knows nothing of the business. (2) Rather unlikely with one who knows nothing of photography. (3) The best way is to consult the "Situations Vacant" column of the Journal, or to advertise in the column devoted to "Situations Wanted." We do not reply to queries by post.

PLATINUM SOLUTION.—"LILY" writes: "As a practical lady amateur I make my own platinum toning bath. This time I have, however, made a stock solution, 15 grains plat. to 15 ozs. water (1 gr. to 1 oz.). I have put it in a clear glass bottle and left it in the light. It has now gone as black as ink. Should it do this, and will this affect its working when I use it to make up a solution to tone matt collodion paper?" In reply: If the solution is in the condition mentioned we expect that it is useless—the platinum being precipitated. We surmise that the precipitation is not due so much to the action of light as to the use of impure water in making the solution—or the two combined.

TONING ALBUMEN PAPER.—"ALBUMEN" writes: "A little information will much oblige respecting toning of albumen paper. What is the cause of deposit in gold acetate bath? I use ready sensitised paper and wash prints with small amount of bicarbonate of soda. Would you advise using bath only? I always make up with distilled water. Also, tell me is it necessary that fixing bath should be stronger than for P.O.P.?" In reply: There should be little or no deposit. It will be well, if carbonate of soda be used in the washing water, that the excess be washed out of the prints before they are put into the toning solution. The bath may be used several times if fresh gold be added at the end of the work. Fixing bath; should be from three to four ounces of hypo to the pint of water.

MEGALETHOSCOPE.—W. E. MANNING writes: "I have one of the original 'Megaletoscopes' made by Ponti of Venice in the middle fifties, in the best preservation, and complete in every detail. With it are many photographs of Venice, Rome, and Florence of the period, specially treated for viewing by direct or reflected sunlight, or by artificial light. The 'Encyclopædic Dictionary' describes it as 'an improved form of stereoscope in which the photograph is considerably magnified, and an increased appearance of sphericity obtained.' The article is a large and handsome piece of furniture, the photographs measure 14 in. by 10 in., and the lenses are large and very powerful. Do you think it would interest a collector of photographic curiosities?" In reply: The apparatus is certainly very interesting, and many, no doubt, would like to possess it. We should recommend you to advertise it if you wish to dispose of it.

FLASH-LIGHT POWDER.—"SMOKER" asks. "Can you give me a formula for a smokeless flash-light mixture? Having frequently to do this kind of work (at dinners, etc.), I should esteem it a great favour if you can oblige me with one. I should be glad if you would say whether it would be safe to keep it ready mixed. I am at present using Bayer's Powder, and although it gives off considerably less smoke than many other makes, I should like a mixture which generates even less, as I understand one or two firms make little or no smoke in their operations." In reply: We know of no formula for a powder that will give off less smoke than that mentioned. Compounding flash-light mixtures in the hands of those who do not understand the nature of the materials they are dealing with is a dangerous operation, and has led to many serious accidents. We should advise you to leave that work alone. "Argentorat" is a very good flash powder we can recommend.

PARAFFIN CASK.—BATTERY.—"DOWN SOUTH" says: "(1) I have, for

storing water in dark room, a cask—capacity about five gallons. The same has been used at one time for hold paraffin oil. When I fill the cask with water I find upon drawing off that traces of the oil are present. Can you, please, give your advice if I can use anything in the water to kill the oil which will not hurt plates, P.O.P., platinotype, or brom paper? Will the oil in water at present hurt the above papers etc., for washing purposes? (2) Some time ago, under 'Cathedra,' I saw a suggestion for the re-charging of carbon which have run out, and making same good for work again. Will you, please, quote formula for same, as I have a lot of waste carbon cells which, if formula works well, will save me considerable expense?" In reply: (1) It is very undesirable that the water be contaminated with paraffin oil, and it is a little difficult to get it out of the wood. We should advise you to treat the cask with a pretty strong solution of washing soda, and let it stand for a few days, and then well rinse with clean water. (2) We do not, for the moment, call the article to mind, probably you refer to a Laclanché battery. If so, you might empty the glass cell and soaking the carbon one for a day or two in clean water and then let it dry for a few days. Then charge with a saturated solution of chloride of ammonia.

MR. EDMUND MACRORY, K.C., died on Monday morning of cancer, after a long illness. Mr. Macrory, who had long retired from practice, was a well-known authority on patent law.

ART IN GERMANY.—Just now it seems, according to the Berlin correspondent of the "Standard," writing on Thursday last week, that there is a pretty little war going on between the artists of Germany and the question was raised in the Prussian House of Deputies as to "What is Art." A similar question has been raised here in connection with a certain style of photography, but that is by the way. It seems that for some time past there has been discontent in German art circles at the somewhat ruthless way in which the Prussian Government has put its veto upon the artists of the Secessionist School. The term Secessionist School in Germany is what is generally known here as the Impressionist School. Dr. Fräger in his speech in the House asked what was Secession? So far as he understood the term it meant secession from routine and from the old regime, and he complained that the Prussian Government treated the Secessionists harshly from the fact that the committee who purchased for the National Gallery excluded a work by a very clever painter, merely because of belonging to the Secessionist School, and added that the Prussian Minister of Art and Education should not forget that over the National Gallery stands the words, "To German Art," and not "To Prussian Art." The Minister of Art and Education in his reply assured the House that equal rights were accorded to all those who represented that which is truly artistic. The question at issue, however, "What is really artistic?" He added that on this point he was, at juncture, unable to discourse at length. This question of schools in art has been a vexed one in Germany, as it has been with reference to photography in England for some years past, and seems still to be a long way from settlement. It is pretty generally understood in art circles that the German Emperor is by no means an admirer of the Impressionist School of Art.

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EX CATHEDRA.

Photography and surveying. The problem of executing virtually instantaneous surveys of a locality by means of photography possesses an easily-understood fascination to many experimenters, but, though certain amount of success has attended the efforts made to combine photographing and surveying, it must be confessed that it is very limited. At the present time there are some authoritative balloon ascents being made with this object in view, and lately an announcement has been made that progress is likely through a paper which has been communicated by Dr. N. Herz to the Vienna Academy on a generalisation of the problem known as the "problem of eight points." We read in "Nature" that it may be stated as follows:—"If from any four points the twelve angles subtended by four objects are measured, or if from any three points the twelve angles subtended by five points are measured, then the relative positions of the eight points are completely determined. The importance of the problem is obvious in connection with the photographic survey of unexplored districts, as by comparing the relative positions of the same five objects on those different plates a plan of the region can be constructed with greater precision than is possible with sketches."

* * *

Photographic effect of radium rays. Our readers may remember the accounts published some time ago of photographs produced by passing an electric current through coins placed on a dry plate, the result being a distinct impression of that face of the coin that was in contact. A somewhat similar effect has been produced by the use of radium emanations in lieu of elec-

tricity by Mr. Henry Stroud, who, writing from the Durham College of Science at Newcastle-on-Tyne, sends particulars of his experiments to "Nature." He says the coin or other object is placed directly in contact with a photographic plate, which is enclosed in an envelope opaque to light. A few milligrams of radium bromide, contained in the usual mica-covered box, are placed some distance above the plate and the whole left for several days. After development it is found that a clearly-defined picture is obtained of the portions in relief of the under side of the coins. Pictures have thus been obtained of the portions in relief on silver coins (half-crown, sixpence, threepence), also of a name engraved on a mother-of-pearl seal. Ten days was the time of exposure, when ten milligrams of radium bromide were placed six inches above the threepenny bit. Ten days also in the case of half-a-crown, when five milligrams were placed 1½ inches above the plate. These effects were first shown by Mr. Stroud at a lecture given by him at the College of Science, Newcastle, and have been shown by him at subsequent lectures.

* * *

A New Source of Radium.

It pays the mining expert to extract gold from ores containing only a few penny-weights to the ton, the processes adopted involving the use of the old photographic chemical cyanide of potassium; but this proportion is infinitely great compared with the yield of radium from pitchblende. This ore, the only available source of radium at the present time, is only found in Austria, and as the Emperor has forbidden its export (though he has generously sent free for experimental purposes a large quantity to the curious), there has been such an enhancement of price for radium salts that the possessors of samples obtained when it was first produced commercially would now be able to re-sell as a profit of many hundreds per cent. In fact, it would be difficult to give a market price for the article; a million pounds a pound has been stated to be a current quotation, though, as we need scarcely say, a pound has never been seen or even produced. Hence considerable interest attaches to a statement that has been going the rounds of the papers lately to the effect that the Swedish chemist Landin has discovered in Sweden a large deposit of ore which is rich in uranium, from which he has already extracted radium. Landin is stated to be keeping the locality of deposit a strict secret until he shall have been able to acquire the ground and prepare the processes for the extraction of radium. Then, again, following on the discovery of uranium in many of the mining districts of Portugal, the Government intends to establish an important industry for the manufacture of radium, from which great results are hoped. A committee was recently appointed to investigate the matter and report to the Government.

A Rival to Radium.

Professor Baskerville, of the University of North Carolina, has made the announcement at a meeting of the Chemists' Club, held in New York, that he has discovered two new elements, for which he proposes the names Carolinium and Berzelium. They possess very remarkable properties, in some respects resembling those of radium. He distils thorium oxide in a quartz tube with carbon and chlorine, and thus produces a greenish, condensable vapour, to which he gives the name berzelium, of a pinkish, crystalline substance, which adheres to the quartz tube, and which he has named carolinium, and a certain quantity of thoria remains unchanged in the tube. In his lecture Professor Baskerville, the room being darkened, exhibited the two elements, and showed that each of them is capable of giving off luminous emanations which will pass through tubes of copper, brass, iron, and glass inserted within one another and covered with cloth. Further investigations are in progress, in which Professor Zerban, of Berlin, will co-operate. One account of these experiments states that the Professor has 5 grams of carolinium and 2.5 grams of berzelium in hand, while another puts down the quantity as three grains, stating that it has taken ten years to produce them, with the further somewhat gratuitous information that "their commercial worth is unknown."

* * *

Spring Photographs.

Last week we had a spell of really spring weather, and a few days hence we enter the "merry month of May." It is not necessary to remind readers that effects are to be had in the spring that are not obtainable at any other period of the year, and, therefore, the opportunity of securing them should not be lost while it lasts, and that often is but for a few days only—that is, for many subjects. Just now there is a craze for picture postcards, and professional photographers in country places, who, as a rule, at this time of the year, are not too fully occupied in the studio, will do well to consider the subject of securing pictures under spring conditions of local scenes. The most saleable pictures are, naturally, those of notable spots—such as churches, ruins, picturesque dells, and so forth. These are frequently—more particularly old buildings—almost entirely surrounded by trees which, when in full foliage, completely hide them when the photograph is taken from the best point of view. If the photographs are taken when the trees are devoid of leaves the pictures look bare and the scene barren. But if the same subject be taken when the leaves are just formed, and with the sun shining upon them, quite different pictures are obtained; the buildings are still to be seen, and the trees surrounding them have not the barren appearance they have when totally devoid of foliage. The same is the case with some glens, which, when the shrubs have put on their full summer garb, do not make such good pictures as while the foliage is still young and light in tint. Therefore many will do well to retake some of the views of the class referred to, so as to present them under the most pleasing conditions, as then they will be the most saleable. Just now the fruit trees are coming into bloom, and these make exceedingly fine pictures, as many painters have shown us, Millais' "Apple Blossoms," for example; but this class of subject seems to be much overlooked by photographers. It is true that photography will not depict these subjects in the brilliant colours of the painter, still, with orthochromatic plates and suitable colour screens, with a full blaze of sunlight, much may be accomplished, often in one's own back garden. It may be well, in connection with this subject, to mention that in all cases when photographing trees in blossom the plates employed should be backed so as to avoid halation, as halation

would completely spoil the effect, or at least very considerably mar it. In fruit-growing districts photographs, picture postcards, of some of the orchards would no doubt command a ready sale, as they would be novelties, a novelty in subject is what is largely sought after in this class of picture. Of course, the time for securing pictures of this type referred to is extremely limited, hence no time should be lost in securing them, for if the opportunity is lost now will not occur again for another year. Hence our reminder.

* * *

A Fraud on Photographers.

A subject of not a little interest to professional portraitists was brought before the last meeting of the Liverpool Branch of the Professional Photographers' Association. It was reference to the sending out of proofs not paid for. The member said he had learned from a firm who were doing work for amateurs that they were continually having proofs to finish, tone, and mount, and finished proofs to copy, and he hoped that some safeguard would be devised to put stop to that kind of thing. We have heard of this before, and remedies for it were suggested in our pages some time ago. So far as the copying of finished pictures is concerned there is no remedy; the customer has paid for them, and has the right to do as he likes with them. But if the customer who has untuned and unfixed proof sent to him has them finished and uses them it is a fraud on the photographer, morally if not legally, because these proofs which are finished are used in place of what the photographer would otherwise have to supply and be paid for. It has been a growing custom of late years with some portraitists to send quite a number of untuned prints as proofs. In former times only a couple or so were sent, whether the sending of a large number of proofs is good policy or not is an open question. It certainly is not if they are put to the use above stated. We have just mentioned that when the subject was mooted in our pages some time ago different remedies were suggested. One, we remember, was that a printed slip should be enclosed with the proofs, with intimation that if the proofs were not returned they would be charged for at the full price. This, we think, is open to the objection that if it were enforced it might give offence to some sitters. A preferable plan, we surmise, would be to write in an iron-gallic ink across the background as near the face, or, better still, impress with a rubber stamp some such words as these—"Unfixed proof." If this were done the print, if toned and fixed, would be of no use to the sitter, and no offence could be taken. If this were systematically done by all photographers it would be a remedy for one of the grievances complained of

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The Exhibition of Specimens.

A fortnight ago, it will be remembered (see page 309 ante), it was pointed out that it was quite illegal for a photographer who had been paid for taking a portrait to print copies from the negative and use them as specimens, although some might possibly not be aware of this actual illegality. Some, we know, habitually, when they take a portrait which they think will make a good specimen for the showcase or shop window, use it as such, and frequently to the annoyance of the sitter. Some sitters, it is true, take it rather as a compliment if their portraits are exhibited. Others, on the contrary, who prefer privacy, look upon the thing in quite a different light, and a natural protest. Sometimes the photographer, as we know from letters we have replied to through the "Answers" column, refuses to remove the pictures from exhibition, as he considers himself within his rights because the negative itself belongs to him, and continues to show it in spite of the

tomers' protests. Many sitters may not know that the law gives them protection against this sort of annoyance, otherwise it might more often be put in force than it is. If proceedings were taken the defiant photographer would find that the costs he would have to pay were no trifle, and the law is quite clear on the point, as previous decisions in the High Courts have proved. It is not, however, so much the legal aspect of the question that we now specially call attention to, as it is to the policy of a photographer showing portraits of sitters against their wishes, however taking they may be as specimens, either as direct prints or enlargements. May well be taken for granted that the sitter will not patronise that photographer, nor will he or she commend him to her friends; indeed, some would use their influence against him, and that might have serious results, particularly in country places and in provincial towns, where so much depends upon recommendation. It is very unwise for anyone to show publicly portraits without getting the sitter's sanction. Some may object to their portraits being shown in the shop window, but not in the reception-room, and some will not object to either. But if permission is asked, whether accorded or not, no offence is done to the customer.

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Photography and Science. We have received the first number of a monthly photographic publication devoted to the scientific aspects of photography. This periodical, called the "Revue des Sciences Photographiques," is published at the offices of the "Photographie," 118, Rue d'Assas, Paris, under the management of Charles Mendel and the editorship of M. G.-H. Niewenwsky. The first number contains articles by Major Gros, on "Photogrammetric Focimetry"; Dr. Lüppomer, on "The Photochemistry of Silver Iodide"; M. L. Thet, on "The Photomicrography of Difficult Objects"; F. Quennisset, on "Photographs of Borrelly's Comet"; Dr. L. Bakeland, on "The Influence of the Hygroscopic State of the Atmosphere in Making Photographic Prints." The proceedings of learned societies, etc., also receive attention. The scope of the work is one of such value to the advancement of photography, and the typography of this first number and the illustrations it contains so excellent, that we have much pleasure in sending it to Charles Mendel and G.-H. Niewenwsky our congratulations and best wishes for the success of their venture.

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Reverse Emulsions Making Photographic Prints. The article in the "Revue des Sciences Photographiques" by Dr. L. Bakeland is very interesting to the photographer who wishes to know something of the difficulties the manufacturers of light-sensitive material have to contend with. Considering the elaborate precautions which have to be taken, it is surprising that paper and plates can be placed upon the market at their present low prices and yet yield a good profit on the capital involved. In the United States, as might be expected, the atmospheric difficulties are intensified by the extremes of heat and cold. The vehicle for emulsions in general use is gelatine, which is easily affected by heat or moisture. Even collodion presents difficulties due to the same causes. With gelatine your troubles begin at 77 deg. Fahr. The setting of the emulsion is affected, and with some varieties it drains off the paper. But if temperature has its own group of troubles for the manufacturer, moisture of the atmosphere brings with it other of greater intensity, and when the two are combined the effects are serious. A definite speed of drying is favourable to the manufacture of each kind of paper, and

this, as might be expected, is affected both by heat and moisture. Bromide papers are more rapid and give less vigorous results if they dry slowly, but quick drying is a condition of success in the manufacture of P.O.P. The latter, if dried slowly when the temperature is high and the air charged with moisture, gives reddish prints, which tone with difficulty, and the paper soon discolours. If P.O.P. is dried quickly at a low temperature the prints will be a purple-blue, and will tone easily. The keeping quality is also better. Another fact must also be borne in mind in coating the paper. The emulsion tends to set as soon as it comes in contact with air at a lower temperature. If the air is dry it absorbs water from the emulsion, and this process also lowers the temperature of the emulsion, and brings it much below that of the air itself. Capillary attraction also plays a part, the water being more or less rapidly absorbed by the paper according to its condition. These difficulties are best avoided by using special means for controlling the temperature and the hygrometric condition of the atmosphere.

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Lines on Bromide Prints.

The irregular, fine lines which are sometimes seen on bromide prints, and which must be familiar to most photographers, are usually attributed to electrical causes. These are also referred to by Dr. Bakeland, who says it is difficult to determine if they are due to static electricity, as they are produced by friction of any sort, and only occur on the surface of the paper. This is proved by the fact that they may be removed by gentle rubbing with cotton-wool. It is known to all that pressure as well as light will produce a developable image upon silver bromide. Sparks are also emitted when paper is quickly unrolled. Dr. Bakeland hesitates to affirm which of these causes produces the effect, but he knows that the presence of a slight amount of moisture in the air of the drying-room will prevent the marks. In a factory of photographic papers the electrometer should be consulted with as much care as the thermometer and hygrometer.

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Diaphragms for Three-Colour Photography.

We see in the "Revue Photographique" that Gustav Selle, whose name is well known in connection with colour photography, has taken out a patent for diaphragms of the sector pattern. The reader will understand the underlying idea by supposing the aperture of the lens diaphragm shaped like the cross section of a quarter of an orange instead of circular. The size of this sector is regulated according to the exposure which the different colours require, and it is intended to make the three exposures of equal duration. Suppose the relative exposures to be 1, 2, and 7; then a circular diaphragm may be made with three sectors of coloured medium shaped to correspond in size to the given relative exposures. As a second alternative three diaphragms may be made with sector apertures corresponding to the exposures. Or a third alternative may be used, giving full aperture for the longest exposure and sector apertures of correct size for the shorter ones. The object of the system is not only to equalise the exposures, but to use apertures of the lens corresponding to each other in quality of definition.

* * *

Galvano-Photography.

The latest idea, according to the "Photographische Mitteilungen," is that of Josef Rieder, who proposes to obtain colour photographs by electrolysis. A polished silver plate was taken and coated with silver iodide by immersing it in a solution of iodine and petroleum ether. The plate

was then exposed to light and fumed with mercury as for the daguerreotype process. After removal of the excess of silver iodide the plate was placed at the anode in the colouring bath, which consisted of a solution of lead oxide and caustic potash. When the electric current was closed colours began to appear, which were modified by altering the distance of separation between cathode and anode. Rieder thinks, as it is possible to produce colours in this way, it may also be possible to regulate their distribution, but the writer of the paragraph, who signs himself Dr. O., expresses a doubt as to its practicability.

THE COLLOTYPE PROCESS FOR POSTCARDS.

THE picture-postcard boom, although perhaps not quite so pronounced as at first, shows no real signs of abatement. Those photographers who seized their opportunity to create a fresh trade, as a welcome diversion for the slack season, are still reaping a satisfactory recompense. It is, however, rather surprising that so few workers have seen fit to adopt the colotype process as a means of reproduction, preferring in the majority of cases, when doing the work themselves, to print in bromide. It can hardly be known how really simple in operation and sure in result the colotype process proves itself once a few leading principles have been grasped. A few remarks on the subject may not be unacceptable to those who are already engaged in the production of photographic postcards or who contemplate undertaking them.

It is a settled conviction with many that an expensive press is necessary. This is by no means the case. An ordinary letter-copying press will do very good work, several patterns of printing-presses may be readily adapted, while an excellent colotype press, taking a plate $10 \times 7\frac{1}{2}$, may be obtained for about seven guineas. The drying oven for the plates, although a great advantage, is not absolutely indispensable; a very good substitute may be quickly made with a suitably perforated wooden box, provided with a metal shelf for the sand-bath, properly levelled ledges for the plates, and a couple of long atmospheric gas burners connected with a rubber tube for heating. The box is open at the top, and covered during use with a canvas lid to allow of free ventilation. The preparation of the glass plates presents little difficulty to a careful worker. Glasses of suitable size are obtainable of any dealer in photo-mechanical goods. It is advisable at first to buy them ready ground; when a little experience has been gained they may be ground as wanted by placing the finest emery powder between the glasses, well wetting with water, and rubbing them over each other till both are sufficiently ground; they are then well washed and dried. Before they can be sensitised a substratum must be applied to the glass.

A good formula is as follows:—Albumen, 5 oz.; potassium silicate, 2 oz.; water, 5 oz. This should be well mixed and filtered, and poured over the plate in much the same way as a varnish. The latter is then placed in a rack to dry; when dry it is rinsed under the tap and again dried. A suitable formula for sensitising is Creutz middle hard gelatine, 1 oz.; potassium bichromate, 50 grs.; ammonia bichromate, 30 grs.; chrome alum, 1 gr.; water, 10 oz. The water is divided into two portions, the gelatine being placed in one and the bichromates and chrome alum in the other. As soon as the gelatine has absorbed the water it is melted by a gentle heat and the bichromate solution added gradually, stirring well. The solution is then filtered through swansdown, calico, or wash-leather before it has time to get cool. For this purpose a filter pump or similar device is very useful. When filtered the

solution is ready for application to the plates, which should be first warmed. The liquid is poured on similarly to a varnish, helping it where desirable with a clean glass rod. It is now placed to dry on a perfectly level shelf or slab in a drying oven for about two hours, the most suitable temperature being about 120 deg. Fahr. Draughts and vibration should be carefully avoided during the drying. The plates should dry evenly, absolutely free from streaks, with a dull matt surface. They are then ready for exposure. A printing frame with wedges or screws is preferable, for postcard work not absolutely necessary so long as clamping pressure and contact can be ensured. The most suitable negative is one that is soft, with ample gradation of detail; hard negatives are quite useless if the best results are desired. The edges of the negative are masked by gumming on narrow strips of tinfoil to the desired shape. Printing is judged by looking at the back of the plate; a faint brown image is visible, and detail should be perceptible in the high lights. Those who prefer it may work with an actinometer after one or two preliminary experiments. Development is effected by washing with water until the bichromate is completely removed; this may take about an hour and a half to two hours. The image will be invisible, but will perhaps show a slight amount of relief. The plate is then stood up to dry. Before it can be printed from it must be treated with what is known as "the etch," a solution intended to be thoroughly damp and keep it in a moist condition. The term is a misnomer, no actual etching takes place. A good formula for this solution is water, 10 oz.; glycerine, 15 oz.; sodium chloride, 25 grs. The plate is levelled and the solution poured over, allowed to remain for from a quarter of an hour to three hours according to the hardness or softness of the plate, a factor which naturally depends on the exposure given. An overexposed plate will need to remain longer under the solution than a normally exposed one. It is better to give, say, half an hour first, then to wipe off the solution with a sponge, and gently dry the plate with a clean rag. The plate can now be placed in the press, inked, and an impression pulled, when, if unsatisfactory, the ink may be removed with turpentine and a further etch given.

An ink slab, a small quantity of thick colotype ink, a nap roller, and a composition or gelatine roller are required. For the ink slab an old lithographic stone may be used, on which the thick ink is to be worked up with a little colotype varnish and a palette knife. The stone should be used as stiff as possible, and is applied to the plate with the nap roller, a fair amount of pressure being used and the work being done rather slowly until the plate appears black all over. The latter is now rolled with a composition roller, more rapidly and with less pressure. This will clean the picture up a good deal, and several proofs can now be taken, when it will be seen whether the plate requires re-etching or other treatment. The margin may be cleaned, if necessary, with a strong solution of lime or by masking the edges with strips of oiled paper. Care must be taken that the plate is well cleaned at the back before placing in the press, as the slightest grit or inequality will cause it to crack under pressure. It must be accurately levelled, and laid on about half a dozen sheets of thick blotting-paper as a bedding. Perhaps enough has been said to show that the colotype process is by no means so difficult as many imagine. With the aid of one of the various excellent and inexpensive manuals on the subject now obtainable it should be quite possible to master the initial difficulties, with a moderate amount of perseverance in a very short time. There are, it should be mentioned, one or two even simpler modifications of colotype, in which the necessity for a glass plate is done away with: these are peculiarly adapted for postcard work, where very large

numbers of prints from one negative are not desired. The photographic worker who makes a chronic complaint of "bad business" is strongly urged to make a trial of the many possibilities of collotype, not only for postcard work, but for the numerous other purposes which will readily suggest themselves, not the least of which is the rapid completion of orders in dull weather.

RADIUM TESTING.

[Reprinted from the "Pharmaceutical Journal,"]

In testing the commercial value of radium by means of the electroscope it is important that a full knowledge of the various steps involved should be obtained. I therefore propose to consider more closely the properties of the various rays under consideration and point out the reasons for certain modes of procedure.

In the first place, it is out of the question to measure the total radiant energy, because all radium salts are sold so enclosed that about 99 per cent. of the total energy cannot escape from the containing vessel, which is usually made of glass or mica. Both of these substances cut off every trace of the gaseous radio-active emanation. The Alpha rays, too, are entirely cut off by the glass, and only the merest trace, if any, can pass through the very thin mica window of the uraninite capsules; therefore in practice we are not concerned with these two forms of emission, but are simply concerned with the Beta and Gamma rays, which, together, constitute the remaining 1 per cent. of the total radiant energy.

It is a singular fact that the therapeutic success already obtained has been the result of this 1 per cent. only; it is with this relatively small proportion that the luminous screen effects, the photographic effects, and electrical properties are demonstrated.

The electroscope does not measure the Beta and Gamma rays directly; what we measure with it is the ionisation of the air produced by these rays. In some way these rays, in passing through any gas, so agitate, or shatter, its molecules, either by simple impact of the projected negative corpuscles, or electrons, which constitute the Beta rays, or by sustained agitation resulting from the neutral Gamma rays, which are probably ethereal disturbances, that it is capable of conducting electricity. When any gas which is ordinarily a very poor conductor of electricity is ionised, it is at once a very good conductor; and so the charge on the electroscope, whether positive or negative, can leak away in proportion to the rays producing this condition. It is most important to bear in mind that ionisation, however produced, does not cease to exist instantaneously. This peculiar condition lasts for a fraction of a second—long enough for the ionised molecules to be blown a few inches.

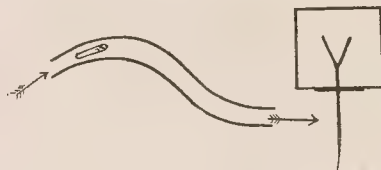
This temporary persistence of ionisation can be well shown as a lecture experiment (see diagram) by placing a tube of radium inside a thick lead pipe, about 2 ft. long, which has been S-shaped, so that practically all the straight line radiation is cut off. If the other end of the pipe is placed near the electroscope there is no discharge, but if the mouth is placed near the end containing the radium a puff of breath through the pipe will blow the already ionised air surrounding the radium through the bent tube, and in this way the charge can be blown off the electroscope like blowing a candle out. It is as well to first blow air through when the radium is not within the pipe, to show that there is no effect without the radium.

It will now be seen that draughts in the testing-room should be avoided as much as possible, for the radio-activity readings may be higher if the air movement takes place from the speci-

men being tested towards the instrument, and it is possible for the reverse motion to give a reading which is too low. This error can be entirely eliminated by letting the distance be fairly great—it is not likely to influence the result, in any ordinary room, at the selected standard distance of 3 ft.

Red-hot bodies also have the power of producing ionisation, but this effect is only produced in their immediate vicinity. However, the air, thus rendered conducting, can be moved over a considerable distance, and so cause error. For this reason any flame should be remote, and smoking forbidden near the electroscope.

Samples should be placed on an equality as much as possible; therefore it is well to allow for differences in thickness of the glass tubes by enclosing all specimens in another receptacle, through which only penetrating rays can pass. If a tin box is used this condition is ensured, and the conditions may be regarded as uniform throughout. The lid should be placed on the box to enclose the ionised air in the immediate vicinity of the sample.



To show the reliability of this method, I may mention the result of a recent test of a glass tube of radium bromide, said to be pure, containing 10 milligrammes, for which a large sum had been paid. The electroscopic needle fell in 313 seconds with the standard specimen tube containing 5 milligrammes, but the specimen to be tested required 1,125 seconds, whereas if it had contained 10 milligrammes of pure bromide it should have discharged the instrument in half the time of the 5-milligramme tube; therefore,

$$\frac{313 \times 5}{1,125} = 1.39 \text{ milligrammes};$$

the radio-activity of the specimen was only equal to 1.39 milligrammes of pure bromide. The vendor insisted it was pure bromide, and disputed my test. This sample was then tested by Sir William Ramsay, who wrote under my certificate confirming it. His actual figures were 1.33 milligrammes.

F. H. GLEW.

SOUTHAMPTON Camera Club.—On April 25 the members of this club held the final meeting of their winter programme. Under the presidency of Mr. G. T. Vivian, a lantern slide competition was conducted. The subject was "Architecture," and the result was a tie between Messrs. W. R. Kay and S. G. Kimber, both of whom produced highly creditable specimens of architectural photography. They will both be awarded the club's certificate of merit. Mr. Kay also gains the certificate for the highest aggregate marks for the competitions of the season. An attractive summer programme has been prepared.

MESSRS. KODAK, LIMITED, have had a letter from Prince Khulkoff, Russian Minister of Ways and Communication, who personally superintended the arrangements for the temporary railway across Lake Baikal during the last six weeks, and the transport of the Russian Army en route for Harbin, for which he was responsible. He was provided with a Kodak—a No. 3 Folding Pocket Kodak—and being a photographer, made about 120 exposures of incidents in connection with the transport arrangements for his Majesty the Czar. These were sent to Kodak, Limited, at St. Petersburg, for hasty reproduction. The work was undertaken, and in less than seven hours the films were developed, fixed, washed, and dried, prints made from them, and mounted up in an album for the Czar.

FIFTY YEARS AGO.

[From the "Liverpool Photographic Journal" (now "The British Journal of Photography") of April, 1854.]

THE second meeting of the second session was held at the Royal Institution, Colquitt Street, on Tuesday evening, April 4, 1854, Mr. Corey occupying the chair.

The Chairman opened the proceedings by directing attention to an article in the "Times" of the previous Saturday, under the head of "The Preparations for War," which he said would serve to convince them of the progress their art was making, and the important functions it was likely to perform to the community at large. He then read the following paragraph:—

"Although the experiments recently made by Captain Scott on the surveying expedition to the Baltic, in taking photographic pictures of castles, forts, coast lines, and headlands were somewhat deficient in finish, they are nevertheless considered highly successful for the object in view. Some of them were executed instantaneously from the deck of a vessel going at the rate of 10 and even 11 knots per hour; though for the delicate manipulation which the process requires, he had nothing better than a sleeping berth at his command. Captain Scott exhibited his pictures at the last meeting of the council of the Photographic Society, where they excited much interest. Some Sappers are now undergoing a course of training by Mr. Thurston Thompson, with a view to the use of photography, as already announced, in the operations of the army in the East. We are also informed that several new cameras are being constructed for the more convenient application of this ingenious and beautiful art to war purposes, both by sea and land. It is proposed that the ship cameras should be suspended, like the compass, on a universal joint, with a pendulum attached, and that those for the field should run on wheels, with a strut to ensure steadiness. The mechanical difficulties in excluding light from the collodion paper used in the process have also been overcome. On shipboard a camera is focussed from the trough of the sea, as is the custom in gunnery practice."

It was little contemplated, he believed, when this process was first set on foot by the originators of the art, that it would be devoted to such a warlike purpose; it was, however, a very great comfort that all the objects they carried out were not necessarily connected with the scenes of war. He then proceeded to state that he had received a letter from their friend Mr. Newlands, who unfortunately was unable to occupy his place as chairman, which he filled with so much credit to them all. It appeared from the letter that the art had been brought to bear in the reproduction of old pictures upon wood and zinc, which could of course afterwards be engraved. He had occasion at a former meeting to call attention to some that had been done on steel; but it was not likely that that process would be practised to any great extent. He did not see why this method of reproduction and engraving, which bore an analogy to anastatic printing, should not become one of the most important branches of their art. As another instance of the progress they were making, he found a notice of what he had just been reading to them from the *Times* in the French paper *La Lumière*. The following is the article alluded to:—

"LA PHOTOGRAPHIE ET LA GUERRE.—Il est intéressant d'observer les développements de tout art nouveau et de suivre les directions inattendues qu'il prend. La photographie, par exemple, a été considérée d'abord comme une curiosité scientifique; puis elle a progressé de jour en jour, jusqu'à ce qu'elle soit devenue un instrument qui, dans la main de tous, prête son concours aux arts et à la civilisation. Elle paraît être destinée maintenant à aider aux opérations de la guerre. On annonce que le gouvernement anglais va attacher des photographes aux expéditions de terre et de mer envoyées en Orient. On

comprend l'importance d'une pareille décision, et les résultats obtenus dépasseront très-certainement de beaucoup les espérances de l'autorité. Il est inutile d'indiquer les nombreuses applications qui peuvent être faites de la photographie à pareille circonstance. Une dépêche, accompagnée de vues photographiques, donnera des renseignements bien plus précis qu'un simple document écrit, si volumineux et si détaillé qu'il puisse être. On peut, avec un objectif, reproduire instantanément des promontoires, des côtes, des forts, des dispositions des flottes, des armées, des positions militaires, et si le stéréoscope peut être employé, rien ne saurait être comparé aux résultats qu'on obtiendra.

Le procédé au collodion semble devoir être le plus convenable pour ce genre de reproductions, et si les avantages de la poudre-coton n'ont pas été reconnus suffisants pour en faire en l'appliquant aux armes à feu, un moyen de guerre, elle pourra, du moins, dans la nouvelle application que la chimie en a faite, en la dissolvant dans l'éther, servir puissamment aux opérations militaires.

"La Société photographique de Londres, avec laquelle le gouvernement s'est mis en relations, ne manquera pas de lui indiquer des artistes capables de seconder ses intentions."

"On dit que lord Raglan se propose d'avoir avec lui, en Orient, un photographe expérimenté. La Société des arts s'est prise, à ce sujet, des renseignements auprès de la Société photographique, et nous croyons que cette idée appartient à prince Albert. Tous ceux qui savent l'importance qu'ont dans une campagne les informations exactes, n'ont pas besoin qu'on leur explique la valeur qu'auraient des dessins photographiques sur divers sujets."

"Nous apprenons de source certaine qu'un photographe de Paris a été désigné pour faire partie de l'expédition d'Orient, et qu'il sera mis à la disposition de M. le maréchal Saint-Arnaud."

He would now call their attention to some beautiful photographs before them, some of which they had seen before, and many others of a similar description; and he had also the honour of having entrusted to him the introduction of M. Kastner, a gentleman then present, who had shown very remarkable talent in the execution of photographic pictures upon ivory. It was the province of this Society to foster and promote talent wherever they met with it, and as this was talent of a very extraordinary character, they should lend their best assistance to further his views. M. Kastner did not come here as an adventurer, merely seeking money, but he wished to promote science by opening a gallery here. If required to give instruction he would be happy to do so; and he wished to develop the art by producing pictures of a most superior character. He would also be happy to give gentlemen his views in private.

Some of M. Kastner's pictures were handed round. We believe that the process of taking pictures on ivory was discovered by Dr. Frank, of London.

The names of several new members were proposed by Mr. Berry, the Secretary—amongst them that of Dr. Dickinson, the President of the Literary and Philosophical Society.

The Chairman said he must call the attention of the meeting to a very important fact. The season was now getting full on; they were pledged to the public to execute something, and to stand in an honourable and elevated position at the time of the visit of the British Association to this town; and he therefore behoved every man to be up and stirring. He had placed in his hand a catalogue from Dundee, where even so early in the season they had produced five hundred and thirty-eight pictures, some of them of very first-rate character. In the preface to the catalogue there were the following remarks:—

"The admirer of Nature and of Art may be fascinated by the beauty of the landscape, or of the human figure, or of the

works of man, and try to carry away a vivid and lasting recollection of the object which so enraptured him; but his memory fails to retain the scene which was delineated for a time with the truth of nature upon the retina of his eye.

"The object of the photographer is to remedy the deficiency of memory, and so to paint and seize the passing scenes as to make their beauties undying.

"The optical glasses of the camera obscura may be likened to the crystalline lens of the eye; and the paper or plate exposed within the camera to the retina. The image falls upon the retina, but disappears. By the chemical process the image falling upon the prepared plate or paper in the focus of the camera can be fixed, and retained, and reproduced, so as to endure for ages."

He (the Chairman) rather thought that they might say that it was the anatomical knowledge of the construction of the eye that gave the first idea of the camera obscura. There were pictures described in the catalogue as "wax paper," "collodion," "calotype," "talbotype," "albumen," "albumen on glass," "iodized paper," etc. "The pictures No. 79 to 84 illustrate photo-lithography, by which it is to be understood that the picture is first delineated, by the agency of light, on a lithographic stone, and afterwards copies are printed off by the ordinary lithographic process." The Chairman then proceeded to say, that, since they last met, some of their members must have experienced failures in the experiments they have made, which failures they ought to communicate to the Society, because they met together for the improvement and advancement of the science, and it was only by exchanging ideas that they could expect to make any progress.

Mr. Bell (the Treasurer) said he should be sorry indeed to show all his failures, especially after trying Mr. Berry's process.

Mr. Burgess said that if he heard of the failures he should also like to hear of the causes. Might he ask if any gentleman had tried the last formula for gun-cotton, given by Mr. Hadow in the last number of the "London Photographic Journal."

The Chairman said if Mr. Burgess had tried experiments himself, perhaps he would favour them with the results.

Mr. Burgess replied that before he did so he should like to hear the experience of other gentlemen who might have succeeded better than he had.

Mr. Berry then read the following paper on "The Chemistry of Iodine and Bromine applicable to Photography."

It is not intended in this paper to enter into the chemical history of these bodies, but merely to detail the properties and preparation of those iodides and bromides most likely to be advantageous to our art. I had hoped to have given the details of an extended series of experiments on the solubility of these different bodies, from my own observation, in alcohol and ether; but I have been unable to devote the necessary time, owing to circumstances beyond my control. I will, therefore, as it were, point out the most promising for future research, with the few facts I have been enabled to collect.

Iodine has been used alone in collodion with some degree of success. Bromine has also been used as a means of rendering more rapid an iodide of potassium collodion, but from its volatility, I really must give my strong conviction that when the collodion film on the plate shall be dry enough for immersion in the bath, the bromine remaining must be rather homœopathic in quantity, and the effect on the plate must be something like that of the mysterious passes of the mesmerist. There are, however, combinations of iodine and bromine certainly worthy of a trial, and here let me point out the very important difference between chemical combinations and mere mixtures of chemicals. It is difficult to give such a definition of the results of chemical action as shall apply in all cases, but for our particular purpose I think the following will be

sufficient, thus:—The production of forms of matter possessed of properties entirely distinct from those of their component parts—for example, take bromine, a heavy reddish brown fluid; very volatile, and possessed of a most insufferable odour; then take potassium, a metal, lighter than water, and whose affinity for oxygen is so great that it takes fire on being placed on water. This inflammable metal, on being chemically combined with bromine, yields these white crystals without odour, without colour, without any metallic aspect, and without combustibility; in fact, can anything be more unlike than bromide of potassium and its elements? This, then, is chemical combination—now for an instance of simple mixture or solution.

These green crystals are sulphate of iron: we are accustomed to dissolve these in water, to form our developing solutions; this is a case of solution, not combination, for if we evaporate the water, we obtain green crystals of sulphate of iron unchanged. I will now give a list of these iodides and bromides which, being more or less soluble in spirit and ether, may possibly become useful as photographic preparations.

1st.—Bromides of iodine, or iodides of bromine, for it is difficult to say which is the electro-negative element. There is one, used I think by M. Claudet, as a sensitive agent for the daguerreotype, which is worthy of a trial as the sensitive for collodion; it is three equivalents, that is 234 parts by weight of bromine, and one equivalent, or 126 parts by weight of iodine; the iodine may be mixed with a small quantity of spirit, say, twice the bulk of the bromine and iodine employed, and the bromine then poured in at short intervals; it is well to do this in the open air, to avoid the pungent vapour of bromine evolved; by this means, a liquid is obtained resembling the original bromine, and a few drops to each ounce of plain collodion might be made for trial.

Potassium, bromide, and iodide are familiar to us all, so that I need not discuss them.

Sodium, bromide, and iodide—their properties are very similar to the potassium salts, the bromide is certainly more soluble in spirit.

Calcium, both iodide and bromide, are very soluble in spirit. I have always found the bromide yield a very quick and stable collodion, and rarely use anything else. I have no doubt the iodide would be found useful to those who prefer an iodised collodion.

Barium, iodide, and bromide are very soluble in spirit, and yielded me a very sensitive collodion—these are quite worthy of trial.

Magnesium—the bromide only is soluble in spirit.

Iron—the iodide, in spirit, gives a very rapid collodion with other iodides or bromides; but I fear the iron salt left in the bath would soon destroy its sensitiveness.

Zinc—the iodide and bromide have both been tried, but I know not with what success.

Tin—this metal forms double iodides with potassium, calcium, etc., and well deserves a trial; it is possible it may form a most rapid collodion.

Cadmium—the bromide has been used with success.

Gold—the ter-bromide formed by the action of bromine and water on powdered gold or gold-leaf is soluble in water. I obtained an instantaneous collodion with it, and shall try more experiments.

In conclusion. The iodides and bromides of potassium, sodium, calcium, barium, magnesium, may be prepared in a precisely similar manner to the process of making bromide of calcium, described by me in my paper upon bromine, in No. 2 of the Journal. And the iodides and bromides of zinc, tin, cadmium, also of cobalt and nickel, are prepared in the same way as iodide or bromide of iron. I would throw out the suggestion that possibly colours may be produced by using the iodides and bromides of some of the metals before mentioned,

either alone or in combination with the iodides, etc., of the alkalies or earths. Trusting that I may have suggested ideas that may be followed up with advantage by those members who may have more time for the research than I possess, I leave the subject in the hands of the Society. I shall be happy to give any further information to anyone requiring it.

The Chairman said the tendency of papers such as that they had just heard, and that Dr. Edwards favoured them with at the last meeting, was to place the Society in a very exalted position. They were no longer like men groping in the dark, in pursuit of that of which they knew little, and using chemicals with which they were comparatively unacquainted. The gentlemen to whose papers he had alluded had shown them how certain results arose, and also where errors might be avoided. Of course, though they had received the suggestions of Mr. Berry with profound attention, they would be glad to hear the experience of gentlemen who might have tried experiments with the formula that gentleman proposed. He begged to thank Mr. Berry for his very luminous paper.

Dr. Edwards said that, at the request of the Chairman, he had made a few experiments with free bromine and collodion, and his experience did not altogether bear out Mr. Berry's conclusions. He certainly thought that the addition of weak bromine, when properly added to the collodion, improved the results. A strong impression, he was aware, existed on Mr. Berry's mind, and with considerable reason, that bromine was so exceedingly volatile, even in ordinary temperatures, that there would seem to be very little chance of so small a quantity as would be used being retained by the collodion film. To prove whether that was the case or not, he added some bromine, in that preparation which was previously dissolved in spirit, to plain collodion, having no other salt present, and tried that film repeatedly, and found that with an ordinary 30-grain silver bath, he got, for at least a succession of 30 days, distinct films of bromide of silver produced. The quantity was certainly very small, and failed to give anything like a distinct impression, but still sufficient to prove to his mind that under these circumstances the collodion did retain a portion of the bromine. He was aware that certain experiments had been made which led to the conclusion that bromine precipitated the iodine from the collodion, converting it into a muddy mixture; but he thought that arose either from the bromine being added in too strong a state to the collodion, by which insoluble matter was formed, or probably a small quantity of water was put in with the bromine, for it was frequently the case that the bottles of bromine contained a stratum of water over the surface, in order to prevent the bromine from evaporating. The only way to preserve bromine was to be very careful in getting it out of the vessel which contained it. He found as a uniform result in his experience, that when collodion was made with five grains of iodide of potassium dissolved in two drachms of spirit, and one drop of bromine was dissolved in another drachm of spirit, if the iodide of potassium was mixed with collodion, and allowed thoroughly to mix first, the addition of the bromine to the collodion made a perfectly bright and yellow-coloured solution; and this collodion appeared to him to be less likely to change than any others. It was a very excellent working collodion; it was more rapid in its results, and in many respects appeared to be an improvement upon the mere iodide of potassium. It contained, as they observed, five grains of iodide of potassium, one drop of free bromine, one drachm of spirit, and five drachms of collodion, to the ounce.

The Chairman asked was not that a large proportion of spirit?

Dr. Edwards: It was a very desirable proportion; where the collodion had a good body in it, that amount of spirit was a very excellent proportion. He must say a little in favour of the presence of bromine, of which he could speak in the highest terms. It required strong baths, at least sixty grains to the

ounce, and in the winter season these baths required to be in a warm room, in order to work satisfactorily; the results with him had been certainly unexceptionable, but he had found a very large proportion of amateurs who had tried the collodion and failed, and it certainly was not quite as straightforward to get pictures from it as from the other collodion. He was not speaking from his own experience, but from the experience of scores of persons, to whom he had recommended it as a good and quick collodion, and who had never been able to make anything of it. He recommended those who had recently begun the collodion process not to be impatient to use the new formula. A person working steadily with one collodion would meet with more success than if he ran about from one formula to another. If he continued to take up every fresh idea in collodion, previous to having been perfectly initiated into the processes, he would find that his experience in making pictures would last much longer than necessary. He therefore advised amateur photographers rather to purchase their collodion than make it. It might be said they could make it a great deal cheaper than they could buy it. Granted. But how many of their pictures did they succeed with? If they got good pictures it would be an extremely cheap process; if, on the contrary, their productions were failures, they would have no reason to congratulate themselves on its economy. He now wished to ask Mr. Berry a question with regard to the iodide of iron. He must say that, in his experiments with it, he was not satisfied with the result; either as to quickness, or in regard to the collodion generally. He had never been able to depend upon iodide of iron, and he knew several persons who had been disappointed with it, although they had taken care to have the other substances in a proper state. He had found that it very soon got to and destroyed the collodion, and he had abandoned its use altogether.

The Chairman inquired whether, before Mr. Berry commenced his reply, any other member wished to make an observation.

Mr. Burgess said he had tried the experiments mentioned by Mr. Edwards, and he found that the results were nearly as that gentleman had stated. He suggested the desirability of producing a picture with the different descriptions of collodion in order that they might be enabled to judge of the relative merits of the productions, and he was understood to undertake their execution and exhibition at a future meeting.

Mr. Keith said that he was the first to recommend, at the July meeting, the use of free bromine; he had since used it almost constantly, and found it worked better than simply iodised collodion. The cloudiness complained of was perhaps caused by the precipitation of the iodide of silver, but he had always found it clear, at any rate, in a day or two. In regard to the iodide of iron, he did last summer produce instantaneous pictures with it, but he had not been able to repeat them with success.

Mr. Berry, in rising to reply, said he had to thank the meeting most cordially for the kind manner in which they had accepted his paper. With regard to the use of free bromine, he had heard from both Dr. Edwards and Mr. Keith that there really was a different action produced by its use, and of course they must take it for granted that it was so. At the same time it appeared strange to him that an agent so volatile as free bromine by being poured backwards and forwards on a plate did not diminish every time; it could not be identically the same as when the plate was first coated out of the same bottle. As to bromine precipitating the collodion and making it muddy, he never found it do so; but he had found with some collodion that even the addition of a very strong alcohol would precipitate the gun-cotton, and it required water to make it soluble again. As respected the iodide of iron, although he certainly had obtained the results which Mr. Maconochie had described, he did not think it worth the trouble of following up. He had seen

of it to a gentleman near Lancaster, and at the same time him that he expected he would obtain pictures in the fraction of a second; but he (Mr. Berry) had not found it much quicker than double iodide and bromide of ammonium. He received a letter from the gentleman, stating that he found it to be very much quicker than anything he had ever tried before; but if he worked with it more than half an hour the collodion was spoiled, and of course retarded the action very much; so that it was clear it could not be worked long with a degree of safety.

Mr. Edwards thought Mr. Berry, in his paper, had proposed, either on collodion or paper, hydrochloric acid as a sort of corrective against any free carbonate, without alkaline reaction, also as a means of preserving the bath. He thought it was possible that bromine might be there in sufficient quantity to prevent that, and preserve the state of the bath, by producing a reaction of bromine in the bath, and in that case it might have an indirect effect, by its presence as free bromine, by its being used as a corrective of alkaline reaction. He did not think at a moment that it was in the volatile state of free bromine. He thought all these substances entered into something like a chemical union. They reacted with solid salts, and, just as in a pure solution, it would be impossible to get them back in precisely the same state, or the cotton in precisely the same state, as they were previously. He thought that there was merely a union of them, but that some organic compound was formed. Hence, he thought, arose the superior sensitiveness of gun-cotton film to paper and some other substances.

Mr. Berry said that his idea quite coincided with that of Mr. Edwards, with regard to the action of materials put into collodion. It would be a rich mine of discovery to ascertain what compounds are actually formed by the reaction of the different chemicals employed after the collodion had been prepared for a considerable time.

Mr. Edwards directed attention to some photographs of the kind on which lay upon the table. The mechanical difficulties had been overcome, and they had reason to hope that the result of their labours would be successful. The best images already obtained had been converted into negatives; but those now exhibited were sufficient to show the meeting the extraordinary results obtained.

Mr. Bell said he had been requested to present, for the inspection of the Society, a series of 33 views taken on wax-paper by a friend of Mr. Carr. He thought they would all be very beautiful indeed.

The proceedings were brought to a close by the exhibition of one of Wheatstone's stereoscopic cameras, by Mr. Morecroft, whom the thanks of the Society were tendered, on the motion of Mr. Frank Howard.

We should add that Mr. Jones, who had undertaken to read a paper on "Light and Shade," was not present, and consequently the meeting was disappointed in that respect.

The Weights and Measures Bill, designed to secure greater uniformity in the administration of the law relating to weights and measures, was read a second time in the House of Commons on April 15. In moving for a second reading, Mr. Bousfield explained the provisions of the Bill, and pointed out that the fourth section of the Bill had reference to the metric system. It was proposed that after January 1, 1908, the two abnormal systems of troy weight and apothecaries' weight should be abolished in favour of the metric system. This would produce no disorganisation of trade, and would be an instalment of the reform desired, which, although a measure was now before the other House, it was unlikely that any Government would make *en bloc*, as would at first result in unpopularity. In the subsequent debate many objections were raised to this section of the Bill, and it was the understanding that the section referring to the metric system was to be withdrawn that the Bill was read a second time.

NESTS, AND HOW TO PHOTOGRAPH THEM.

So forth issu'd the seasons of the year;

First lusty Spring, all dight in leaves of flowers,

That freshly budded, and new blossoms did bear,

In which a thousand birds had built their bowers.

SPENSEE.

WITH the advent of spring comes the season of courtship amongst the birds. From every meadow, glade, and hedgerow come the rustle and flutter of wings, and the glad, joyous music of innumerable feathered songsters. Demeter, the great Earth-Mother, is sending the breath of life once more over hill and dale, through woodland and valley. As we ramble along the country lanes, at every step we take our eyes are arrested by tokens of her presence, and of the reawakening of Earth's children from their long winter sleep.

But it is more particularly with the springtime work of the birds that we are now most keenly interested. In the gray of the dawn the early pipe of half-awakened birds has set us longing to be out with camera on back, tramping through the fields and lanes once more, on a nest-photographing expedition. It is a longing which must be very promptly gratified, if we are to obtain a good series of photographs this season, for nest-building operations are in full swing, and indeed many are already completed.

Few collections of photographs are of greater interest than a good series showing the building of the nest, the nest completed and ready for the reception of the eggs, the nest containing the eggs, the mother-bird sitting, the nest with the young birds therein, and lastly the deserted nest when the young fledglings have flown. Nests are to be found in very varied situations, in bushes and trees, in holes in sandbanks and cuttings, in the hollows of trees, amongst reeds and rushes, on the ground, on rock-ledges on the face of the cliffs, and amongst the shingle high up on the sea-shore. Those nests which are built in trees and bushes, from an artistic point, are the most satisfactory to photograph. The great variety in the shape and construction of the nests themselves, and the varied environment in which they are built, offer almost endless possibilities for the production of artistic and interesting photographs. A brilliantly sunny day is by no means ideal for photographing nests, on account of the severe contrasts between light and shade, which produce an unpleasant spotty effect. A bright day with plenty of light, white clouds in the sky will enable us to obtain far better results. The greatest trouble in photographing nests built in trees and bushes is the wind, which, blowing amongst the leaves and branches, causes constant movement, and necessitates very curtailed exposures. With nests built in a fork, or amongst the small twigs at the outer end of a branch, the wind is a very serious trouble to the photographer, swaying the branch backwards and forwards, in and out of focus. If the branch is within reach, the wind trouble can be got over with the help of some stout string and a couple of wooden pegs driven into the ground. But in adopting this anchoring process care must be taken that the natural growing position of the branch is not seriously disturbed, or a very unnatural and peculiar-looking picture will be obtained. Care must also be taken in fastening back branches and leaves which obstruct the desired view of the nest. On no account should these be ruthlessly cut away; for in the first place the nest will appear with an absolutely unnatural halo of freshly cut twig ends, and secondly will permanently expose the nest to view, and, if it does not cause the parent-birds to abandon it altogether and build afresh, will endanger the lives of their offspring needlessly.

Where shadows are very heavy, a piece of white cloth and a good sized pocket mirror will be found most useful and effective reflectors.

Nests placed high up in the topmost branches of trees, like

crows' and hawks' nests, are by no means easy to photograph, and generally have to be taken from a neighbouring tree. In this class of work, a good pair of climbing irons are an absolute necessity. On no account should the photographer attempt to climb to the top of a tree with his camera strapped on his back. Let him first ascend with a cord, one end of which is attached to his camera placed on the ground under the tree, and when he has gained the vantage point from which he can obtain the best view of the nest, he can then draw his camera up by means of the cord. He will in such situations often find the cord useful to lash himself to the tree or branch, so that both hands may be free to manipulate the camera.

Photographing the nests of sea-birds, built on the ledges on the face of the cliffs, is dangerous work, calling for the greatest coolness, presence of mind, and resource in the face of unexpected difficulties, great determination, and considerable physical powers. It is one of the most dangerous branches of natural-history photography one can take up, but, like mountain-climbing, it has a charm peculiarly its own. What beautiful and interesting results can be obtained in this branch of nest-photography is fully demonstrated in the magnificent work and productions of the brothers Richard and Cherry Kearton, whose untiring perseverance and resourcefulness have won them the well-merited admiration of all true naturalist-photographers.

Nests that are built on the ground, although more accessible than those in trees and bushes, are in many respects far more difficult to make into artistic photographs. The most common fault is that the photograph is taken looking down on the nest, giving a sort of "bird's-eye view," and very little idea of the general surroundings. A very short tripod should be used, or, better still, a camp-stool, or log, or boulder; the lens must be stopped down so as to give the maximum depth of focus, and a full exposure given. A screen of cloth fastened to a couple of jointed sticks will be found useful to shelter the nest from the wind during a long exposure. When eggs are present in the nest, they must on no account be touched or their position disturbed in any way, or an unnatural photograph will be obtained. I have seen many photographs which would have been most admirable pictures rendered quite worthless on account of the photographer having rearranged the eggs.

In all nest work a lens of considerable focal length and a long-focus camera will be found most useful. The tripod should have telescopic legs, so that it can be used for bush and ground nests. The most satisfactory results will be obtained when a full exposure can be given; and, whenever possible, an orthochromatic plate should be employed. A telephoto lens forms a very valuable addition to the outfit.

F. MARTIN DUNCAN.

MR. BARAGWANATH KING, of Plymouth, who is one of the judges of the forthcoming Plymouth Photographic Exhibition, has had a very high honour paid him. On Friday last her Majesty the Queen, accompanied by Princess Victoria, paid a private visit to the exhibition of his water-colour drawings of "Scotland, from the Trossachs to Skye," at Graves' Gallery in Pall Mall. How greatly the Queen was impressed by this distinguished artist's work may be judged from the fact that in the afternoon the King himself went to inspect the drawings. Before his Majesty arrived Princess Christian also visited the Gallery. Her Majesty bought four of Mr. King's water-colour drawings. One was "The Shore, near Mallaig," a superb little sea scene of rolling clouds and deep blue water. Another is "Nightfall, Oban," with its fairy-like lights round the water and the hills. The others were "The River Lochay, at Killin," and "A White Squall off the Hebrides." In the afternoon his Majesty, who was attended by Captain Seymour Fortescue, purchased two drawings, "A Grouse Moor above Crianlarich," and "Loch Lomond from Tarbet." Mr. King is to be warmly congratulated on the Royal appreciation of his works.

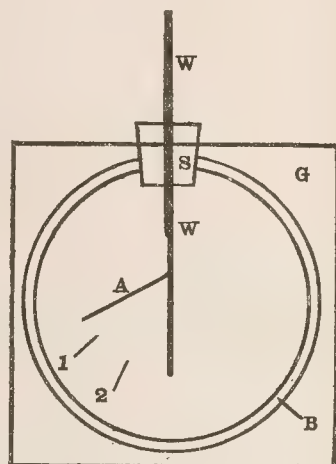
SIMPLE INSTRUMENT FOR ESTIMATING RADIUM.

To make the electroscope (shown in the illustration), procure a No. 1 turned wood box and cut out the bottom, drill a hole (about $\frac{1}{2}$ in. diameter) in the side—this hole can be made with a red-hot poker without risk of splitting the wood—next, flatten the edges of box B by rubbing on sand-paper; now smear these edges with Seccotine, and clamp between two lantern-slide cover-glasses (G), a little stick sulphur in a dish or iron spoon (using as little heat as possible) and pour into a 1-drachm pill box. When set, the cardboard should be removed and the sulphur plug (S) must be trimmed taper to fit the hole in the box.

Procure a stout piece of copper wire (W), about 4 in. long, hammer flat a strip (at one end about $1\frac{1}{2}$ in. long by three-sixteenths broad), smooth this flat strip and stick on it one end of a piece of aluminium foil (A), about 1 in. long by $\frac{1}{8}$ in. broad, as shown.

It is an advantage to have one of the cover-glasses of finely-ground glass, rough side outwards (tracing-paper stuck on plain glass will do). The upper round portion of the wire must now be made hot, then pushed quickly through the sulphur plug, until about 2 in. protrudes above the stopper. The wire will quickly set in position, any adhering sulphur may then be scraped off the wire. Now adjust the stopper in position, and fix it in place with a drop of sealing wax.

The electroscope is now complete. It is best charged by means of



camel's-hair throat brush—just drawing the brush over one's coat sleeve gives the brush a positive charge of electricity—now touch the copper wire with the brush, and the aluminium leaf will be seen to stand out in proportion to the charge so given; and if the surface of the sulphur stopper is clean some charge can be retained for a day or two. Whenever the sulphur gets dirty it should be cleaned by scraping with a knife, the surface should never be touched with the fingers.

It is now necessary to graduate the ground glass by making pencil marks (No. 1 and No. 2). The instrument is now ready for use.

The graduated ground glass should be turned towards the observer, a candle, or small electric lamp, must now be placed opposite the glass window (2 or 3 yards away), so that a sharp shadow of the movable leaf is thrown on the ground glass.

Always charge the electroscope until the leaf stands slightly higher than No. 1, then note the time required for a fall from 1 to 2; this is the constant of the instrument for the particular room in which it is being used; it may take several hours, but if it falls in less than an hour there must be a considerable leak over the sulphur, or there is some radio-active material in the room, or it may be in the next room. To prove the sensitiveness of the instrument, place a Welsbach mantle about $3\frac{1}{2}$ in. from the charged wire, the leaf should then drop from 1 to 2 in about sixty seconds.

Place a 5 Mgm. glass tube of radium bromide a yard away, then charge the wire and notice the drop is too fast to be properly timed.

Therefore the sample should be slowed down by being enclosed in a metal case (a 1 lb. jujube tin is very suitable); place the radium in the tin, touching one side (raised about $\frac{1}{2}$ in. from the bottom), let it be held in place by cotton wool; put on the lid of this box and place it exactly a yard away from the electroscope, and on a level with the wire; now charge the wire as before, and if the radium is pure the drop will take place in about the same time as it did with the mantle when was $\frac{3}{4}$ in. distant.

A thorium mantle is far from being an ideal standard of radioactivity for several reasons, which cannot now be explained, besides being variable; but a very rough idea can be obtained in this way. Am trying to devise a more satisfactory standard, but, of course, the best standard is a tube of radium which is known to be pure. If a pure sample produces the drop in sixty seconds, and another sample takes 120 seconds under the same conditions, the second specimen is only half the value of the pure bromide; if it takes 180 seconds, it is only one-third the strength, and so on; it is therefore very easy to compare samples with each other with considerable accuracy. I use Geiger's preparations as standards.

The above method does not serve to measure the total radiation from radium, the Alpha rays never get through the glass. For therapeutic use, therefore, we are only concerned with the Beta and Gamma rays, both of which are thus measured indirectly by the amount of ionisation which they produce in air, and this is by far the most delicate and certain test that can be relied on.—"Pharmaceutical Journal."

MOUNTING.

THE proper mounting and trimming of a print has a very important part to play in a finished photograph. We may have made a very beautiful landscape or portrait, and if we do not mount it properly the whole effect is spoiled. Don't be afraid to trim your prints. It is much better to have a pretty little $4\frac{1}{2}$ by $3\frac{1}{4}$ than to have an $8\frac{1}{2}$ by $6\frac{1}{2}$ containing so much that there is nothing of interest because there is too much to make it so. How often we see exhibited by well-known artistic photographers little, wee pictures, and I believe we are much interested, and more, in these than we were in some of the much larger pictures shown.

Because we make a 14 by 11 negative it is no reason that the print should be of the same size. Take some of your old prints and experiment with them in this direction, and you will be surprised at the pleasing little things you will get from some of your prints that you considered worthless from a pictorial standpoint. Trim away the unimportant parts and mount properly, and your work will improve.

The selection of a proper mount is, of course, a matter which is regulated by the taste of the worker himself, very much the same as in the choosing of the composition itself, only be careful to harmonise. Don't mount a black print on a green card or a glossy purple-toned one on a light grey card. Remember that it will be safe to mount platinum and black-toned Rotox or other bromide prints on grey cards of any shade. If, however, your Rotox has not worked to a pure black tone, use a black or brownish black, or even sometimes an olive-green card. The now well-known and much-used "carbon-black" mount seems to combine all of these colours sufficiently for all general purposes, and is a very handy mount to use when in doubt.

We have all seen some very pretty prints mounted on very contrasty cards or papers; but this is very dangerous ground, and must be studied in order to learn the proper contrasts that will be acceptable. This is also true of double mounting, which consists of mounting a print on two shades, one showing but a narrow margin around the print, and this in turn being mounted on a card of a different colour or shade; but be careful, as many a good thing has been ruined by this contrasty style of mounting. The use of white mounting papers is often advisable if your print is not too hard.

In mounting prints it is, in my opinion, better to mount them wet, unless, of course, in the case of squeezed prints, and these are better mounted; or in the case of very heavy thick papers, such as Rotox and heavy platinum papers, it is only necessary to apply a little good photo paste to each corner and use strong pressure at once.

For mounting a number of regular weight prints, place them in clean water until thoroughly moistened through, then place them face down on a clean sheet of glass irregularly, so that each print will project beyond the other at some corner, and then squeegee the excess of water from the batch and apply to the top one with a flat bristle brush a

coating of a good photo paste well rubbed in, and especially see that the edges are well pasted. A small quantity of paste evenly rubbed in is better than a larger amount spread over unevenly. Then with a pin or knife blade lift up the corner of the first print and lay one side on your mount, which has been marked with a pin to show where the print is to go. Rub this edge gently with the fingers so as to make it adhere to the mount, and follow it down through the middle, rubbing lightly towards the edges. When the entire print is down on the mount, place over it a piece of clean blotter and rub over it with the hands or print roller. This is to dispel any air-bubbles that may have formed under the print. When mounted, the prints should be placed between blotters and put under pressure. If prints are to be framed, it is only necessary to "tack" to corners with paste, as the pressure of the glass will keep them smooth.—"Bromide Monthly."

Exhibitions.

CHISWICK PHOTOGRAPHIC EXHIBITION.

THE display of pictorial photographs at the Town Hall, Chiswick, (April 23, 24, and 25) was inaugurated by a very successful entertainment, which may be summarised as "supper, song, and smoke." Mr. Gentry, the exhibition secretary, is to be congratulated on securing many excellent, and not a few renowned, examples of current photographic work. Recognition is also due to him and to the Chiswick Camera Club on their successful innovation in organising competitive sets of four prints contributed by a number of photographic societies, the result being that many prints of very high quality are shown. Not that these last should be discouraged—but supplemented. Reverting to the society's exhibits, a word of commendation is due to the Capetown Photographic Society for its sea and river studies. In this class the medal was carried off by the Preston Scientific Society, among its exhibits being a curious gum print by Mr. J. Busby, which in several respects presented a superficial resemblance to some of the old engravings after Nasmyth. The Cambridge Society is awarded second honours, chief among its quartette of prints being an unusually happy realisation of a portion of the cloisters of "Queens'."

The judges, Messrs. J. A. Hodges, F.R.P.S., and W. Thomas, F.R.P.S., made the following awards:—

Club Exhibit.—Special prize of two guineas and medals: Preston Scientific and Photographic Society. No. 13, bronze medal, J. Busby; No. 14, bronze medal, A. N. Cooper; No. 15, bronze medal, W. Phillips; No. 16, bronze medal, Miss A. Marsden. Highly commended, Nottingham Camera Club, Nos. 21, 22, 23, and 24; Cambridge and District Photographic Club, Nos. 17, 18, 19, and 20.

Open Classes.—Class A.: Silver medal, No. 57, F. J. Mortimer; bronze medal, No. 60, H. Burkinshaw; bronze medal, No. 87, A. and F. Read; highly commended, No. 64, Graystone Bird. Class B.: Silver medal, no award; bronze medal, No. 97, John Spark. Class C.: Bronze medal, No. 139, A. Bedding; highly commended, No. 128, D. W. Kyle; highly commended, No. 134, E. Seymour.

Members' Classes.—Class F.: Bronze medal, No. 196, H. Hucklebridge; bronze medal, No. 214, T. A. Coys; highly commended, No. 161, T. H. Bishop; highly commended, No. 171, J. Woodger. Class G.: Bronze medal, No. 236, W. E. Walker. Class H.: Bronze medal, No. 260, J. Woodger; bronze medal, No. 267, W. E. Walker. The Club Silver Medal for the best picture in the Members' Classes was awarded to No. 185, V. G. Barford. Class D (Open).—Lantern Slides: Bronze medal (3rd set), Graystone Bird. Class J (Members).—Lantern Slides: Bronze medal, J. Woodger.

FORTHCOMING EXHIBITIONS.

May 24.—Bristol Eisteddfod. Photographic Section. Hon. Secretary, Arthur B. Cleaves, Westbury-on-Trym, Bristol.

May 11-18.—Plymouth Photographic Society. Hon. Secretary, Wilfred Grist, 105, Old Town Street, Plymouth.

May 16-28.—Photographic Society of Ireland. Hon. Secretary, E. Webb-Smith, care of Royal Dublin Society, Kildare Street, Dublin.

May 24-28.—Devonport Camera Club. Hon. Secretary, A. J. Catford, 78, Charlotte Street, Devonport.

June-October.—Glasgow Photographic Exhibition. Secretary, Art Gallery and Museum, Kelvingrove, Glasgow.

November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.

November 23-26.—Hove Camera Club. Hon. Secretary, A. R. Sargeant, 55, The Drive, Hove.

December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.

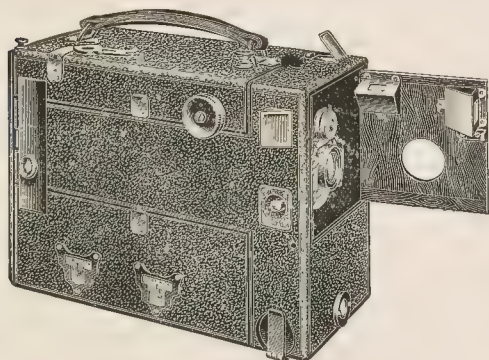
December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.

December 13-20.—Southampton Camera Club. Hon. Secretary, S. G. Kimber, Oakdene, Highfield, Southampton.

New Apparatus, &c.

The "Telephoto" Cornex Hand Camera. Made by R. and J. Beck, Limited, 68, Cornhill, London.

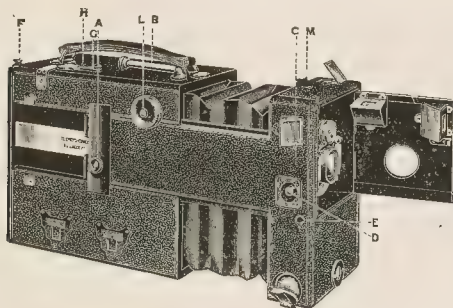
This latest addition to the steadily growing ranks of hand cameras that the spring of each succeeding year seems to call forth, appears to strike an entirely new note in camera construction, and one that should command the attention of most serious workers on the look-out for a reliable instrument for the ensuing season. The "Telephoto" Cornex is essentially a snap-shot camera, embodying the usual attributes of a high-grade box-form magazine camera, with good lens,



shutter, finders, focussing and plate changing movements. Its chief point of novelty, however, lies in the fact that contained in the body of the camera is a telephoto attachment that by a simple movement can be brought into action at a moment's notice.

The camera is complete in itself, and by merely drawing two slides it can be changed from an ordinary snap-shot camera of the usual magazine type into a Telephoto Hand Camera, working with the same simplicity and upon the same principle. Pictures can be obtained in rapid succession, the twelve plates being charged one by one by the movement of a lever, and should it be necessary to take an ordinary photograph instead of a telephoto picture, the camera can be altered in a moment without fogging the plates in the magazine.

A further advantage that is gained in this new type of camera is a means of focussing to objects as near as 24 inches from the camera with the ordinary positive lens, without the use of any supplementary lenses, etc. The camera is supplied with three makes of positive lenses: the Beck-Steinheil Unifocal (Series I.) with an aperture of

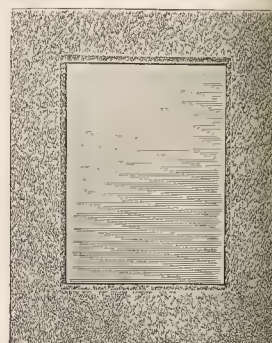
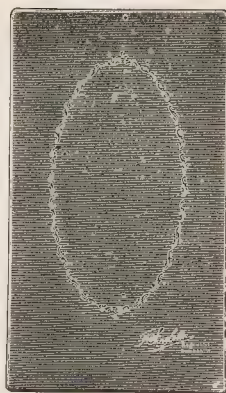


F/4.5, the Beck-Steinheil Unifocal (Series II.) with an aperture of F/6, or the Beck Double Speed Rectilinear with an aperture of F/6. The Telephoto Lens is a negative element specially constructed to illuminate the whole of the plate and preserve, as far as possible, the perfect definition given by the positive lenses. Three finders are provided; they are of the brilliant stationary type. Two are placed in the usual positions and show the view that will be obtained with the positive alone, while in their centres is ruled a small rectangle which shows how much would be included in the picture if the Telephoto

Lens were used instead. The third finder is placed on the right-hand lower corner, and gives the view taken by the Telephoto Lens on a large scale. This "Telephoto Finder" will be found a most useful addition, and in the poorest light a bright image will be given that can be easily examined. The focussing scales are both provided with a "Cornex" Index, by means of which, not only is the focus set, but the depth of focus of the lens is given for each aperture in use. This feature is no less useful for telephotography than for general work.

New Mounts made by Charles Tyler and England Bros., Limited, 79, Copenhagen Street, London, N.

We have had submitted to us several new lines in photographic mounts made by Messrs. Tyler and England Bros. They are made in a great variety of colours and designs, and embody the latest ideas in this essential department of the professional photographers' equipment.



Many of the designs should also appeal strongly to the amateur, and not the least item in their favour is the fact that the mounts are all of English manufacture, made at the firm's own factory. The Florentine and Devon mounts, here illustrated, are particularly neat, and should command a ready sale.

Patent News.

The following applications for patents were made between April 11 and April 16, 1904:—

Printing machines.—No. 8,474. "Improvements in automatic continuous photographic printing machines." Herbert Richard Watts.
Cameras.—No. 8,766. "Improvements in and relating to photographic cameras." John Laing Kinloch and Andrew Duncan Kinloch.

Coe Collotype Company, Limited.—The above-named company has been registered with a capital of £30,000 in £1 shares (10,000 Six per Cent. Cumulative Preference). Object to acquire (1) the business carried on by A. Coe, at Vicar Lane Bradford, as the Coe Collotype Printing Company, and (2) the photographic business carried on by the said A. Coe, at Barkerend Road, Bradford, aforesaid, to adopt an agreement with the said A. Coe and J. Maddocks for the acquisition of certain rights relating to improvements in collotype machinery, and to carry on the business of collotype, letter-press, and general printers, lithographers, machine makers, paper manufacturers and merchants, dealers in photographic and collotype printers' materials and requisites, etc. No initial public issue. The first directors (to number not less than two nor more than five) are J. Maddocks (permanent chairman), special qualification, £500; A. Coe, managing director; and H. B. Booth. Ordinary qualification, £100. Remuneration (except managing directors) as fixed by the company; chairman to receive an additional £100 per annum. Registered office, 44, Vicar Lane, Bradford.

New Books.

Enzyklopädie der Photographie. Vol. 48. Das Arbeiten mit Rollfilmen, by Hugo Meyer. Verlag von Wilhelm Knapp, Halle a. S. This small volume of about 60 pages is devoted to instruction in the manipulation of rollable film, and will be found very useful by those who prefer this variety of sensitive material for camera work. There is much information in the book concerning the peculiarities of films those who wish to be *au fait* upon the subject would do well to read it. Numerous illustrations elucidate the text, and we have no doubt they will be found very useful by the amateur as a guide to correct work.

Martin's Up-to-Date Tables. Compiled and written by Alfred J. Martin, F.S.I. 255 pp. Price 2s. 6d. London: Published by T. Fisher Unwin, 11, Paternoster Buildings, E.C.

This useful little compilation of weights, measures, and coinage of the world should prove a remarkably handy desk companion. Its most obvious mission, however, is to bring home to the minds of the uninitiated the multifold advantages likely to accrue from a universal adoption of the metric system, and it states the case very clearly indeed. Practically every page contains useful information, some of which may prove of help to the photographer struggling amid the intricacies attendant on the conversion of foreign units into English denominations. Many good suggestions are given for the means whereby the metric system could be adapted to England.

It is pointed out that many British advocates of the system have met failure in the past by trying to compulsorily introduce with system its "nomenclature" en bloc, and some even insist on high pronunciation and spelling.

The author maintains, however, that if the system is to "catch on" with the British people, it is of no use telling them that in time they must buy their goods by the metre, gramme, and decitre. That is the wrong way of putting it.

We should endeavour to bring the common weights and measures of every-day life into line with the metric weights and measures, and on all our adjusted measures stamp the familiar names, prefixed the word "metric," alongside the metric value. Thus 1 metric pound, $\frac{1}{2}$ kilogram, 1 bi-pound, 1 kilogram.

In this way, Germany, Holland, and other countries adjusted their trading standards to the metric standards, and avoided French measures. Thus in Germany the meter was called the stab, the centimetre became the new zoll, the millimetre the strich, the liter the ltr., the half-liter the schoppen, and half-kilo the pfund.

A penny supplement for beginners is also published, and should be very useful in schools. It is a very comprehensive little table.

New Editions of "Photography for All," by W. Jerome Harrison, F.S., and "Practical Slide Making," by G. T. Harris, F.R.P.S., to hand. They are Nos. 1 and 2, respectively, of "Photography," a bookshelf Series, and are published at 1s. each. They are essentially working guides, and the new editions are strongly and neatly bound, as is to withstand workroom usage.

REFERRING to one of our "Answers to Correspondents" in the last issue of the BRITISH JOURNAL OF PHOTOGRAPHY re "Paraffin Casks," a respondent says:—"The simplest method of getting rid of last traces of the paraffin is to burn, i.e., set on fire a wisp of straw or paper in the cask and let it ignite the spirit in the interior. The slight charring of the wood greatly improves it as a water cask. This method is preferable to the soda washing you recommend."

ENTRIES for the Plymouth Photographic Society's eighth exhibition close on May 2, and the show promises to be a good one. In addition to the usual silver and bronze medals offered in the five open and six members' classes, a silver cup is offered in the open classes to the exhibitor whose work represented in not less than three classes will be judged of the highest merit, and a silver plaque is offered to the members' classes under like conditions. The hon. secretary is W. W. Grist, and his address is 105, Old Town Street, Plymouth. The judges are Messrs. P. H. Emerson, Baragwanath King, and F. Selley; and the exhibition will be opened by the Mayor of Plymouth on Wednesday, May 11.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

April.	Name of Society.	Subject.
30..... May	Bowes Pk. and District Ph. Soc.	Outing. Loughton, Epping Forest.
2.....	South London Photo. Society...	{ Elementary Chemistry for Photo- graphers. Mr. C. F. Townsend. Gum-Bichromate Printing. Mr. J. C. S.
3.....	Royal Photographic Society.....	Mummery.
3.....	Nelson Photographic Society.....	Members' Negative Evening.
3.....	Rotherham Photo. Society	Ozotype. Mr. T. Manly.
3.....	Glasgow Southern Photo. Assoc.	Amateur Photographer Prize Slides.
3.....	Everton Camera Club	Make Haste Slowly. Mr. G. H. Usher.
4.....	North Middlesex Photo. Soc.	Lantern Slide and Print Competitions.
5.....	Dundee & E. of Scotland P.A.A.	Japanese Coloured Slides. [Mr. H. Drummond.
5.....	Camera Club.....	Members' Exhibition.
5.....	Watford Camera Club	Competition "Wind," "Rain," or "After Rain."
5.....	Hull Photographic Society.....	General Meeting.

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION

APRIL 21, Mr. W. A. Sims in the chair. The hon. recorder showed results of exposures made upon Barnet Lustra Matt bromide paper, samples distributed a week or two ago, and thought it a very fine paper. The slides sent in by the members to the affiliation competition having been returned broken, the hon. secretary was asked to communicate with the affiliation secretary on the subject. Mr. Brown exhibited an ingenious and useful cover for a candle, for use in changing plates on tour. It was a cone made of red fabric, 12 in. high, 3 in. at base, and half an inch at top. Mr. Teape and other members were curious to know why a light at all was required for plate changing, and Mr. Becket described his plan, which is to place the ordinary chamber candlestick, with candle alight, on the floor in a corner of the room, hang his coat over a chair or two in front of the candle, then proceed to manipulate his plates at the other end of the room. A friend of his had tested the method and given an exposure of ten minutes, and failed to get fog. Watson's Antinous shutter release for roller blind and iris shutters was exhibited, and considered a great improvement upon the indiarubber release. Watson's Everset shutter was also exhibited and admired. Mr. Wright exhibited a telescopic walking stand, light and effective, made of aluminium, and which could be repaired in case of damage.

CAMERA CLUB

UNDER the modest title of "Pictures from Birdland," Mr. Oliver G. Pike last week gave a lecture upon his methods of work, and although he had not to face any terrible beasts like the whale which gave free lodging to the prophet Jonah, he has certainly been exposed to dangers which few men would care to face in order to secure a photograph or two. And let us at once say that Mr. Pike's pictures are of the best, although so many of them were taken under strange conditions and under most uncomfortable circumstances. Exposure and lighting were in most cases good, and there was an artistic quality about many of them which at once showed that their producer had an eye for pictorial effect.

The Chairman, an enthusiastic member of the Bird Society, whose name we failed to catch, gave an interesting preface to the lecture, pointing out how the old method of studying ornithology generally consisted in shooting the bird first and then stuffing it. He was loud in his denunciation of "collectors," who are mostly ignorant men who, with the collecting mania upon them, destroyed every specimen they came across, either to add to their own store, or for purposes of exchange—very often to sell. He also spoke of the danger of that "nature study" which is now so much encouraged in our schools, because it is so apt to degenerate into slaughter for collection. Birds' eggs, butterflies, and moths were destroyed by the thousand by these enterprising youngsters. It is much better to study the living thing than its corpse, and every right-thinking person would prefer the harmless camera to the gun. The society to which he belonged had recently sought permission from the Admiralty to instruct coastguards to act as watchers on behalf of the Bird Acts, and he hoped that much unnecessary cruelty would be thereby avoided.

The lecturer commenced by saying that many people thought that

bird photography was an easy thing, but he would advise any one who thought so to try and stalk a rook or a sparrow, and note how near they could get to their quarry. It required much patience and experience, but when the knowledge was once acquired the work was most exciting and fascinating. He used a reflex camera of his own design, with a lens which would split up into its components and five different foci. The first examples he showed he took at Southport—which, by the way, does not lie south and is not a port. These consisted of a number of studies of gulls, some crowded on the sands, many flying, and others tossing about on a rough sea. But he reminded his hearers that it was not necessary to go to the sea for seagulls, for they could be seen in the colder months all along the Thames Embankment in the heart of busy London. One photograph he showed taken from the Embankment in the 300th part of a second on a very dull day.

But Mr. Pike has gone further afield than this; indeed, he has roamed the country over in search of the rarer kinds of feathered bipeds, and has generally succeeded in finding them. It is not every man who would care to hang by a rope over a cliff edge for an hour so that he might secure the photograph of a raven's nest, or consent to be lowered down the steep face of the Bass Rock so that he could visit the homes of gannets there on a like errand. Nor would it suit many of us to creep along the thin branch of a tree so that our camera lens could look down for a few seconds on a nest of eggs which could not be viewed from any other position. At great pains and risks he had been able to photograph the nest of that rare bird the kite—for a single clutch of whose eggs the collector is glad to put down the sum of £10.

Many birds have been made by Mr. Pike to take their own photographs. He arranges a tempting bait on a twig near their haunts, and in connection with it is an electric device which throws the shutter of the camera into action. Directly the bird pecks at the food the shutter is released and the picture is taken. It would occupy too much of our space to give even a list of the birds whose pictures Mr. Pike has secured, not the least interesting of which was the series with which he brought his remarks to a close. First a common hen's egg. In the second picture the egg was seen with a tiny hole chipped at the side by the imprisoned chick within it. The third picture showed how the little creature had succeeded in getting one leg out, and in the fourth he was seen lying down exhausted, a moist mass beside the empty shell. The last picture showed him twelve hours afterwards, standing by the shell and wondering what it was. Mr. Pike received a hearty vote of thanks for his excellent and entertaining lecture.

CROYDON SCIENTIFIC SOCIETY.

APRIL 22.—Mr. C. A. Franklyn attended to exhibit and explain his new patent tripod camera stand. The stand differed entirely from any other on the market. Three points stood out prominently, i.e., (1) the head of the tripod was in three pieces instead of one, as is usual, each piece being attached to one of the legs, they could all be brought together and fixed centrally by the ordinary camera screw. (2) The leg had two sliding joints instead of the usual one. (3) The entire stand could be carried about easily without the usual leather straps. It will be at once seen that the tripartite revolving head affords an almost infinite variety of movement; as a matter of fact, the camera can be used by its means in a horizontal position, and through any angle from that to the lens pointing straight down, or straight up, as may be required; hence for copying by the vertical method, or for taking the ceilings of buildings, nothing could be better. Again, the legs, either or all, can be shortened from 5 ft. 3 in. to under 24 in., uneven surfaces, therefore, present no difficulties; moreover, in doing this the camera can be maintained in a perfectly horizontal position the whole time. When it is added that the stand can be used, if necessary, close against a wall, it will be apparent that it ought to command a ready sale and have a future before it. On Tuesday evening, before a crowded audience, some 150 Swiss views, taken by Mr. C. L. Faunthorpe, the late secretary to the photographic section, were shown on the screen. These were much admired; indeed, some of those portraying the Alpine peaks, with their snow-clad summits and glaciers, and numerous waterfalls, were exceptionally good.

News and Notes.

THE Traill Taylor Memorial.—A meeting of the Committee will be held at the rooms of the Royal Photographic Society, 66, Russell Square, on Tuesday evening next, May 3. The chair will be taken at 7 p.m. Agenda: The balance-sheet for the year. Election of committee members. Election of Secretary. Selection of Lecturer, &c. **SOUTHEAST Photographic Society.**—On April 22 a lecture was given before the members of this Society on "Marine Photography," by the author, Mr. F. J. Mortimer, treated his subject in a popular manner and the slides accompanying the lecture fully illustrated the points wished to bring out.

A SECOND edition of "Hand Camera Photography," by W. Kilbey, is to hand. It is elementary in character, but sound in principle, and although addressed more particularly to the beginner who elects to start in photography with a hand camera, it contains many useful hints that may be taken advantage of by the more advanced worker.

THE Technological and Scientific Dictionary is the latest edition of the many good reference books published by George Newnes, Ltd., Southampton Street, W.C. Part 1 is just issued, and the work will be completed in about fifteen monthly numbers. It will appeal to the teacher, the artist, the professional man, the trained mechanic, the student. Photography, needless to say, has its full share of attention.

An Empress's Vanity.—The "Standard's" correspondent, writing from Tien-Tsin, under date April 20, says:—"A special light railway has been constructed from the Wai-wu-pu to the station in Peking, in order that mere coolies may not have to handle the portrait of the Empress-Dowager, which she is sending to the Louis Exhibition. The painting leaves the Capital to-morrow in a special car. The expenses connected with it and its journey are already fabulous."

THE Royal Photographic Society of Great Britain.—The fifth of a series of practical demonstrations of printing processes will be given at 66, Russell Square on Tuesday, May 3rd, 1904, at 8 p.m. by Mr. J. C. S. Mummery, the subject being "Gum Bichromatic Printing." Synopsis: Brief historical notes on the process, description of the materials, tools, printing and manipulation, demonstration of the preparation of the pigment, coating the paper, washing up, image, etc.

SOUTH London Photographic Society.—Eighteen members of the society journeyed to Bexley for North Cray on April 23, and by the courtesy of a local landowner were permitted to photograph in and about some water meadows and along the banks of the River Cray, a good number of the architectural-minded made for the church, and spent the afternoon in securing records of some very fine carvings about the altar and choir stalls—some of which is believed to date back to the sixteenth century. The carved oak pulpit is dated 1616. Orthochromatic workers should note that hanging on the church wall is an oil painting of the Crucifixion by Gessi—formerly in Lamport Church—of which the vicar states he has never yet seen a satisfactory photograph.

Röntgen Society.—Ordinary general meeting, Thursday, May 1904, at 20, Hanover Square, the chair will be taken at 8.30 p.m. by Mr. J. J. Vezev, hon. treasurer, will read a paper: "The Röntgen Society; its Past Work and Future Prospects." Mr. F. H. Glew will give a short account of "Some Experiments with Alpha Rays." The epidiascope will be in use, and it is hoped that members will take the opportunity of showing slides or pictures. Medical members are invited to a meeting of the medical section, to be held in the Society's room at 19, Hanover Square, at 5.30 p.m. on the same day.—May 5th—to hear a paper on "Three Years' X-ray Work," by Dr. L. Herschell Harris, of Sydney, N.S.W. Future arrangements: June 2, Dr. Clarence A. Wright, a paper—"Experiments to Determine the Effects of Form and Winding upon Resonance Phenomena." July 7, annual general meeting. Library: The Council have arranged that the library of the Society at 19, Hanover Square, shall be open to members, for reference, every Thursday afternoon from 5 p.m. to 7 p.m., commencing on Thursday, March 3. Members are invited to send to the librarian any contributions of interest—books, journals, skiagrams, tubes, etc., etc.

Our Modern Knight-Errant.—The war correspondent is the modern

ivalent of the knight-errant. He is a free-lance in a sense less row than that in which the word is used by Mr. Clement Scott, the bonds of red tape and duty that hinder the movements of the st adventurous subaltern have no power over him. Happy is the of this twentieth-century condottiere! He writes for a public that es far less for elaborate explanations of tactics than for gaudy criptions of action; he need not worry himself about the niceties of le, for who would be so brutal as to expect anyone who writes as he es—or perhaps when he is actually under fire—to produce faultless English? He is welcome in almost every place, and he enters by alth the places that do not welcome him, and makes articles for a timony against them. He rides, he is lost on mountains, he is assassinated, he is triumphant against fearful odds. He knows all the enities of life, and supps with Crown Princes, and makes speeches en he returns to England. For this delightful existence no qualifi- ons are necessary, except, of course, courage, endurance, the know- ge of tongues, the knowledge of men, tact, good temper, and a ficient allowance of health and muscle. The metier is open to any- ; we could all be splendid war correspondents if we wished.—*World.*

EASTMAN Kodak Company of New Jersey.—The balance sheet of s company has just been issued for the year ending December 31, 03. The result of the year's working, after charging liberal ounts for depreciation, shows a net profit of £603,235 5s. 10d., king, with the sum of £96,700 17s. 9d. brought forward, a total ilable balance of £699,936 3s. 7d. After paying dividends at the e of 6 per cent. upon the Preference, and 10 per cent. upon the mmon stock, and making further special reserves of £16,165 16s. 2d., e remains a surplus to be carried forward of £222,891 6s. 8d. ention is called to the fact that the company is paying dividends on a large amount of capital which has been paid in by share- ders, but has not yet been invested; the total of railway bonds, l loans and cash, less current liabilities, amounting to £326,541. en this surplus capital is fully employed the total profits should ery considerably increased. The balance sheet discloses a very on financial position, the goodwill apparently being about 4½ ars' purchase, which will compare favourably with most indus- undertakings. In spite of depressed trade and the bad weather ast year, the business, from a comparison of the profits with those previous periods, is evidently steadily progressing.

The Camera in the Desert.—Sir Benjamin Stone, after a month's ence in Algeria, has brought back with him a collection of rare otographs. Making Tunis his headquarters, he arranged a series xpeditions, hunting out unheard-of tribes, and photographing them ividually and in groups. The 300 plates which he used will not be eloped until about three weeks' hence, although Sir Benjamin ploys two men continually on this kind of work. "If they turn ell," said Sir Benjamin to an "Express" representative, the other y, "the plates will be the best thing of the kind that anyone has e as regards Algeria. I spent several weeks there, and probably elled between three and four thousand miles, through gorges and er mountains, going among the tribes, and securing pictures that one has heretofore succeeded in getting. The difficulty among the ives was that their religion Mahometanism—prohibits them from king pictures of any natural object. Consequently, they do not like ing photographed, and it was hard work to persuade them to let 'take' them. What I did was to win over their head men, for ne of their chieftains tells them to do a thing they obey orders." Benjamin bears testimony to the safety of touring in Algeria. e French, he said, have inspired the natives with a respect for ite men, and he had no unpleasant incidents during his trip.

INDECENT Picture Post-Cards.—Amelia Praag, of 101, Caledonian ad, N., was summoned before Mr. Bros. at the Clerkenwell Police- rt, for exposing for sale indecent picture post-cards. Mr. Muskett oscuted. The defendant keeps a newsagent's shop, and on March 30 b-Divisional Inspector Briggs noticed a number of pictorial post- ds in the window. These were, according to Mr. Muskett, of a isky" character. The officer purchased half-a-dozen of the cards, d subsequently seized 1,173 other cards. He spoke to the defendant, d she expressed the opinion that the cards were indecent. In- spector Briggs, in the course of his evidence, said his attention was awn to the shop by seeing a number of young persons looking in e window. About 100 of the cards were exposed to view. He

spoke to the defendant, who said that when she purchased them she was told that she could exhibit them. He then bought seven for 11d., and on April 2 he executed a search warrant. The de- fendant rendered him every assistance in making the seizure. Mr. Bros, having examined specimens, told the defendant that she must exercise some discretion herself in purchasing picture cards. He would have thought that she would have seen that those of which the police had taken possession of were not of a proper character. Under the circumstances, he bound her over to come up for judgment if called upon, directed her to pay 6s. costs., and ordered the destruc- tion of the cards.

Work of the Optical Society.—The work of the Optical Society was passed under review by Dr. R. T. Glazebrook, the president, at a meeting held last week at 20, Hanover Square. There could be no doubt, he said, that in recent years the rate of progress of the optical industry in foreign countries had been greater than in England. The fact of German success was continually paraded before them. The cause did not lie in the greater skill or ingenuity of the German work- man—British honesty, doggedness, and pluck were still effective assets on our side—but in the fact that elsewhere the value of science as a commercial factor was more fully realised than with us. The work of the Optical Society was carried out largely by co-operation; it consisted of some two hundred and twenty members, practically all closely connected with optical work, and already there was a wiser feeling recognised in the trade. Efforts were being made to organise a Convention of Opticians, and he thought that a representative exhibition of English instruments, arranged to show the best that they could do, would be of distinct service to the industry. The society had realised the importance of education, and in co-operation with the Northampton Institute had taken steps of real moment. At a fitting time the new education authority for London must be reminded of the urgent need for a larger and more complete organisation. Respecting standardisation the society had not been amiss. When it was once realised that the trade required standardisation it must come, and he should esteem it a privilege to work with the society to secure it.

We regret to see the announcement of the death of Sir Henry Thompson, distinguished as a surgeon and by his active interest in many departments of science. Sir Henry Thompson was born at Framlingham, Suffolk, on August 6, 1820, and received his early education at University College, London. He gained the Jacksonian prize of the Royal College of Surgeons in 1852 and 1860 for essays on surgical subjects. In 1866 he was appointed Professor of Clinical Surgery in University College Hospital; and in 1884 he became Professor of Pathology and Surgery to the Royal College of Surgeons. He took a leading part in the establishment of cremation in this country as a proper method of disposal of the dead, and was president of the Cremation Society from its foundation in 1874. He was the author of numerous works, including volumes and papers on the branches of surgery in which he was an acknowledged master, on motor cars, horses, diet, and death certification, and also of two novels. For several years he cultivated astronomical studies, and had a well equipped observatory constructed at Molesey, but this was abandoned after a time, and the two fine refractors were presented to the Royal Observatory, Greenwich. Later, in 1897, Sir Henry Thompson added to his gift the thirty inch photographic reflector which bears his name. He was knighted in 1867 and created a Baronet in 1899, and was the recipient of many honours and distinctions from professional and other learned societies, both at home and abroad.

CINEMATOPHGRHS in the Street.—At Lambeth Police-court on Tues- day last, Frank Lloyd, 32, described as a steward, and Arthur James Porter, 24, a photographer, surrendered to their bail, and were charged on remand before Mr. Hopkins with causing an obstruction by causing a crowd to assemble. On the afternoon of the 12th inst. Police-inspector McCarthy found a large crowd assembled in Cramp- ton Street, Newington, and upon investigating the case, found Porter standing in the centre of the roadway, with a cinematograph machine. A tableau had been arranged on the pavement, in which Lloyd, attired as a police-sergeant, appeared to be the leading character. In view of the obstruction which was caused, Inspector McCarthy arrested Lloyd and Porter, who were brought before the Magistrate, and remanded on bail, in order that summonses might be issued against the other defendants. Inspector McCarthy now informed his Wor- ship that Mr. Collins was present at the time the picture was being taken, and was stage-manager of the affair; Mr. Bromhead was the

manager of a cinematograph company, and was responsible for sending the other men out to take pictures in the streets. Mr. Collins pointed out to the Magistrate that the taking of the picture only occupied a few seconds. Mr. Hopkins said he did not see how this sort of thing could be done in the London streets. Mr. Bromhead: We have done it often with the co-operation of the Magistrates in many cases. At Worthing and other places the J.P.'s have assisted us. Mr. Hopkins: I am afraid you will find London too big. Mr. Bromhead: We are far from wishing to cause an obstruction. If the inspector had cautioned the men they would have gone away. I admit that it was a great mistake to take a picture at that time of the day. I have taken pictures myself in the neighbourhood with an inspector present. Mr. Hopkins: Here, you see, you have got a sort of play going on, with a sham sergeant of your own. I don't see how it can possibly be done in the London streets. Mr. Bromhead: We are only too anxious not to cause an obstruction; we certainly do not cause such a large crowd as the Salvation Army, and we never occupy the street more than a few minutes. Mr. Hopkins: You see what this is coming to. The next thing we shall have will be a motor accident in Piccadilly for the purpose of being taken on the cinematograph, and brought out at the Empire the same evening. Plainly, it can't be done in London. Mr. Bromhead and Mr. Collins were each ordered to pay a nominal penalty of 10s. and 2s. costs. Lloyd and Porter were discharged.

A CORRESPONDENT in the "English Mechanic" describes a method of producing home-made gas for illuminating and laboratory purposes, which is interesting. He says:—"When living in the country miles away from any public gasworks, it is a great boon to be able to manufacture your own gas in a simple way to light your workshop and laboratory, and also for various heating purposes for which gas alone is satisfactory. For Bunsen burners, incubators, blowpipe work, heating soldering irons, and also for illuminating purposes, it is almost indispensable. For years I have made my own, and as I have always found it very satisfactory, I think other amateurs may like to make a similar apparatus. The gas is made by forcing air through gasoline, which is a highly volatile fluid of the nature of benzoline; the air becomes saturated with its vapour so as to burn like ordinary coal-gas. It is necessary to have a generator and a blower. The generator is one of Fletcher's, and consists of a tin box filled with wicks which dip into the gasoline, which is poured into the generator until it is about one-third full. Of course, this has been made for many years, and is usually used with foot-bellows for furnace and blowpipe work; but for a constant gas supply some simpler blower is required. I have tried several. First I had a gasometer, which I filled with air by pulling it up, and then, as it sank in the water, it forced the air through the generator. The objection to this was, that you had to pull it up every time, and, also, unless you had a very large gasometer it did not last any time. Next, I made a sort of revolving drum, on the principle of a gas-meter, which was worked by a falling weight, and as it revolved in water it carried a constant pressure of air. This was not very satisfactory. It had a habit of going unevenly, would sometimes stop altogether, or suddenly run down at a great speed. The blower I use now is a very simple affair and works very evenly. It consists of two tin cans, one inverted inside the other. The inner can is about 4 in. in diameter, and about the same depth. Through the bottom is inserted and soldered in a piece of 1 in. pipe, open at both ends. There is also a small pipe soldered to the bottom for the exit air. The outer can is open at the top, and is rather bigger in diameter, and about three-quarters the height of the inner can. An overflow pipe is soldered to this with a movable elbow, so that the height of the water in it can be varied. A cork is fitted with a fine brass or glass nozzle, and inserted in the water-supply tap. The stream of water issuing from the nozzle passes into the tin pipe, and into the water contained in the outer tin, carrying with it a quantity of air bubbles, which rise to the surface, and become imprisoned in the inner can, thus giving a constant pressure of air, which can be varied by raising or lowering the overflow pipe. The air is conducted by an indiarubber pipe to the generator, and issues as gas. It is necessary to put a weight of some sort on the upper can, or the pressure of air will lift it up. The lower portion of this can should be notched to allow the water to flow freely into the outer can. With this smaller apparatus I can keep three gaslights burning, and a Bunsen at the same time.

Correspondence.

- * * Correspondents should never write on both sides of the paper, notice is taken of communications unless the names and addresses of the writers are given.
- * * We do not undertake responsibility for the opinions expressed by correspondents.

PHOTOGRAPHY FOR BABES.

To the Editors.

Gentlemen,—My attention has just been directed to your paragraph (page 307, April 15) "Photography for Babies."

As I am indirectly responsible for the method proposed for removing the images of spoilt prints, perhaps you will permit me to say that the editors of the leading London daily papers do not encourage verbal attacks and they would be extremely likely to use their blue pencil in order to strike out obvious "padding." When speaking to photographers (even "baby" photographers) it is hardly necessary to waste a lot of valuable space in offering precautions as to the use of poisons, any daily paper editor would be justified in considering such caution as "padding." Surely you are quite aware that no one—he "be" a photographer or otherwise—is able to buy potassium cyanide at a sweetstuff shop, but has to go to a properly qualified chemist; he has to sign the poison book, and be properly identified before he receives the poison. Under these conditions, it is not likely that he would take it as a beverage; nor is it likely that a photographer (even a "baby" photographer) would be likely to employ a tea-tray for photographic purposes. Even if he did so employ a tea-tray, I do not think the ultimate result would be very tragic; but surely you would not expect a writer to devote several lines to describing exactly what sort of a tray must be used for photographic purposes?

In your attempt to set the advertisers against the writer, you appear to overlook the fact that you are treating amateur photographers (even "babes") as altogether devoid of ordinary understanding. As a matter of fact, the matter in the paragraph to which you refer was suggested by an inquiry from a man who wished to utilise his spoilt prints, and particularly specified the way in which he wished to use them.—Yours faithfully,

April 22, 1904.

To the Editors.

Gentlemen,—In "Ex Cathedra" of yours of the 15th inst., under the heading "Photography for Babies," you hit hard, and rightly so, one of our dailies for an article on bleaching wasters with cyanide. Everything you said there was true, but if it is true in a non-fessional journal, what can one think of the same appearing, word for word, I think (I have not seen the article on the daily) in a journal devoted to photography? Please see (I expect, though, you have already) page 323 of the "Amateur Photographer" for April 21, and let us know whether you think it right for a paper which knows the dangers of cyanides to recommend its use without any warning, as is evident the asker of the question can't know much about it.—Yours truly,

April 24, 1904.

REPRESSION OF THE BRITISH INVENTOR.

To the Editors.

Gentlemen,—An extract is given by you in the issue of March from the "Journal of the Society of Arts." Therein is compared the difference between inventor and author, their treatment as regards patent and copyright, and an apparent injustice to the patentee. The writer does not seem to have noticed that the public and not the inventor are being considered. The work of the inventor is looked upon as of greater need for public use than that of the author; therefore a comparatively short term (fourteen years!) is supposed to recompense the inventor, so that the public may the sooner have the benefit of free use. It should be noticed, also, that in practice the right works cheaper with time, and after a few years are supplied to the public, through the publisher, at quite nominal royalties.

There seems to me no comparison between a book and an invention. Our patent system at present is hard, expensive, and inadequate; it is on a different standing to copyright. It is an infinitely more difficult matter to deal with. It is much more easy to grumble.

are too high. Make them lower and multiply the number of useless, invalid, or unworkable patents. Refuse to grant a patent as it is for an original or valuable matter. Who is to decide? Patent Office?

No doubt something can be done, and I hope will be done in the future; but it is a difficult matter to inaugurate a system that not work hardly on some one.

Imagine a committee of experts, the highest in the land, to decide every invention as the patent is applied for, to decide for once and whether such patent shall be granted or no, and if granted to hold hold question or possibility of contestation. Such a system would, doubtless, be perfect, but for one little matter—the enormous number of patents applied for, and the time required to thoroughly sift the details and evidence as to novelty, etc. A big patent case in the Courts runs into weeks. Could all this time, labour, expert thought, and decision, be given to every Tom, Dick, or Harry who wanted to patent a new print-washer? And I don't think it could be for five shillings!

An intermediate course, certain searches by the Patent Office officials, will, doubtless, be adopted—in time! I am, yours faithfully,
C. HAROLD SMITH.

1, Avenue Road, Fordsburg, Johannesburg,
April 4, 1904.

TO PROSPECTIVE PATENTEES.

To the Editors.

Gentlemen, Patents and fortunes are not exactly synonymous. But many patents are being taken out nowadays that one cannot help wondering if many of these inventors do think so. For, after all, a patent is not a giving to science, but simply a commercial affair, and such and such only it must be dealt with. You will have noticed "Ex Cathedra" comparisons with fifty years ago, and the remarks thereon.

There is one question to consider—which rarely seems to be considered—in addition to novelty, utility, and cost of manufacture, which, for want of a better word, may be called opportunity. To obtain, what good to the patentee is his patent if he is unable to place the article on the market? Look at the patent columns. Shutter improvements—Pickard, Camera improvements—Watson. These men are shutter makers, camera makers, already. A very small improvement to them is worth a patent, because it becomes a part of their existing business. That is the crux of these, often, minor improvements.

How many thousands of plate-changing hand cameras were invented in the dozen years ago. Let us look at the question practically. Required a mechanism to change plates; could not any mechanical man of thought produce something. A manufacturer or one of his staff works out some design, and it is made. He will not trouble himself to take up somebody else's patent (without considering the question of validity) unless it is in truth something entirely new and marketable. I remember constructing half-a-dozen different ones. We used to call it "hand-camera fever" in those days, but the disease never got so far as the Patent Office.

Even with a novelty there is no certainty of being rewarded with so much of a return as the value of fees expended. Having a patent, what are you going to do with it? Start a company? That requires money or influence. Manufacture it yourself? That requires money and capacity. Sell it to a manufacturer, or get him to make it on royalty? Not so easy unless your patent is a remarkably inclusive one. Inclusive, not because our manufacturers are less honest than any other persons, but for the simple reason that A will not pay to be allowed to produce an article that B will almost copy and produce without paying anything. One cannot look through the "Almanac" advertisements without being reminded of this.

And there is another side to this infringement question. As the Editor is often telling his correspondents, a copyright does not prevent another copying, it only gives right of action. You have a patent, and it is infringed by a big firm (unknowingly or knowingly, or doubting your validity). What are you to do? Bring an action, when they obtain some of the most eminent counsel and expert opinion? Can you afford to do it?

Again, in the Patent Office there are records of all patents; have you searched through all of them? It is a very long and tedious affair. Few matters have not been the subject of patents, often unwork-

able it may be, but needing search and care. No searches are made by the Patent Office authorities; if specification is in order they take your money and give you your patent, whether they have given the same thing to Smith, Brown, Jones, or Robinson, or all of them, the day before. There are books of index and reference, however, in their library to help you. But though it is a free library, it seems to be somewhat infrequented by the inventor, from the constant repetition that may be seen there. This search can certainly be executed by patent agents, and the application and specification drawn up by them. It is their business, and doubtless they know better how to do it than you do yourself. More expense!

The preliminary to a patent, "provisional protection," costs a guinea. It seems cheap. But a guinea is a guinea, and why throw it away? Probably that is all an inventor would do, if, inexperienced, he drew up his own preliminary specification. It must be borne in mind that although a fuller specification is allowed no new thing can be added; no real alteration can be made. I mean that the professional skill of the necessary and expensive agent is as necessary for this, too.

There seems to be considerable misunderstanding in the lay mind as to this provisional protection. A man gets provisional protection and thinks he is protected. He is not. There is one more thing he must do. He must publish his process or design. He must not keep it secret as so many do. As to the publication, there is no need to cry it in the streets or from the housetops. A notice with particulars in the "Slocum-in-the-Mud Weekly." A pamphlet published (not necessarily distributed) and sent in the usual course to the British Museum, is publication sufficient, for the Museum library is open to the world. Novelists favour the National Gallery for certain purposes, so might the inventor the British Museum Library. Sufficient publication, too, would be an explanation or exhibition at a meeting of the member's society, without prohibition or secrecy.

The reason for this is a simple one. No one may patent a thing that is not new (or rather such patent would be useless). The particulars in the provisional specification are not given to the world, but kept private at the Patent Office for the period allowed—nine months. Anyone, therefore, in the meantime taking out a full patent (complete specification) for the same thing would have precedence, unless the world (as the British Museum) had been told the secret by the first man. And as there is often no need for secrecy, why trouble.

In conclusion, if you must patent, go to the Patent Office Library, and read what others have done in the same line. Then go to a first-rate agent. And in all things be prepared to pay. To put it shortly, for a man not "in the trade," only a big patent, one worth the expenditure of a large sum, is generally worth being patented at all. I am, yours, etc.,
A BARRISTER-AT-LAW.

April 22, 1904.

THE NORTHERN EXHIBITION.

To the Editors.

Gentlemen, One reads from time to time a good deal of criticism in respect to the affairs of the Royal Photographic Society, but as a mere outsider I cannot help contrasting the methods of the "Royal" and my treatment as an exhibitor, with the methods of the Committee of the Northern Exhibition. But you naturally say, "Why make a contrast?" Well, I will explain.

For a few years I have exhibited at the Royal. I send up my pictures together with the hanging fees, and in due course I am informed that such and such pictures are rejected, together with a receipt for the amount of my remittance, then comes a copy of the catalogue together with an invitation for myself and friend to the conversazione on the opening night, and, if I have any work accepted, a season ticket for the exhibition. Now, sir, this I consider Royal treatment. Mark the contrast. I send my pictures to Liverpool, together with the hanging fees, but I receive nothing in the way of acknowledgment and no receipt for my remittance. Then I see a report in the photographic Press of the opening night, brilliant success, etc., but as one of the contributors, no invitation has been extended to me, nor do I even receive a ticket that I may see the show. About a week after the opening I receive a copy of the catalogue, and this is my only official communication. Finally my pictures are returned, with not even a printed slip enclosed.

On Easter Monday I thought I would go over to Liverpool and spend an hour or two at the exhibition, and thinking I might do a little work on the river, I took my camera with me. In the afternoon I

wended my way to the Walker Art Gallery, and entering I turned to a youth in livery and asked him to kindly direct me to the exhibition. He in a very brusque manner replied, "At the top of the steps," and then added, "You can't take those inside," pointing to my camera and plate bag, so I said, "Why?" "Because," he replied, "you'll have to leave them here." I felt considerably annoyed at the rude officiousness of the youth, and my wife, who was with me, said "Come along, we won't go in." I thought it best, however, to make a virtue of necessity, and so handed them over at a charge of 2d. I then continued my way until I came to the ticket office of the exhibition. Before purchasing a ticket for my wife and myself I inquired from the official, "if exhibitors were charged for admittance," when he said, "I don't know—everybody that goes through here pays." I said, "Well, it isn't usual I think!" and he replied, "I know nothing about it—if it isn't right the secretary is inside, you had better speak to him and ask him to refund the money." I must confess that I felt very much put out, and to quote the words of the song, "It wasn't what he said, but the nasty way he said it," and I know in consequence that my enjoyment of the exhibition was brought to an untimely end. However, I paid my money and went inside, but I found no pleasure, and was glad to get out after spending less than half an hour. So, sir, I spent six hours in a railway train and a day in Liverpool, and had my outing completely spoiled. By what?—The lack of a little common courtesy. When I got back to the cloak-room I found a fresh attendant, who, instead of giving me what I had deposited, handed me an overcoat, and kept me waiting a considerable time when I explained to him that I wanted a camera and not a coat. I then left the Walker Art Gallery and got the first train home, after shaking the dust of Liverpool off my feet—that is briefly my experience of the great "Northern Exhibition." I do not know whether or not I am voicing the complaint of any other exhibitor, but I can assure you that I shall think carefully before I contribute another sovereign to the success of future Northern Exhibitions.—I enclose my card, and subscribe myself, yours faithfully, "A DISGUSTED EXHIBITOR."

April 25, 1904.

SOME NOTES ON THREE-COLOUR WORK.

To the Editors.

Gentlemen,—Mr. Baker is entirely wrong in assuming that I considered his notes as reflecting on my translation, but I did think it very nearly impertinent for anyone with only two years' experience in colour sensitising to question the statements of Dr. Eder, who has had thirty years' experience.

Your correspondent's remarks as to the article being out-of-date, etc., are not impertinent, they are only rude, and show how little he knows of the subject, and although two years old there are points in it which have never before been touched on by anyone.

I was not aware that Mr. Baker was endeavouring to commercially exploit these dyes, or I should not have taken the slightest notice of his article; still, as the translation in my previous letter proves that these purple black dyes can be used successfully, the only conclusion I can come to is that, notwithstanding his long daily experience and laboratory equipped regardless of expense, he is not yet an expert manipulator, and were it not that he has such an utter contempt for authorities, I could refer him to one that would probably clear all his troubles away.—Yours faithfully, E. J. WALL.

Foots Cray, April 25, 1904.

PSYCHIC PHOTOGRAPHY.

To the Editors.

Gentlemen,—Please find enclosed a few untuned spirit pictures. I have been very interested by the articles appearing in the Journal.

It seems to me that your correspondent of Friday week last is making fun of the thing altogether, and also seems to think the method of producing them should be made public.

I think he had better exert his brains, as I had to do before succeeding in it, for he will find it is not such an easy matter, but it pays for it in the end, as I am now receiving from £3 3s. to £55s. per dozen for spirit pictures.

By this I mean that, supposing a man lost his wife, or vice versa. If I had a description of the departed one I could photo the living one, and the departed one should be by his or her side.

Also, a family who have lost several members and would like a family group taken, the departed ones included. By coming to my

place and giving me a description of the lost ones, or showing me photo or drawing of them, I will take the family group, and include the departed one, who shall be in their right position in the finished picture.

Trusting you will excuse my troubling you with this matter, but there seems to be a lot of controversy about it, I thought, perhaps, might settle the matter that others besides Mr. Blackwell can do the —and without the aid of spirits.—I am, gentlemen, yours truly,

J. LAURANCE.

The Sackville Studio, 7, Sea Road, Bexhill-on-Sea,
April 26, 1904.

CINEMATOGRAPH PATENTS.

To the Editors.

Gentlemen,—I note in the last issue of your Journal an anonymous letter signed "A Cinematographer." As a matter of fact this letter already answered by my letter which you have published. However, had the writer of this letter considered it of sufficient importance to sign his own name, I would have taken the trouble to answer it—as I would be pleased to do any other letters you may see fit to publish signed by their authors. I, however, have other things to do besides answering anonymous letters, whether they be addressed to me personally or printed in your Journal, and do not propose to take the trouble of answering anyone who has not sufficient belief in the importance of his own statements to sign his name. I have received some forty odd letters from various old assistants of mine referring to the early phases of this invention, which I have not had time personally answer, and would take it as a personal courtesy to me if you would kindly express to them, through your columns, my deep appreciation of the kindly interest toward me which these letters show.—Yours sincerely, W. FRIESE-GREENE.

Millbrook, Dovercourt, April 26, 1904.

PROPOSED TARIFF REFORM.

To the Editors.

Gentlemen,—So far the question of the proposed retaliative taxes on imported goods has not been adequately discussed in the photographic papers, at any rate in their relation to photographers. One reference to the subject appeared in a contemporary, supposed to be written by a professional, but the ignorance displayed was so great as to make it appear quite impossible that any professional could have known a little of the subject. It was stated that the proposed changes would make no difference to photographers, as scarcely any of their goods were imported, except a few mounts from France. Now surely every professional knows better than this. An enormous number of mounts come from Germany, and within the last few years a large quantity, especially of the finer quality, are American. These presumably would be taxed, as they can scarcely be regarded as raw material. Photographic chemicals, too, especially developing agents, come in vast quantities from Germany. Probably almost the whole of the raw material for sensitised paper comes from abroad, and no doubt, the paper-makers of this country would object to such goods coming untaxed as raw material. The glass of which dry plates are made comes from abroad in considerable quantity; this again could scarcely be untaxed as raw material. It is tolerably certain, then, that when such new arrangements are made, and made they will be sooner or later, professional photographers will have to pay more for nearly every article used in their business, unless the producer pays the tax as we are assured by some, they must do.

At first sight this is a serious outlook for those who earn their bread by photographic work, for an increase in the cost of materials means a proportionate reduction in the profits obtained, unless higher prices can be secured for the finished photograph, or a larger amount of business can be done.

The question is a very serious one, and it is as difficult as it ever was to foretell the future. But the present state of business is equally serious. We find on every hand that trades and manufactures are suffering from unfair competition. Goods are being imported to be sold at a cheaper rate than they can be manufactured here. Some will say, "So much the better for the photographer, for the cheaper he can buy his material the more profit he can make." This is a very superficial view to take, for the prosperity of the photographer depends on the prosperity of the community, and if one section of the community suffers all must lose in the end. We are naturally dependent upon our

her. In the Midland district several trades have been almost wiped out by foreign competition; for example, button-making, nail rivet-making, are almost gone. Yet the first-named was once a very important industry, and German wire nails, it is said, can be bought for less than the wire costs here. The jewellery trade in Birmingham is suffering severely from foreign imports at low prices. It may surprise some to learn that the jewellery trade of Birmingham is large and important, and it does not produce only "lacquered ware," or "Brummagem ware," but that nearly the whole of the English jewellery, including the best London, is made in Birmingham. The boot trade is suffering in the same way. It is possible to buy English boots here at 16s. 6d. a pair, which cannot be bought in America for less than 25s. The list might be continued to a much greater length, and when all these trades are suffering photography must suffer too.

It is said that these things will right themselves, and that although Birmingham has lost its staple trade of ribbon weaving, it soon established a prosperous watch trade, and when that went from the same cause cycles and motor cars filled up the gap. But the men who made ribbons did not become watchmakers, and the watchmakers do not build motor cars and cycles. They have had to go to the wall, and the cycle trade is threatened with large importations of foreign bicycles, and a wall of hostile tariffs is destroying the markets for English goods all over the world.

The English dry-plate trade is being threatened in the same way, the hostile tariffs are so rigorously enforced that some time ago a well-known American lady photographer was asked, on her return from America on a European tour. Under these conditions how is it possible for English manufacturers to remain prosperous? They are condemned for clinging to old methods, for not making scrap of their old machinery and putting down the newest in its place. But what would be the use when they see that do what they may a foreign article can undersell them? What encouragement is there for a manufacturer to spend thousands of pounds on new machinery when German goods are sold for less than he pays for the raw material? And the American maker can do it at a profit because he can get high prices for his same goods in his own country.

This is an extremely difficult question, and whether the proposed remedies will be effectual it is impossible to say. But one thing is certain that when the change is made photographers will at first suffer. Whether they will suffer more if the present state of things continues can be told, and whether the proposed taxes will eventually benefit them is equally uncertain.—Yours truly,
HAROLD BAKER.
1, Cannon Street, Birmingham.

BARMANS. Special.—Photo. Canvasser's Dishonesty.—On four charges of having obtained money by false pretences, Henry Spare, who has lived at the Corporation lodging-house in Ancoats, appeared before Mr. Brierley at the Manchester City Police-court to-day. Wm. Cobbett prosecuted on behalf of Messrs. Eddison, Limited, photographers, of Manchester and elsewhere, by whom the defendant recently engaged as a canvasser. The allegation was that Spare went to public-houses and solicited orders from barmen and barmaids, representing that his firm were offering to such persons special rates of 2s. 6d. (instead of 12s. 6d.) for six photographs, and in some cases saying that they were to exhibit the photograph in the public-house. The coupon books with which the firm's canvassers are supplied, said Mr. Cobbett, stated the only authorised terms, in most instances the defendant had made an alteration in the coupon, or endorsed it to the same effect. In this way he obtained copies of half-crown payments, for which he had not accounted. An employee of the firm said they had no such "barmen's and barmaids' special," as the defendant had represented. Detective-inspector Ridings brought two other charges against the defendant of obtaining a postal order for half-a-crown by false pretences. These had obtained as "booking fees" from persons answering advertisements—in one case from a barman, in the other from a coachman. The defendant admitted his guilt, and said he came to Manchester in search of employment, but could not get it, and became destitute. On obtaining the situation as a canvasser he gave way to temptation. A sentence of four months' hard labour was passed.

Answers to Correspondents.

* * * All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.

* * * Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.

* * * Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.

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PHOTOGRAPHS REGISTERED:—

H. G. PIKE, 34, High Street, Reigate. Photograph of Castle Grounds, Reigate.

H. W. HAYNES, 13, Cumberland Park, Acton, London. Photograph of Past and Present Members, Acton Urban District Council.

J. WICKS, 41, North Gate, Slaford. Photograph of the Manor House, Slaford.

A. B. BURKIN, 21, Reforme, Portland. Two Photographs of a Military Funeral at Portland.

E. RIDDLE.—We do not think you are asking too much for the prints. We have followed your instructions and inserted advertisement to effect your desire.

J. SHAW.—On the facts as stated in your letter we think you could make a claim against the firm who has pirated your print. Your best plan is to place the matter in the hands of your solicitor.

CEMENTING GELATINE.—"PHOTOPHIL" asks: "Would you, please, say what is the best method and adhesive for firmly and flatly uniting two films of gelatine without any expansion of either?" In reply: If the films are gelatine, pure and simple, moisten them with a dilute acetic acid, press in contact, and keep flat till dry; or plain water may be used if slightly tepid.

A. L. CRANCH.—You do not say whether you desire a situation as a studio operator or press photographer. In the former case the prints give no clue whatever of your abilities beyond being fairly good snapshot photographs. In the latter case so much would depend on your own initiative for securing the right thing at the right time that lack of knowledge of the facts precludes our offering advice. Let us hear from you again.

BOOK WANTED.—"KRAM" writes: "(1) Will be very pleased if you can give me the name of the best book on retouching? (2) I am enclosing some prints taken from negatives which I have retouched. I should like your opinion of them. Do you think I will ever be a good retoucher?" In reply: (1) "The Art of Retouching Negatives and Finishing and Colouring Photographs," by Robert Johnson, is a good book. (2) With practice we see no reason why you should not become a good retoucher.

THREE PER CENT. COLLODION.—J. ADAMSON says: "A German formula gives 900 c.c. of a 3 per cent. collodion in wet plate work. What would be the proportions of gun cotton and alcohol and ether to make a 3 per cent. collodion? How many grams of pyroxiline to the 100 c.c. of liquid, or the simplest way it can be put to make up?" In reply: What is meant is three grammes of pyroxiline to ninety-seven c.c. of a mixture of equal parts of ether and alcohol.

DEVELOPER.—"FOCAL PLANE" asks: "Will you, please, tell me the best formula and best method of developing plates exposed by a focal plane shutter at 1-1,000th of a second? I use for ordinary work pyro ammonia." In reply: Any developer. What has the form of the shutter to do with the developer, supposing the plate is fairly well exposed? If it is very much under-exposed, and probably that is what you anticipate. Metol or rodinal will, perhaps, bring out as much detail as any developer.

TROOPER asks:—"Will you please give me a formula for painting a background dead black (on canvas)?" In reply: Stretch canvas tightly (on wooden frame if possible), thoroughly wet it (with a watering pot), and cover the surface with equal parts of lamp-black and dextrine, sprinkled from a fine sieve. Then rub the colour in with a stiff brush. Black "Kalko" background paint,

sold by the Vanguard Company, is also good, and convenient to use.

TEST FOR HYPO.—"LAD" asks: "(1) How to detect traces of hypo in paper? (2) When detected in paper on which photos are going to be mounted how to remove same without destroying paper?"

In reply: (1) Soak some strips of the paper in distilled water, in a test tube. Then make a solution of permanganate of potash—say a dram in five ounces of water, and acidify with a couple of drops of sulphuric acid. Next dilute some of this with water until it has but a very faint tint. If, on adding a few drops of the water the paper was soaked in, the colour is discharged and the paper contains hypo. (2) There is no method of removing it without disturbing the surface of the paper.

STAINED PRINTS.—A. WALLHAUSER writes: "I should be obliged if you would inform me as to the cause of yellow stains on enclosed print. They appear in the toning bath made up of gold and sulphocyanide. I washed the print with others for ten minutes in running water, then I put them in an alum bath for ten minutes, and then washed them again for twenty minutes before toning, and about a dozen turned out in this way. As a rule I am very careful with my toning, and have never had anything like this before." In reply: The stains are evidently due to contact with hypo, probably from an unclean dish being used for the washing of the prints.

COPYRIGHT.—"SMOKER" says: "I am reading your articles on the law of copyright with enjoyment. May I trouble you to answer one question. Take, for example, the group I enclose. It was taken at my own risk, no money consideration. If a gentleman who is in the group, and who buys a copy likes himself sufficiently (1) Could he go to another photographer and have copies of himself taken from it? (2) Could he have copies of any other gentleman (who might be an old friend) produced? (3) Or would such acts as above be an infringement of copyright. (4) Or must the whole photo be copied to constitute an infringement?" In reply: (1) No, not if the copyright is yours. (2) No. (3) Yes. (4) No. Copyright covers all portions of the picture.

STUDIO QUERY.—"A. A. A." says: "I shall be glad of your advice on the following:—I have the chance of shop, etc., but space at back will not allow of studio wider than nine feet; would you advise so narrow a studio. Not having worked in one so very narrow, I feel doubtful if the class of work I do (the best) could be carried on in so narrow a space. The light is good, being north-east, and length ample for studio—from 30 to 35 feet. It is only the width I am doubtful about, so shall be glad of your advice on the same, or shall I wait and look out for a more roomy place?" In reply: Nine feet is certainly narrow for a studio for professional work; still good portraits may be obtained in one of that width. The difficulty in so narrow a studio is in taking groups, not single figures.

STUDIO.—WESTLEY says: "My studio here faces west, and I get a strong sun from about two o'clock. Could you give me any advice as to the best means of overcoming the difficulty—screens, curtains, blinds, etc., I am using in abundance. It is not glazed with ground glass. Would it be worth my while to have ground glass put in? Could you also give me a word as to what means you would advise for keeping the studio cooler?" In reply: You might stipple the glass in the roof over with starch or flour paste to which some whiting has been added. That will answer the same purpose as ground glass. Or you may fit the roof with light wooden screens covered with tracing linen. Good ventilation will tend to keep the studio cool. A fan, driven by an electric motor will keep a current of air through the place.

A. E. WITTY asks: "I wish to get permission to photograph parts of (Greenwich Park, and I find from information in your Almanac that I can do so on production of the 'Red Book.' Can you inform me what this is and where obtainable?" In reply: The "Red Book" is issued by the Royal Photographic Society to its members, and to members of affiliated photographic societies. The "Red Book" besides representing the official voucher of membership also confers certain desirable benefits and privileges on its owner, one of which you mention, and all of which are detailed in the "British Journal of Photography Almanac."

Your best way to become the happy possessor of a copy is to join the nearest affiliated Photographic Society, or become a member of the Royal Photographic Society. The Secretaries will send you all particulars if you write to 66, Russell Square, London, W.C.

DEVELOPER.—"S. E." says: "I shall be glad if you will inform me if you think that it is as cheap to use 'brilliant' developer for professional use as to use pyro-ammonia. I buy the 'brilliant' in quart bottles at 3s. 6d. each, and the soda for use with bottle costs, I suppose, about 3d. or 4d. I use it in the same way as a toning bath (i.e., pour the solution back into a bottle each time and just strengthen it up for use). I have to develop on an average about twenty negatives a day. As it in time becomes thick and muddy, would it do for me to filter it, should I by so doing weaken its action?" In reply: "We have had no experience with the developer named—nor do we know its composition. We should think that our correspondent, who develops twenty negatives a day with it, would be able to judge whether it is more economical to use that or pyro. Of course all developers lose energy the more they are used. Filtering the solution will not weaken it."

ADULTERATION OF Potassium Cyanide.—L. F. Kebler complains that potassium cyanide, labelled "98 to 100 per cent. pure," is frequently imported into the United States in a state of gross impurity. Analysis of four samples showed the percentages of KCN to be 33.65, 13.31.75, and 65.90 respectively, the remainder consisting of sodium cyanide in very large quantity, with potassium carbonate, and in some instances sodium chloride as well. The author remarks that present methods of detecting and determining chlorides in the soluble cyanides are not satisfactory, and more expeditious and accurate tests desirable.—U.S. Department of Agriculture Bulletin.

DETERMINATION OF Formaldehyde.—C. Kleber suggests the following method for the quantitative determination of formaldehyde:—A commercial concentrated sodium bisulphite solution, which generally contains a considerable quantity of free sulphurous acid, a solution of pure caustic soda, preferably made from the article purified with alcohol, is added, until the odour of sulphurous acid has completely disappeared. No special care is required in this operation, as a slight excess of caustic soda over the quantity necessary for deodorising is immaterial. Then this solution is diluted with water, until 30 C.c. it exactly neutralises 50 C.c. of normal caustic soda, using phenolphthalein as an indicator. Towards this solution formaldehyde behaves like an alkali, and can be titrated accordingly.

AMONG the recent additions to the art collection in the Victoria and Albert Museum are three cases containing original drawings, a work of modern English book illustrators. Phil May is represented by a characteristic study on brown paper, and by several pen-and-ink drawings for process reproduction in "Punch" and elsewhere. Next to them are two pen-and-ink drawings by Charles Keene, reproduced by wood engraving in "Punch." G. Du Maurier's original pen studies and finished pen-drawings for "Punch" are exhibited along with proofs of the wood engravings. The work of Frederick Barnard is illustrated by three characteristic drawings in pen-and-ink. There are also four mounts containing nine original water-colour drawings by Kate Greenaway, made for her well-known picture books.

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JUBILEE OF "THE BRITISH JOURNAL OF PHOTOGRAPHY."

STORIES of the British newspaper Press invariably make attractive reading. The foundation, growth, and expansion of the vastly circulated publications which exercise such commanding influence on the national life, supply the historian, as a rule, not only with material for important contributions to the records of industrial progress, but also with the opportunity of relieving his book by some piquant touches of a personal nature which contrast the high lights of human interest with the sombre shadows of his subject. As in the more prosaic walks of life the element of romance occasionally asserts itself, in the world of Press administration, and a lambent glamour of mystery attaches to every member of a newspaper staff from the able youth irreverently known as the "printer's devil" up through the entire organisation up to the Grand Editor-like occupant of the Chief Editorial chair himself. The fascinating story of the lay Press may, then, always be trusted to delight the general reader, who, however, in the cases out of ten, is probably unaware that the popular daily and weekly newspapers do not meet all the requirements of the serious student of commercial, scientific, or industrial progress. Hence it is that we have but so much that comparatively unknown but still very powerful in the Press termed "class" journalism. Your ordinary daily or weekly newspaper which deals with the general trivialities of the moment is read, flung aside, and, in most cases, forgotten in a few hours. Not so your technical journal which voices and represents one's principal interests in life. In this respect no ponderable gap in the community is neglected or unrepresented;

every trade, profession, or occupation being catered for by competent writers and authorities. An exhaustive history of the technical Press since its virtual foundation in the earlier part of last century might be made in great measure to take the place of an industrial history of England so intimately is the work of the Press associated with what goes on daily in the nation's workshops and manufactories.

Tempting as the theme is, it would be foreign to our present purpose to enlarge upon it, even were it possible to devote the necessary space to the treatment of a subject to one section only of which, on this occasion, it is our obvious intention to address ourselves. Readers of these pages for the past few months will not need reminding that from time to time we have reprinted, under the title of "Fifty Years Ago," extracts from the "Liverpool Journal of Photography" of 1854, of which the present journal is the direct dynastic descendant. Curious it is to, as it were, sweep the mental gaze back over the broad gulf of half a century, and, making the familiar comparison of "now" with "then," note the fact that in those subjects of general interest and discussion which occupied the minds of photographers fifty years ago, time to-day has wrought little change. Processes have altered, improved, or advanced; the field of their application widens from year to year, but nevertheless the scope and possibilities of the "black art" were quite as fully recognised in 1854 as the then existing state of knowledge permitted.

Recent Royal usage has associated the completion of a Jubilee with the occasion of rejoicing. Authorities are not agreed as to what a Jubilee really is, or what particular number of years it signifies—two, seven, twenty-five, or fifty. Since 1887, however, the mighty arbiter, Custom, in obedience to which we all make deference, has decreed that a public person, or institution, boasting, as such, a continuous career of fifty years before the world, may legitimately make the fact the subject of self-congratulation and invite the sympathetic countenance of friends and contemporaries in the celebration. So it comes about, therefore, that in this year of grace—1904—THE BRITISH JOURNAL OF PHOTOGRAPHY takes pride and pleasure in the reflection that it passes into the second half century of its existence. The first number of the oldest photographic journal now extant was published in 1854, and thus our fiftieth year was completed in December, 1903. Consequently January last should have seen this present announcement, which was deferred till a season of the year more convenient and congenial to celebrations of the kind.

To prove that the history of THE BRITISH JOURNAL OF PHOTOGRAPHY during its fifty years' life if written out in full detail would practically constitute a voluminous history of the "art-science" which the JOURNAL WAS deliberately founded to foster would, we

submit, not be a very difficult thing. But such a history in the form suggested would necessarily be somewhat partial and coloured by the not unnatural egotism of the pardonably self-aggrandising journalist. The history of photography has never yet been written, and never will be, until the work is taken in hand by some as yet undiscovered master of historical research thoroughly well qualified to collect, sift, and weigh evidence, and thus do for photography in general what has been done for one particular branch of it—the lens—by the accomplished authority, Dr. Moritz von Rohr, of Jena. When that history comes to be written it cannot possibly escape notice that at various epochs this JOURNAL has had a direct and most important influence upon some of the most momentous advances in photography, and we trust that we may be pardoned for recalling those circumstances on this occasion and subsequently.

We shall, indeed, recall them more in detail on June 10th next, when, in order to commemorate the completion of its fiftieth volume, we propose in a special supplement to the ordinary issue of THE BRITISH JOURNAL OF PHOTOGRAPHY of that date, giving a history of the paper and those who have been associated with it since its foundation. The story, we have no doubt, will make interesting reading in respect of both its journalistic and photographic aspects. Avoiding for the moment any further reference to the former feature, it will be our object to show that the JOURNAL and those who have had the honour of being attached to it during its career have all along rendered great services to the cause of photographic progress. Addressing itself primarily to the advancement of knowledge in photographic technique, the JOURNAL has steadily encouraged every step forward which has had for its object the perfection of photography as an instrument of scientific precision. At the same time it has not neglected to promote and advocate the material well-being of those whose interests are bound up in the commercial phases of photography. To enumerate in detail, however, the many aspirations which the JOURNAL has always assiduously encouraged would amount to an anticipation of our issue of June 10th, wherein all this, and much more, will be written about. In truth, it is a pleasant, enthralling, and withal very human little history, that of the BRITISH JOURNAL OF PHOTOGRAPHY, which the present Editor-in-chief regards as one of his most cherished privileges to have the opportunity of writing. And, perhaps, it may be permitted to him to add that these feelings of gratification are somewhat sobered by the regret that so many of those who rendered loyal service to the JOURNAL in past years are not here to-day to share in the permissible exultation of those nowadays associated with the paper, in the fact that after half a century's existence the "old B. J.," to quote the colloquialism of the moment, is "going stronger and better than ever," and has marked out for itself a future of aggressive vitality and unrestrained progressiveness which will assure to the second half-century of its existence a degree of success, prosperity, and usefulness far greater than that of its first.

A DARING robbery was attempted on Saturday morning shortly after six o'clock at the premises of Messrs. Sinclair and Co., opticians, Haymarket. Two men broke the plate-glass window of the shop, and extracted a tray containing twenty-four gold pendant compasses, valued at about £40. A policeman on special duty outside a shop just opposite, hearing the sound of the breaking glass, dashed across the road and captured one of the men after a short chase. The other man ran off in the opposite direction. Eventually the man was captured, but it was then discovered that he had got rid of part of the spoils, and it is believed that he was assisted by accomplices. This is the second time that Messrs. Sinclair's window has been broken, the last attempt having been made on Easter Tuesday.

EX CATHEDRA.

New Lens Glass.

The use of the various kinds of glass made at Jena has revolutionised the construction of lenses, especially photographic, combination being now made possessing properties which not long ago were pronounced impossible by many experts. A further addition to optical powers seems possible, indeed, probably by the introduction of another medium for the manufacture of optical instruments—vitreous silica. Recently a paper by Messrs. J. W. Gifford and W. A. Shenstone, the "Optical Qualities of Vitreous Silica" was read before the Royal Society, and the feeling has been expressed that this substance is likely at no distant period to play an important part in optical work, and, if the cost of the material and its working should not be prohibitive, photography in certain directions should be distinctly aided. The authors of the paper have made a number of measurements of the optical constants of the new material, which possesses great uniformity of composition, combined with transparency to ultra-violet radiations, while, unlike quartz, it is not doubly refracting. To test the homogeneity and, consequently, perfection of refracting power of the new medium, four slabs of it were prepared, cemented together, and from the mass a prism cut and polished. A variation of density on any one of the slabs would have so affected the refraction as to render the prism useless as an instrument of precision; but so far was this from being the case that when tested against a similar prism of boro-silicate glass from Jena, all the slabs being from the same melting, the silica prism was found to be distinctly superior. A thin doublet had been made and described; it had the vitreous silica for one component and fluorite for the other; the focal length of the combination is almost independent of the wave-length, in other words the achromatism was almost perfect.

* * *

Electro-plating Aluminium.

The undoubted usefulness of aluminium in the use of photographic lens mountings, camera fittings, and so forth is not fully recognised by the general use of the metal for such purposes. The increased cost, perhaps, has something to do with the weathering, but there must be other causes. Probably its appearance influences camera users, for it must be admitted that the metal, when worked up, has not an attractive appearance, even when lacquered; when unlacquered it very rapidly attains a very unlovely leaden appearance. An improvement upon these qualities appears to be possible according to an article in "Electro-chemical Industry" by Messrs. C. F. Burgess and Carl Hambuechen, who have invented a method of electro-plating aluminium with any desired metal. The difficulty in such plating hitherto experienced has been considered to be the instant formation upon the surface after cleaning of a film of oxide, which prevents a cohesive coating being formed. A theoretically perfect plating bath is the one which would dissolve the oxide and allow the deposition to take place at the same time. This is brought about under the new invention by the addition of a soluble fluoride or a small quantity of free hydrofluoric acid. Then it is necessary to give a first plating of a base metal which will adhere tenaciously, and zinc is found to answer. After this, other metals, such as copper, etc., may be deposited on the zinc, using the ordinary precautions for plating in that metal. Singularly, gold cannot be satisfactorily deposited on the zinc direct, as, after the lapse of a short time, it seems to sink into the zinc, and almost disappear. If, however, a preliminary coating of copper be given, the gold coating remains perfectly adherent. It is perhaps too much to expect fold-plated aluminium mountings for lenses, but the

ould be the acme of luxury, and, as a good lens can be made in small bulk, the expense should not be prohibitive, and the idea cannot be said to be wildly utopian.

New ch in ar Physics.

Under this title, Dr. Wm. J. S. Lockyer, in "Nature," gives an abstract of a paper in the "Publications" of the Yerkes Observatory which records a triumph of photographic work produced under the guidance of the skilled hand and brain of Professor Hale working on lines indicated by Sir Norman Lockyer, M. Jaanssen. The application of the spectro-scope to the telescope in the manner devised by these two astronomers rendered possible the making of observations—without the intervention of an eclipse—upon the sun's disc and prominences, greatly adding to our knowledge of the sun's circulation. But these were all accomplished by the eye; the spectro-heliograph enabled photography to step in, and the latest form of this instrument is described in the paper referred to. The feature of the instrument is that it is capable of giving pictures of the sun in light of one wave-length—i.e., in monochromatic light. The instrument itself differs little in principle from the ordinary spectro-scope whose eye-piece is removed and replaced by a second slit. If the solar image be thrown through a lens upon the first slit, then after the solar image has passed through the lenses and prisms of the instrument it will fall on the second slit, which will only allow a narrow portion of the spectrum corresponding in wavelength to this slit to pass through it. The second slit can be adjusted so as to receive any particular line of the spectrum and completely isolate it. If now the solar image falling on the first slit be kept stationary, and the spectro-scope be moved in a flame at right angles to the axis of the incident solar beam, and in a direction at right angles to the length of the first slit, then the light which will pass through the second will be a succession of images in monochromatic light, corresponding to the strips of the solar image which entered the first slit. As an example, if the second slit be adjusted to receive, say, the "K" line of calcium, and placing a photographic sensitive plate almost in contact with the surface of the second slit, while the first slip is passing over the solar image, the second is moving over the stationary dry-plate, and thus the monochromatic "K" light to impress its successive images on the plate. The result is a picture of the sun in "K" light, and, by isolating different lines in a similar manner, various monochromatic images of the sun in different "lights" may be obtained. Professor Hale decided to employ the spectro-heliograph with the great refractor, and had, in consequence, to make special adaptations to this end, as the movement of the instrument as above would have caused a vibration that would have ruined definition. He therefore decided to keep the spectro-heliograph still, and to cause the solar image to travel across the first slit by means of a rotation motor. This necessitated a further device, the dry-plate being to traverse at the same rate as the image. Professor Hale connected the plate-holder directly with the rotation motor, and thus the two were moving simultaneously. A new field of research which apparently has not been opened up, Dr. Lockyer writes, to take advantage of it three stations would be required for the study of the element, and to take full advantage of the new method a number of stations would have to be established in the fashion needed for the star atlas. His justification for such a recommendation is that a study of the changes in the sun is vital for the clear understanding of the changes in our terrestrial variations which are so closely connected with our everyday life, and that the necessity of such a programme is obvious.

THE FUTURE OF PHOTOGRAPHY FOR EMPLOYEES.

THOSE of our readers who make it a rule to look through the "Answers to Correspondents" column week by week must frequently have been struck with some of the inquiries we have to reply to. A very frequent one of late has been as to our opinion of the merits of somebody's work as an operator or as a retoucher, and what salary he should command as an employé in either capacity. Sometimes the examples of work sent, possibly picked specimens, have been tolerably good, at others just the reverse, and they serve to illustrate that the sender has no idea whatever of what is required from a good craftsman, either as an operator or a retoucher, or the two combined. Many of the former's specimens, though they may be good, clean photographs, show that their producer has but little knowledge of lighting the sitter, and far less of posing him or her; indeed, some of the poses have often been of a most inartistic character. The same may be said with regard to some of the examples of retouching we have received, as they show that the senders have no idea of drawing or the anatomy of the face. The notion seems to be, in the majority of cases, to work out every line of the face and make it appear as smooth and even as the wax-figures one sees in hairdressers' shop-windows. In some cases the likeness has been almost entirely destroyed through the total obliteration of the most striking features of the model, the face being rendered flat and inanimate to a degree.

It is evident from a very large number of the specimens we have received that the senders have quite mistaken their avocations, as they clearly imagine their work to be good, or, at least, sufficiently so to obtain them employment—and so it may, of a kind. It is this sort of thing that has brought about the over-stocking of the labour market with mediocre workers, who are frequently glad to obtain employment at a wage even below that of an ordinary unskilled day labourer. At the present time, when plates are bought ready for exposure in the camera, there is really very little for an operator to learn before he can produce a good and clean negative.

The chief skill now required is in the lighting and posing of the sitters, and being able to deal with them with tact and in a gentlemanly manner, so as to secure portraits of a refined and artistic character. These qualifications do not seem to be recognised by a large proportion of the candidates for appointments as operators. Many seem to surmise that if they can produce a clean negative, that is all that is necessary to secure them employment. It is perfectly true that the highest class operators—even in the best studios—do not get the same high salaries that used to be paid in the wet collodion days. But four or five guineas, and upward, a week are still paid; but, then, it is only to gentlemen of good education and with exceptional artistic ability. It is obvious that these qualifications are quite overlooked by some that think they are really good operators. An operator who may suit quite well for a studio of the "three for half-a-crown" type would be quite out of place in a high-class one where the sitters are mostly of the aristocracy.

In the above we have only been considering the male portion of photographic labour. But at the present time much of the work that used to be done by males is now done by females, and that does not improve the position of the former. A very large proportion—indeed, by far the larger proportion—of the printing and toning, as well as retouching, is now done by females, and it may be at once admitted that this work can as well be done by them as by males. But with them the outlook for the future is by no means bright. It has, for some years past, been a custom with very many to take girls as apprentices, with or with-

out premiums, for three years to learn printing, mounting, spotting, reception-room duties, etc., paying them quite a nominal wage, or none at all. After three or four months the apprentice, if fairly intelligent, becomes, with ready sensitised papers, able to do the work as well as those with long experience, and also to retouch negatives fairly well, if they have good tuition. She then becomes a valuable hand for the end of the term, and receives but quite a nominal sum for her services. Before she is out of her time—perhaps six months—another apprentice is taken on to learn the business, and she in due course takes the place of the former one, who then has to seek a situation elsewhere, and finds that it is by no means so easy a matter in the already over-stocked market as she or her friends were at first led to imagine, as witness the number of advertisements in "Situations Wanted" that appear weekly in our columns.

The advertisements "Situations Wanted" and "Situations Vacant" are always a good criterion of the existing state of the labour market. There is very little question that the present state of competition, with cutting prices, has been brought about by gelatine photography. It has tempted so many to become amateur photographers. As such they are able to purchase their plates and papers at about the same price as the professional, and they think, from the prices the latter—particularly those of the higher class—charge for their work, that photography must be a highly remunerative business, quite without taking into consideration anything beyond the mere cost for material. Hence they drift into professionals with very little ability as such, and, consequently, frequently adopt cutting prices. Some parents, thinking of the supposed profits of photography, article their sons for a term to some who almost make a trade of taking "articled pupils" with a very substantial premium; but what are the youth's prospects when he has served his term?

The object of this article is to point out to young people and their parents that at the present time photography, as an employment, is by no means so lucrative as many seem to imagine, and there seems to be but little prospect of its being better in the future. We therefore suggest that they should not enter the ranks of professional photography without giving due consideration to the matter.

THE COLOURED DAILY.—It is undoubtedly coming. But when? And by what means? Well, it must be process. It is curious that New York attempted a "Graphic" daily. It was to be by litho. It failed. London attempted a "Daily Graphic." This journal relies on process. It is a great success. The new daily in colours must be by tri-chromatic process method. Once again, we are ready.—"Half-Tone Times."

ASTRONOMICAL INSTITUTE OF EDINBURGH.—The fourth meeting of this society, since the present session opened was held on April 20, in the Philosophical Institution, Edinburgh. Mr. Wm. Firth, the President, occupied the chair. Mr. Heath, First Assistant Astronomer, Royal Observatory, Edinburgh, read two communications. The first was on the Solar Corona, which he illustrated by lantern slides prepared from negatives made by himself during the Scottish Eclipse Expedition to Spain in 1900, also by large photographs made by the Astronomer-Royal for Scotland by means of his 40ft. telescope, and kindly lent by him for the occasion, and in addition, by a selection of coronal slides made from photographs of those eclipses, and the observation of which photography had been employed with most success. The latter series included several obligingly lent by Mr. Wesley. Mr. Heath's second paper (also illustrated by many slides from his own negatives) embraced an interesting account of his personal experiences in Spain during the 1900 eclipse expedition—an account which the mature technical astronomer and the budding astronomical amateur alike seemed to enjoy thoroughly.

THE CRYSTALS OF AMIDOL HYDROQUINONE AND EIKONOGEN.

THE crystals of the developing agent amidol, when seen under the microscope, exhibit a very different formation to those of pyro, but are, under certain conditions, equally interesting and beautiful subjects for study. The crystals of amidol may be obtained from an aqueous solution as unlike pyrogallol and amidol will not dissolve in ether or alcohol.



Fig. 1.—Crystals of Amidol. Slow evaporation. $\times 50$.

A pyro deposit presents to the naked eye a regular and artistic grouping of crystals, but amidol requires the aid of a microscope to discover its beauties, as with the unaided vision it has the appearance of a dirty patch on the glass.

When preparing crystals of amidol for the microscope the solution must be quickly evaporated to produce the most varied

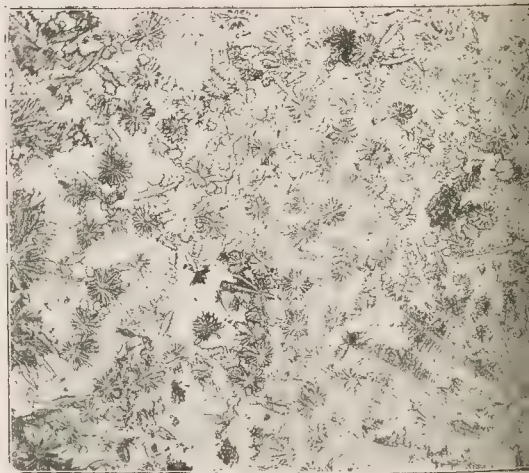


Fig. 2.—Amidol Crystals. Rapid evaporation. $\times 3$ obj.

effects. Slow evaporation produces the finest pyro crystals, but with amidol the deposit is too regular, and lacks variety. A photo-micrograph of the effect of slow evaporation is given in the first illustration.

the glass with the amidol solution should be warmed over a lamp. The resulting deposit, when examined under a low-power objective, will be found, for the most part, to be composed of uninteresting fragments, but here and there very



Fig. 3.—Amidol Crystals. Edge of deposit. 1 in. obj.

interesting crystalline effects will be noticed, especially at the edges of the deposit. The crystals of amidol give beautiful results with polarised light, superior even to pyro. The microscope should be rotated till a dark background is obtained

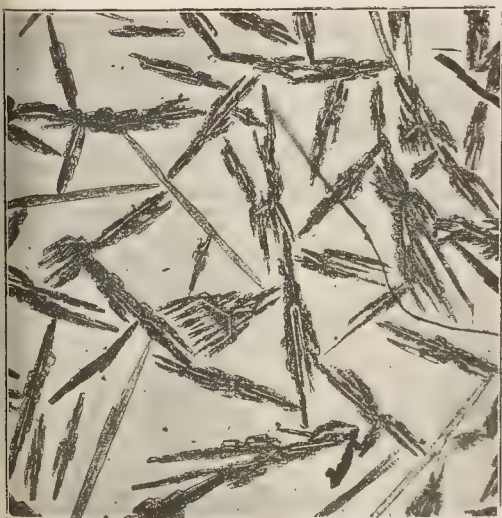


Fig. 4.—Hydroquinone Crystals from Ether Solution. 1 in. obj.

to bring out the best display of colour and form. Amidol crystals are usually of a very transparent nature, and on that account are not easily photographed. Fig. 1 is a reproduction of a photo-micrograph of amidol crystals, and gives the typical appearance of the deposit formed by slow evaporation. The crystals have formed in chains over the plate; the nature of the formation, however, is not particularly interesting.

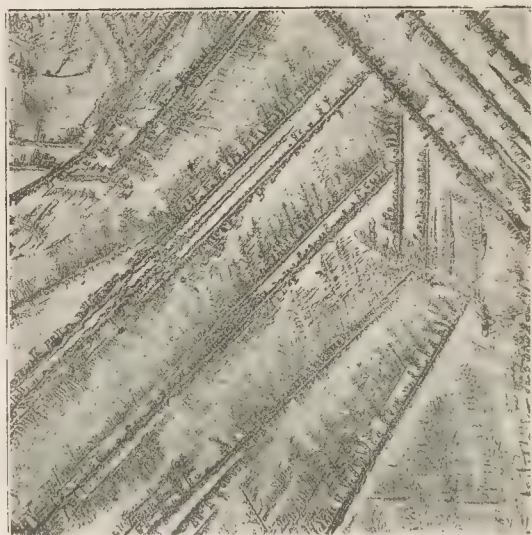


Fig. 5.—Crystals of Hydroquinone Dissolved in Water. 1 in. obj.

Fig. II. shows the appearance of amidol crystals when the solution is rapidly evaporated. In this plate the crystals, instead of forming in chains, are broken up into floral designs in a varied and picturesque manner. Some of the crystals bear a curious resemblance to flowers and leaves of plants.

Fig. III. is from a photograph taken from the same preparation, but at the extreme edge of the deposit. These crystals have formed into a very fine group, and bear a striking

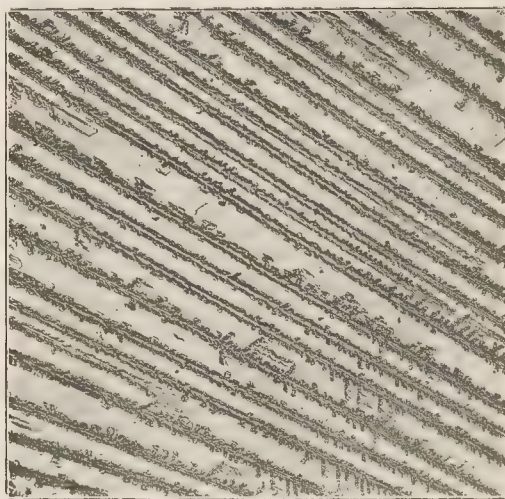


Fig. 6.—Crystals of Hydroquinone Dissolved in Water. 1 in. obj.

resemblance to palm leaves. There were several other similar deposits on the same plate, but these were the most perfectly formed. The adjoining crystals were included in the picture in order to give the general appearance of that portion of the preparation, though from an artistic point of view the palm tree should have been reproduced by itself. This group of crystals gave very remarkable effects with polarised light.

The crystals of another of the energetic type of developers, eikonogen, were examined by the writer, but gave very disappointing results. A solution of eikonogen after evaporation leaves only a few isolated crystals of no particular shape, and the few that are visible give little effect with the polariser. Hydroquinone produces many forms of crystals, and they are all of a different type to those of either amidol or pyrogallol acid. Interesting effects can be obtained with water, ether, spirits, or acetone as the solvent, and some of the typical formations are reproduced here.

When ether is the solvent long isolated crystals form, with a few broader specimens in some parts of the preparation.

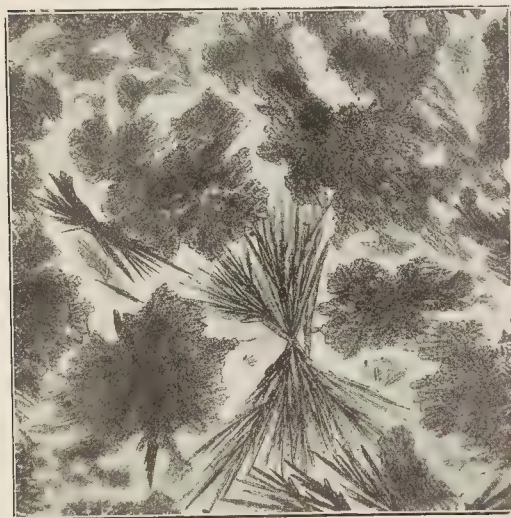


Fig. 7.—Crystals of Hydroquinone Dissolved in Acetone. 1 in. obj.

Fig. IV. reproduces these crystals.

Fig. V. gives the result of evaporating a solution of hydroquinone in water. With hydroquinone rapid or slow evaporation makes little difference. Slight and very transparent crystals are formed, consisting of straight rods with projections on each side; the projections are generally much more prominent on one side than on the other.

Fig. VI. is another portion of the same preparation of crystals. In this photograph the lines run nearly parallel to each other at very regular intervals, with a thin line passing down the middle of each rod.

Fig. VII. is a photo-micrograph of crystals from an acetone solution. This is a very different group from those shown in either of the foregoing illustrations. The crystals are formed in broad masses instead of rods; but one or two groups somewhat resemble the radiating nature of pyro crystals. All forms of hydroquinone crystals polarise effectively, especially those just mentioned, Fig. VII.

J. I. Pigg, F.R.M.S.

ON THE DISCOLORATION OF BROMIDE PRINTS WITH AN INCIDENTAL CONSIDERATION OF THE ACID FIXING BATH.

[A paper read before the Royal Photographic Society.]

THERE are several sorts of stains or discolorations by which bromide workers are frequently troubled, and some from whom few bromide workers wholly escape; although some workers would assert that they never had any stains or discolorations in their bromide work. In order to obtain certain results in bromide prints one may use a very active developer which will be very prone to produce stains; and I think you will find that those who never get stains make it a rule never to use a developer that does not suit their particular requirements. To distinguish the various discolorations is the first step; to assert the supposed causes is the second step; and, in the third place, I propose to speak of a proper mode of working to avoid each kind of discoloration. These are:—

- (a) Greyness; slight grey fog over print; greyish whites.
- (b) Yellowness of the print.
- (c) Grey-brown discoloration.

All these are seen most upon the whites, of course, and are totally distinct from wrong colour or "tone" of the image.

The grey fog is the least often met with, and the most easily prevented. It arises from exposure to light while the paper is still in the sensitive state. An "unsafe" colour developing light may produce it before development, or the faintest reflection of white light from the walls and ceiling while changing and charging the frames, but so will an unsafe light during development. White light—at least with soft papers, during fixation, and, in fact, until the final salt is removed in the first washing after the fixing bath, will produce this fog. Some papers are less prone to yield grey fog under these conditions, while others are particularly prone to produce it.

Yellowness and grey-brown fog are the two discolorations now to be considered. The two are clearly distinguished in most cases, but for those who have only suffered from one or the other, a test which I will give will suffice to make the distinction clear. The yellowness is a development stain. It arises from the precipitation of brown products of oxidation in the developer into the film of the paper during development. This stain will be more readily produced in proportion to—

- (1) The age of the developer.
- (2) The duration of development.
- (3) The rapidity of the particular developer in oxidising.
- (4) Exposure to the air during the development.
- (5) The sensitiveness of the film to coloration.

The statement in regard to the last item I can justify by the fact that many papers give the stain continually, unless very short development and very fresh developers are employed. Other papers are discoloured by amidol, but not by metol or hydroquinone developers. Again, most papers show staining, any, only later, on inspection by daylight, but a few yield visibly at an early stage. This yellowing is undoubtedly sensitive to light. It can, for example, be latent, and be rendered visible later by an intensifying action of light.

The grey-brown discoloration is a sulphur stain, and quite distinct from the others. This leads me to suggest a method of working, and I will first deal with discoloration (c).

The acid fixing bath stops development just the same as the "dead stops," sometimes used with bromide and gaslight papers. It acts as a clearing bath, as well as a fixing bath, to clear any development stains which are not in some way soluble in plain hypo. But it has the possibility of damage within it, owing to the addition of an acid to hyposulphite soda, and the liability to this danger is what causes many to recommend a plain hypo bath for bromide and chloro-bromide

work. A plain hypo bath works very well, although not acting as a "dead stop"; the development, therefore, requiring to be stopped early, but the accumulation of developer therein may lead to stain soon afterwards. The plain hypo bath only works well if the developer is one of the non-staining kind, and if the conditions of development are correct. It would, therefore, be better to learn how to make a safe acid fixing bath, and to use it when we desire it. The danger is that any strong acid is liable to decompose the hypo and deposit sulphur. Now, to avoid the danger. Great men—men of unquestioned greatness in chemical and photographic knowledge—have put forward a bath made with sulphuric acid. This, however, I think is not wise. I think that sulphuric acid is about the worst acid to effect this splitting-up tendency; lactic acetic acid is a far better acid for this purpose, while sulphurous acid is supposed not to act in this way on a hypo bath, and, as far as can be seen, this acid may safely be used. The danger of decomposing the hypo and depositing sulphur by the strong acid may generally be obviated or minimised by dissolving all the constituents of the formula separately, and then adding the acid constituent slowly. It is dangerous with any strong acid to pour it into a very strong solution of hypo, particularly one in which there are any particles of hypo still undissolved by water. In my experience, the safest way—in an absolutely safe way, in fact—is to import a salt, super-saturated with the acid, into the bath. The cheapest salt of this kind is sodium bisulphite. If sulphurous acid is added in the form of bisulphite of soda (a salt containing the acid in its free form) it is so safe from the decomposing tendency that many firms are selling a dry mixture of the hypo, and the bisulphite, to be, of course, dissolved in water together. For plates, the best fixing bath is a solution of hypo in water. An acid bath is, however, useful to prevent development stain of hypo, and to stop the development. For negative films, an acid bath is at no time advisable, owing to its great tendency to separate the gelatine from the support; although a solution made up in alum might be expected to obviate this. But negative papers need an acid fixing bath to avoid a trace of stain on the paper support, the meta-bisulphite bath being a particularly good one for these paper films. Bromide papers particularly need this bath, as, their effect being positive, and the image being viewed against the white paper, the presence of any vestige of stain is objectionable. A "toned" paper, of coloured base, is permissible, because the degree and nature of the coloration is under control, as a fortuitous colour cannot be.

Now we turn to the yellowness which has its origin in development, and not in the action of the hypo or acid-hypo. Given the causes, the remedy is clear. Use a developer which does not readily oxidise—like metol-hydroquinone, or, if a more active developer is desired, even though it be constitutionally more addicted to stain, let it be freshly made and quickly used. Let all developers having a tendency to stain have a sufficiency of bisulphite, to keep the products of oxidation suspended, and not precipitated in the film; and add the reducer dry at the time of use, or only filter through cotton wool when about to use. Let the exposure be sufficient, so that the immersion of the developer need not be excessively prolonged. Avoid exposing the print unduly to the action of the air. Mr. John Tallia's view is that yellowish whites are most often caused by repeatedly taking the prints out of the developer, to examine them during development, thus giving rise to oxidation of the developer, on the gelatine film being brought into contact with the air. Work with plenty of light, so that the prints may be properly examined without their removal from the developer. Let the fixing bath be fresh—that is to say, free from developer discoloration.

With regard to the greying discoloration. Knowing that exposure to actinic light is the cause of greying, it is clear

that the greying will be avoided if the operator tests the light of the window used when changing the paper; also the developing light; keeps all white light from the prints while fixing; keeps them free from white light for a few minutes in the first washing water—in fact, until the soluble salt is washed out into the water. Of course, imperfect fixing should be guarded against, although three minutes has been said to be sufficient for effecting the fixation of bromide prints. Do not blame the products of the manufacturers. As a rule, I think, we may take it that the plates, films, and papers obtainable nowadays are properly made and correct; but sometimes they are fogged by light at the factory; and some of the rapid papers made abroad, and sent over to this country by sea, come "ripened" and most sensitive, even in the high lights of the image. There are those who never find white light fogging their prints in the fixing bath; indeed, several people disbelieve that the fixed print can fog. We will deal with this fog for a moment. Mr. Horsley Hinton says of plates that they can be washed, and then fixed in a white light freely; but he does not specify any particular make of plates or paper, and the statement appears to be too general. Mr. Arthur W. McCurdy, of the Franklin Institute, Philadelphia, said just the same thing, and that thorough washing before fixing is a *sine qua non*. But here, again, no particular kind of plate is mentioned. Mr. V. C. Warner confirmed these statements. He used Bradley's "Extra Speed" plates; and he concludes (1) a plate or film, washed free from reducing agent used in developing, may be fixed as well in light as in dark, and at the convenience of the operator; (2) before fixing, it can be exposed to bright, white light, then redeveloped—in a weaker developer, till the entire surface is veiled—with no reduction of detail, only more printing density; and the result will be free from fog. In my opinion, however, all this is too general, for all these gentlemen lay down one statement for all films; but is this statement correct? Some emulsions will certainly fog under the conditions mentioned. Lumière plates, for instance, could not be taken into white light immediately after development without fogging; and the same is the case, I believe, with Austin Edwards' and Ensign films. And so also in the case of bromide paper; all bromide prints will fog if exposed to white light before fixation, and several will fog in the fixing bath, and until the soluble salt is dissolved out in the first washing water. Associated with this salt may possibly be some unaltered, or only slightly altered, yellow silver bromide.

A test to distinguish the sulphur stain from development stain is as follows:—Mercuric chloride—ordinary bleaching solution for intensification—will soon affect the yellow stain, which contains no sulphur, turning the stain white in a short time; but the grey-brown sulphur fog or veil is only very slowly affected by mercury, which does not entirely bleach it, but only makes it lighter. The yellow development stain is a compound of oxide of silver with the product of oxidation in the developer. This compound is insoluble in plain hypo. Under certain circumstances this yellow stain may pass, by the action of hypo, into a sulphide which is insoluble. Both these facts are arguments for an acid fixing bath.

The old-established idea of the reaction of the crowded fixing bath is possibly an incorrect one. It is, perhaps, incorrect to say that all silver haloid passes into a double silver salt. Some part of the haloid may be but triflingly modified and remain, till perfect fixation is finished, in nearly its original state.

And now to speak of developers that tend to stain. It would almost seem as if the tendency to give yellowish stain were in some way associated with the amido radical in the constitution. Amidol is found to readily stain, and several others containing NH_2 in their formula are also prone to stain. Those of the new synthetic reducing compounds which have not the NH_2 radical are free from this tendency (the one exception, as far as I know, being pyrogallol). I throw this out merely as a query

for the learned to answer. It is, of course, beyond the province of a mere worker like myself.

The acid hypo bath is used for plates, to avoid blistering, and also to prevent stains in the film, chiefly because of the use of the alkaline carbonates, or because the concentration of new developers (caused by use of large quantities of sodium sulphite in conjunction with alkaline carbonates) tends to blister.

The sulphur difficulty is a great difficulty, as much in the acid-fixing bath as in the notorious combined toning and fixing bath. Theoretically, the addition of acid to the hypo must produce the liberation of sulphur; an acid salt should, of course, act likewise. This formation is readily observed by adding in a test tube a crystal of citric acid to some hypo solution, and then gently heating it, when a white, curdy precipitate will gradually appear. If only a small quantity of acid be present, milkiness ensues, and the precipitate separates more slowly. The sulphur difficulty is much delayed (but not, I believe, prevented, when an old solution is used) if the acid and the hypo are separately dissolved, allowed to cool, and slowly added together, although a long delay before use seems to make the action very great. When alum is used with hypo many dangers arise, the separation of sulphur being almost inevitable.

With silver present, the sulphur precipitated in the film is very ready to form silver sulphide. With interrupted fixation, some of the sensitive salts may be left in to fade, discolour, or to perform a multitude of reactions. But acid directly added to alum and hypo solutions may effect many changes, good or bad. The danger is that a strongly acid substance is liable to decompose the hypo, liberating sulphuretted hydrogen, and depositing sulphur; or it will liberate hypo-sulphurous acid, which splits up into sulphurous acid and sulphur. But the process of the deposition of sulphur is very slow; while the presence of the sulphurous acid, as well as the hypo-sulphurous, and the excess of the hyposulphite of soda, keeps the bath useful and the prints clean. The process seems to me to be that, when an acid-hypo bath is used, it will eventually act in depositing sulphur. This process, however, is extremely slow—so slow, indeed, that we may ignore it in the early stages of the bath. That is why, in using the alum-hypo bath for sepia toning, it acts best when old, and worst when quite new. Conversely, it acts as an acid-fixing bath best when new and worst when old.

A safe acid bath may be made according to this formula:—

Hypsulphite of soda	4 parts.
Metabisulphite of potash.....	1 part.
Water	20 parts.

But the metabisulphite is costly, and the same result is obtained with bisulphite of soda. For plates we may have two stock solutions, made as follows:—

I. Hypsulphite of soda	1 lb.
Water	50 ozs.

This should be well dissolved: for, if we are going to have any danger at all it is most likely to occur when the hypsulphite is not in perfect solution.

II. Bisulphite of soda	4 ozs.
Water	20 ozs.

This should be kept in a stoppered "Winchester." For use, one bulk of II should be added to ten times the quantity of I. For papers—bromide, etc.—dilute with from 25 to 50 per cent. of water. If using amidol, add it dry at the time of use to avoid stain. Another way is to dissolve it in part of the water used, and filter the solution with the other dissolved constituents. An excellent formula for good black prints is:—

Sulphite of soda	1½ oz.
Bromide of potassium	15 grains.
Water	15 ozs.
Amidol (added at time of use)	60 grains.
(Or 4 grains to 1 oz.)	

This will work all the better if the sulphite is also fresh dissolved.

Another formula for soft grey prints is:—

Sulphite of soda	3 ozs.
Water	80 ozs.
Metabisulphite of potash	12 grains.
Bromide of potassium	8 grains.

Filter 1 oz. bottle amidol into this by part of the solution.

A. G. FIELD.

YACHTING PHOTOGRAPHY.

[A paper read before the Edinburgh Photographic Society.]

AMONG the many sports with which photography is combined there is none, I consider, which lends itself to the use of the camera so much as yachting. Be he the keen racing enthusiast or the easy-going cruising man, he is always tempted to have a record of his favourite pastime. In racing, the manoeuvres a start, the neck-and-neck hammer up to windward sometimes fairly enveloped in water, the roundings of the marks, the run home with spinnaker, and the finish where the hulls of the boats sometimes scarcely be seen for the amount of white canvas crowded on to the towering spars all appeal to the photographer while it would be difficult for the latter, from the time he comes yawning up the hatchway to look round among the morning mists and the dingy surroundings of some busy harbour, until he for a change drops anchor at sunset in a quiet little peaceful bay, far from the madding crowd, to resist the many appeals of the ever-changing moods of nature, the range of scenery, and the many both exciting and humorous events which take place in a day on the sea. On thinking over how I should treat my subject, I am afraid that I cannot give it justice here. I would have no difficulty in addressing a yachting audience, as to be technical would be making everything plain; but to be so here would, I think, be making myself unintelligible to most. However, I will go over as simply as possible a few points which I think would be of assistance to any one wishing to have yachting pictures.

To begin with, I wonder if I should, in an inland town like this, take for granted that all my listeners know how a yacht is rigged, and whether for the benefit of a few I should give a short description of one. As it would be rather difficult to do so very fully without wearying one or two of the "would-be" nautical men present, I just give in a few lines the remainder of a novice making his first visit to a yacht. The yacht was yawl-rigged. The account, I may say, is taken from the "Cruise of the Folly":—"It boasted of two masts, and there were other smaller pieces of wood projecting horizontally from each end. I was inclined to complain of this arrangement as it made it difficult to distinguish between the head and tail of the vessel till it began to move; but if you bear in mind that the one in the bows is called the bowsprit and the other the one the bumpkin, there is no real difficulty, at least not to the experienced eye. The mainmast rose out of the front part of the deck, and supported four sails, two in front and two in rear. The ones in front were triangular in shape, and extended between the mast and the bowsprit, the one before being called the jib and the one behind the foresail. The sails at the base of the mast consisted of the mainsail, a huge trapezium, and another triangle on top called the topsail, a word whose etymology requires little or no explanation. The mainsail, it is important to note, was stretched out on two spars, the gaff above and the boom below; and one of the chief perils of navigation on board a yawl arises from the unpleasant habit the boom has of swinging over from one side of the vessel to the other, thereby endangering the lives of persons who may be seated quietly smoking or playing cards on the deck. The second mast, known by the mysterious name of the mizzen, was planted at the extreme rear, and carried a small edit

the mainsail. The sail was attached by a rope to the end of the bumpkin, and was thus made to serve as an artificial extension of the real length of the yawl. When it is borne in mind that the allowance which one boat has to give another in a race depends largely on its length, it will be seen that this contrivance is not quite so childlike as it may appear at first sight." I am not sure that this description makes things very simple, but it at least shows where the different sails go in case I should mention them later on. Well, I think it would be a good plan if I gave here a few of the errors and mistakes which I first made when I started photography.

Some years ago, when I was owner of a smart little seven-footer, of which I naturally thought a great deal of, a friend came to stay with me for a few days, and I was delighted to find he was a photographer, so that now I thought I would have no difficulty in getting photographs of the boat. He was with us about a week. I spent a considerable time each day idling past the slip of the pier on which my friend stood holding his wonderful box at us. His evenings were spent in one of my rooms shut up by himself, as I thought, doing nothing but messing the furniture; but, to my great delight, one morning he presented me with a photograph of the yacht. It was splendid! I did not mind much if she was up in a corner, or if a bit of her topmast was cut away, or her bowsprit looking very short. I could recognise her quite well—photography seemed a splendid thing—I must go in for it; and, as I wanted to dispose of his camera (from what I learned afterwards I was not surprised at this), I became a ready purchaser. It was a beautiful instrument, made of mahogany and brightly finished; it had a small hole in front with a neat little lens (none of the great, big, ugly pieces of round glass you see nowadays), and had a spring shutter which went off like a trap, which I thought would make the photographing of yachts going at full speed an easy matter. I had only to get the camera to be fully equipped for taking pictures. I went to a dealer (who I thought a great stupid); I wanted very quick plates so as to take yachts in motion, and he would try to sell me slow ones, saying that they were plenty quick enough for my work; but as I could see he did not know anything about yachting I took the fastest I could get. I then gave up an afternoon's sailing to get a few pictures of the yachts as they came into the harbour. I wanted a good position where I could be perfectly steady, so that at first I would not be troubled with the camera being moved during exposure. I went to the pier and got myself planted against one of the big round pile-heads on which the ropes are attached to moor ships alongside the quay. This I found gave me a nice space between two of the piles, so I set the shutter and waited for the first yacht to come out. I was getting her nicely centred on the finding, and seeing the camera round as she came along. I was in luck—it would be a splendid picture; when I was suddenly startled by a rough voice from aboard the ship alongside the quay shouting out, "Let go that rope!" This startled me and spoiled my exposure. It was in no good humour that I told the man "I wasn't touching his rope"; but as my answer, instead of appeasing him, seemed to make him very angry, I went further along the pier, where I got an opportunity of posing my plates. After I got them developed I found that I put bits of them together I might be able to make up a picture out of the lot. I had not a whole yacht on any of them—I had a topsail, another a bowsprit, another a mainsail, and so on. I may also say that the results were very flat and dull, so I blamed the plates. I felt sure they were too slow; and I am aware that they were much too quick for working at full aperture of the lens. I was a little disappointed at the results, so gave it up until the opening cruise came off, when we were to have a photographer down to photograph the boat, and when I thought I would get a few hints, and that after seeing his way of working I would get on better. He set

up a stand camera on the breakwater, got one of the yachts to sail past to focus on, then told the rest they were all to pass at the same distance from him, which he estimated at thirty feet. From my experience of judging distance on water I put it down at eighty feet; but I am sure that every one, and especially beginners, will find it much more difficult to judge distances on water than on land. As each yacht passed he made an exposure, and when they were all taken told us he would send us prints in a few days. I may say we did not get the prints, but I saw the negatives, and I must say they did not help me much, although his results were different from my own. Where I had only got a little bit of a boat, he had got all but the little bit. I counted his mode of working, and was no good, and henceforth I condemned stand cameras for this work. I persevered after this, but decided my failures were due to the camera. Now, I am inclined to think that some people will put it down to my fault, as we are occasionally told that these cheap cameras will do as good work as the very expensive ones. However, I launched into expense, got a camera with a good lens, a varied speed-shutter, and a good finder, and after this my failures began to get a little less frequent. The principal difficulties I had were focussing and getting my subject all on the plate. With a yacht coming tearing towards me I found it a little difficult to reckon the proper distance to set the focussing scale, and also with the small finders to get everything on the plate and have the horizon at the proper angle. When I began to get accustomed to getting over these difficulties, a box form of magazine camera I found a handy and convenient instrument. It stood a lot of knocking about, was always set ready for use, and a little salt water did not harm it much; but it had several drawbacks for serious work. From my experience the essentials of a camera for this work is one with which you can see and focus your subject up to the moment of exposure, and which will allow of this being done even when using a long focus lens, such as the single combination of the ordinary lens. With a short focus lens, such as a 5 in. on a quarter-plate, or a 6 in. on a 5 by 4 plate, when taking a boat coming bow on, it makes the different sails seem out of proper proportion to each other, the size of the jib appearing too large for the size of the mainsail. Also it is not always easy or convenient to get sufficiently near a boat to show her a fair size on the plate with lenses of the focus just mentioned. I have found an 8 in. lens very suitable for a 5 by 4 plate, and the single combination of 16 in. focus gives a good-sized picture even when working a considerable distance from your object. The lens should be an anastigmat working at a fairly large aperture. The necessity of this will be seen later when I come to speak of the plates used. Using long-focus wide-aperture lenses one will readily see the need of being able to focus by the finder up to the time of exposure. A focal plane shutter is also a necessity. In some of the present-day manuals you will find it stated that in taking a vessel going in the opposite direction from which you are sailing an exposure of 1-75th of a second is sufficient. This is all right if you are photographing from an Atlantic liner which goes along comparatively steady, but if you are working from a lively little half-rater—that is one of the smallest class of yacht—you will find sometimes that 1-200th part of a second is none too quick. In this case it is not the speed of the vessel that has to be considered so much as the sharp, jerky motion of the boat you are on. There is another fitting to the camera which I found of the greatest convenience—that is a reversing back which will allow of almost instantaneous changing of the plate-holder from a horizontal to an upright position, or vice versa, after the slide has been drawn out. Of course I admit that all these requirements in a camera are apt to make it rather bulky, but I do not consider this a disadvantage, as you do not have to carry it for a mile or two between each exposure as when hunting for pictures on land. A movement

which I would like to have on my camera, and which I do not see any way of accomplishing as yet, owing to the focal plane shutter, is a method of changing the plates as quickly as can be done in a magazine camera. As to the best plates to be used. After a great many trials with various makes of plates I may say that Isochromatic plates are essential; and owing to, especially in fine weather, the intensity of illumination, the preponderance of the blue rays and the delicate tone values, a screen is absolutely necessary. Where rapid movement has to be taken into account, a light screen which doubles the exposure can be used; but in cases where a slow exposure can be given, a screen which increases the exposure four or five times is to be preferred. For instance, in good light, F. 11 with a hundredth part of a second and a light screen, I have found to be a very ordinary exposure; but when using a darker screen the benefit of a large aperture lens will be very apparent.

Backed plates must be used, as it is quite hopeless to expect to get the fine wire rigging of a yacht against a light blue sky otherwise. Also, without backing you will often have the outline of the white sails under the same conditions—very faint and indefinite. With regard to development, we often hear amateurs complain about not being able to get sufficient density; but in marine work the great thing is to guard against getting too much. Isochromatic plates with any subject give density very readily, and this is very much accentuated when using them on the sea. Hydrokinone developer alone should be avoided, but for those who will have a clean, non-staining developer, hydrokinone with eikonogen will be found fairly satisfactory. Pyro soda I consider to be the best, but the ordinary formulæ given with plates should be slightly altered, the quantity of pyro being reduced and more water added. Preference should be given to a two-solution developer, such as mentioned, which will give power and latitude in development. Thin, well-graduated negatives will be found the best for getting good results on the most modern of our printing papers, and also for enlarging and lantern-slide making. I may now say that I have never attempted to treat my yacht photography in the manner which now by some seems to be counted as pictorial. By this I refer to the smudgy, out-of-focus, muddy-looking results which we have occasionally seen medalled at our exhibition.

A friend of mine who seems to make this his aim came out with me one day for a sail, and I think he photographed every yacht we passed, apparently with the view of teaching me afterwards how to make "pictures." He sent one of the so-called "pictures" to the owner of one of the yachts, whom I afterwards heard described it in the following manner: "To begin with, my fine new sails were a dirty brown, as if they had been in use on a fishing-boat for ten years; my nice three-eighth of an inch galvanised steel wire stays were like a three-inch coir rope, and looked more like a trawler's tow-rope; my newly-scraped and varnished spars were like rough pit-props with the bark still on them; the spotless, clean decks were like a dredger's platform; the sea was the colour of a ploughed field; and the whole affair, instead of leading you to believe it was taken on a bright summer day, had every appearance of a dark, dull, muggy day in November." My friend told me afterwards that he considered it the finest thing he had done, and wanted to have a few more opportunities of yacht photography. I am afraid I gave him very little encouragement, although I took him another trip shortly afterwards. He had heard me saying what a curious sort of picture it made to take a view of the deck from the cross-trees when sailing, and as this seemed a little out of the ordinary, he would have a try at it. Well, he got a fine opportunity; it turned out a splendid day, with a nice fresh breeze, so we paid off before the wind to have the boat as steady as possible. I may mention he was no sailor, and I rather disliked the idea of him going aloft. However, as he insisted on doing it, I gave way to his wishes, and saw

him start on his upward journey. I often laugh when I call memory that fearful clamber upwards. He did make a journey of it. However, in the end, with the aid of his hand, arms, legs, neck, teeth, and eyebrows, he managed to get safely seated on the cross-trees. We then sent up his camera to him on signal halyards. He exposed a plate, only one—he seemed to be always sure of his results—and sent down the camera again. He then started on his downward trip, but I wasn't so frightened for him at that. He got safely past the throat halyard block and the jaws of the gaff, and was starting to come down the mast-hoops, when he seemed to "lose his head," slipped, came down on the deck all of a heap. I rushed forward expecting a broken arm at the very least; but when I asked him if he was hurt I was greatly relieved to hear him cheerfully reply, "Not a bit; it's all right; I was coming down at a rate." I may say that plate, for what reason I never heard did not turn out well, and I have never been able to persuade him to have another try at it.

I would advise amateur photographers not to be too ready to accept invitations to go out for a sail with a view to photography. The trip is not always an enjoyable one to a shore man, and is usually something like this. You get aboard and find the crew has by some error not got the owner's message to have the yacht ready, and you spend half an hour at hard work hauling at ropes, etc., and by the time the sails are up you look at your fine soft hands to see how much of the skin is still left on them. The moorings are slipped, and as the yacht glides gently out of the harbour you lay yourself on the deck under a blazing sun, with just sufficient wind to keep the heat from becoming uncomfortable, and begin to think life is well worth living. But this does not last long. As you get further out the breeze freshens, the deck takes a different angle, and you have to get perched up in a corner clinging on to a rope to prevent yourself from slipping down to the lee side, which, to say the least of it, is not very dry. At last your host seems to brighten up, says, "Now she is going, and, after a little persuasion, you are bundled into the dingy which has been towing astern. You find she is not very inviting—all wet, and most unsteady. You are left in her, and what you think to be an hour, while the yacht sails past several times. Every time she passes you attempt to stand upright in this "cockle-shell," holding on to your camera as you never did before; your legs jammed up between some of the seats so that when an extra jerk comes and puts you off your balance you will be sure to collapse, not into the water over the side, but into the by no means clean water in the bottom of the boat. You always seem to prefer the latter. After you have exposed all your plates, the yacht "heaves to," you get aboard again, but your pleasure seems to be at an end; for "convalescence" you have to sit close to the side of the yacht where the spray is drenching you to the skin; you feel cold and miserable, the salt water is nipping your poor, skinned fingers, and put yachting down as the most idiotic sport you have tried, and, as a rule, are very glad when the trip is finished, and you once more set foot on terra firma.

Of course there are exceptions to the foregoing. Where your host does not wish a photograph of his own boat, and if you are one which is easily handled, it is often a great treat to sail along to leeward of another yacht; and if the two yachts are about the same turn of speed, it gives you ample opportunity for making several exposures, with plenty of time to change plates and study the position and lighting. The ideal for the yacht photographer is a smart little steam or motor launch which will do her eight to ten knots an hour. This makes matters very pleasant. At a regatta you can go from one race to another from the lee mark to the weather mark, and have an excellent choice of position. If you have to content yourself with a position on a regatta steamer there are one or two points worth remembering. Firstly, a long-focus lens is an absolute necessity

the steamer usually gives the yachts a wide berth. You will occasionally come across a well-managed vessel which will take up a nice position just to leeward of the weather mark, and which will steam up to leeward of a batch of yachts apparently just to give the photographers a chance; but sometimes they seem to go on the old lines that "Distance lends enchantment to the view," when you find that a telescope will be much better company than a camera. When making exposures keep as nearly amidships as possible, as the vibration, especially on the light paddle steamers on the Clyde, makes photography at the bow or stern almost an impossibility. Another point I might emphasise is to keep as low down in the vessel as possible. The paddle-box or the bridge gives a fine commanding view, but the lower deck is much to be preferred. The former are much too high, with the result that when you have to point the camera downwards to get a yacht in the centre of the plate, the horizon line comes much too high on the picture, giving a very unnatural-looking result. As to the position in which to photograph a yacht, the most popular view is from the lee side. When a boat is close-hauled—that is, going as near to the wind as possible—she is best taken from the lee bow; but it should be noticed that she has plenty of "way" on at the time of exposure, as, if taken, say, immediately after "going about," or, to put it simpler, going from one tack to another, she will be "lying down," but have no appearance of going through the water. When reaching with a beam wind and the sheets "eased off," a view from right abeam or a little abaft of it makes a pleasing picture, giving, as it does, a fine idea of the lifting power of the sails. Another position which makes a nice view when the sheets are eased is from the lee quarter; but some difficulty will at first be found in catching just the proper angle at which to make the exposure. If taken from too far aft the head sails will seem mere narrow strips, while what is required is that they should all have a good appearance of drawing well and doing their work properly. I may say that it takes a modern boat with good setting sails to show up well in the latter position—the "old crocks," with badly-stretched, baggy sails, usually cutting a very poor figure, this being a view which shows up these defects to the greatest extent. In photographing yachts the operator must be able to judge distance accurately, and be prompt in using his camera, as the slightest hesitation usually means the loss of a good picture.

J. F. DUTHIE.

INTERNATIONAL Printing Exhibition.—At the Agricultural Hall on Saturday afternoon last an International Exhibition of the Printing, Stationery, and Allied Trades, surpassing all its predecessors, was opened by Sir James Henderson, of Belfast. It is some six or seven years since a similar exhibition was held, and even the important Caxton Celebration Exhibition of 1851 has been out-distanced by the present event. Under the able organisation of Mr. F. W. Bridges, the trades supported the movement to a remarkable degree, over three hundred exhibitors taking part and showing no less than five hundred different machines, of which one hundred were in operation. Besides this, numerous displays of art stationery, picture postcards, and commercial appliances were on view, as well as an historical loan collection, including Japanese wood-cut book illustrations of the notable periods. Labour-saving appliances in all departments are strikingly apparent, and no lack of energy or money has been spared to place the British trader in the foremost position. There are several mechanisms for automatically feeding sheets of paper into machines, a subject to which much thought has been given of late years. The printing of three colours in one process as against three is also demonstrated, while the substitution of aluminium plates for the lithographer's stone has made a marked advance. One of the chief advantages of the latter is that rotary presses can be utilised, to say nothing of the saving of weight and storage room. A complete model printing office is laid down by Messrs. John Haddon and Co. The London Stereoscopic Company are represented with some beautiful collotype printing and photography, while Messrs. Raphael Tuck and Sons are among the foremost with picture postcards, etc. Altogether the exhibition can be said to be a most thorough one and decidedly well arranged. It will remain open for a fortnight.

Exhibition.

THE CAPE TOWN PHOTOGRAPHIC SOCIETY.

It is now some years since the Cape Town Photographic Society held an exhibition. The years that have elapsed since the last exhibition have been very fruitful, and this year the exhibition is one of great interest. The "South African News," in reviewing the exhibition, says:—The exhibition of the Cape Town Photographic Society was formally opened in the School of Art, Queen Victoria Street, on April 4 by his Excellency the Governor, Sir Walter Hely-Hutchinson, and the show is a great success in every way. There are two sections in the exhibition. One is open to competitors of any photographic society in South Africa, and the other is open to members of any photographic society in the world. In addition to this, there is a loan exhibition of photographs from the Royal Photographic Society of Great Britain and also from the North Middlesex Photographic Society.

The "Cecil Rhodes' Memorial Medal" (gold) is the highest distinction that can be conferred by the Cape Town Photographic Society. It is given—irrespective of class or subject—for the most artistic picture, and has been awarded to Mr. F. J. Mortimer, of the Southsea Photographic Society, for a seascape. Mr. Mortimer has won many distinctions, and this beautiful seascape of his is a most finished and artistic production. "The Deep's Unrest," by Mr. J. P. Edwards (C.T.P.S.), takes the second place among the seascapes, and to it a silver medal is awarded. The stormy sea and dark clouds are in sharp contrast to the light which pours down between the broken clouds. The other seascapes which have been specially commended are "The Frothy Main," by H. W. Schonegevel (C.T.P.S.), "An Evening Zephyr," by F. A. Joyner, South Australian Photographic Society, and "After the Storm," by E. J. Steer (C.T.P.S.). This last is a very beautiful piece of work, and depicts a background of calm sea—though the breakers are still dashing upon the rocks on its margin. Among the landscapes open to competitors of any society, "A Pathway to the Sea," by Charles R. Pancoast, of the Photographic Society of Philadelphia, is the best, and to it has been awarded a silver medal. It is a beautiful piece of work. The light over the sea is very clear, and every detail of the bush on either side of the pathway is wonderfully distinct. "Homewards," by E. Naude (C.T.P.S.), has received an extra bronze medal. It is a representation of cattle, grazing on their slow progress homewards. An extra bronze medal has also been awarded for "Dawn," by Sydney Taylor (C.T.P.S.). Commendation has been given to "Solitude," by E. Naude (C.T.P.S.), and to "The Rist River," by H. W. Schonegevel (C.T.P.S.). This latter is a typical African scene, in which the river winds its way between high rocks. "Barren Hills and Fertile Valleys," by E. J. Steer (C.T.P.S.), and "Afternoon in the Berkshires," by C. R. Pancoast, Philadelphia, are also commended.

In the genre or figure studies, the silver medal is awarded to "Reflections," by Robert Ayton (C.T.P.S.). The figure of a girl sitting among soft shadows is the theme. Extra bronze medals have been given for "Waiting and Watching," by F. A. Joyner, South Australian Photographic Society, and for "The Fisher Maid," by G. Campbell Dickson (C.T.P.S.). The fishermaid makes a particularly charming picture, sitting on the rocks with her bare feet thrust into the sand. "The Portrait of a Lady," by G. Greene (C.T.P.S.), is commended. The detail of this is particularly good. Every thread of the lace can be discerned, but from an artistic point of view the face is over-wrinkled. The effect of age might be given without the innumerable lines that veil the expression. "An Africander Blossom," by A. Elliott (C.T.P.S.), which is also commended, is a vigorous life-like portrait. "Art or Nature?" by A. Keyzer (C.T.P.S.), has won commendation too. For architecture, the silver medal has been withheld. The bronze medal has been awarded for "Black Adden Crypt," by J. Campbell Dickson (C.T.P.S.). "Wells Cathedral," by George Greene (C.T.P.S.), and "Interior of Stainsborough Hall, Yorks," by John W. Young, of the Sheffield Optical Society, are commended. The detail in the "Interior of Stainsborough Hall" is remarkably good. The pattern on the ceiling and the pictures on the walls are easily discernible. In the class devoted to flowers and plants, the silver medal has been awarded for "Roses," by J. P. Edwards (C.T.P.S.). The roses are beautifully grouped, and stand out well. "Gladiolus," by E. J.

Steer, is a very dainty and artistic piece of work, and has been commended. For home life no silver medal has been awarded. The bronze medal falls to "Fireside Gossip," by Sydney Taylor, and "Christmas Stories," by J. P. Edwards (C.T.P.S.), is commended. The silver medal for lantern slides goes to "La Grosse Horloge, Rouen," by A. Bailey, Leicester Photographic Society, and the silver medal for stereoscopic transparencies to "Crypt, Battle Abbey," by Harry Wormleighton, Leicester, and Leicestershire Photographic Society. In the stereoscopic paper prints, "Ruins of Fortifications," by A. J. Fuller (C.T.P.S.), wins the silver medal, and set No. 3, by W. S. Wedd, South Australian Photographic Society, is highly commended. Set No. 8, by J. Gazard, South Australian Photographic Society, is also commended.

In examining the section of the Exhibition that is devoted to South African work only, the onlooker is struck by the effect that the clear atmosphere of South Africa has on photography. The strong light and clear air bring out all details with amazing distinctness, and at the same time make it most difficult to get a correct perspective.

The silver medal given for the most artistic picture in this section has been awarded to Mr. J. P. Edwards (C.T.P.S.) for "The Deep's Unrest." Among landscapes, Mr. E. Naude's "Homewards" occupies the first place, and commendations are given to the following:—"The Fall of Day," J. P. Edwards; "Cape Town from Table Mountain," T. Mowbray Turquand; "Bare Slopes were Chasing Shadows skim," E. J. Steer; "A Transvaal Pastoral," J. S. Dunn.

In the seascapes (South African) the distinctions are as follows:—First place, No. 127, "The Deep's Unrest," by J. P. Edwards, who takes the silver medal in this section; extra bronze medal to No. 113, "The Frothy Main," by H. W. Schonegevel, C.T.P.S.; commended, No. 255, "Table Bay, Early Morning," by Dr. G. F. M. Nellen, C.T.P.S.; No. 114, "The Song of the Ocean," by G. Campbell Dickson, C.T.P.S.; No. 128, "Lost in the Solemnity," by A. J. Fuller, C.T.P.S. In old Cape architecture and antiquities no medal has been awarded, but the "Entrance to the Castle," by E. J. Steer (C.T.P.S.), and "Welgelegen," by P. J. Edwards (C.T.P.S.) are commended.

The figure studies (typical South African) are particularly interesting. The following distinctions have been earned in this class:—Bronze medal, No. 283, "Kleintje," by A. Elliott, C.T.P.S.; highly commended, No. 273, "Malay Priests," by E. J. Steer, C.T.P.S.; commended, No. 275, "A Cape Cottager," by P. J. Edwards, C.T.P.S.; No. 286, "Primitive Conveyance, Knysna Heads," by W. Baker, C.T.P.S. "De Kleintje" is a black boy standing in the bush. The "Malay Priests" is a very characteristic picture. The strong light and shadow and the hot atmosphere that seems to surround the figures and to envelope the glimpses of Devil's Peak that form the background, are eminently characteristic of South Africa.

For child life the medal is awarded to the "Dreamland" of Mr. J. P. Edwards, and commendations are accorded to "A Happy Trio," by A. Keyser, and to "Florrie," by Sydney Taylor. Among the African flora Mr. E. J. Steer's "Gladiolus" is commended. In the class devoted to river, pool or vlei, the following distinctions have been earned:—Bronze medal, No. 326, "From Yonder Mist-capped Hills," by E. Naude, C.T.P.S.; commended, No. 361, "To the Woods," by H. R. Brownlees, C.T.P.S.; No. 23, "The Water Mill on the Mooi," by J. S. Dunn, C.T.P.S. No awards have been made for photographs of a South African drawing room or for lantern slides. Among the many beautiful photographs that have not received medals or commendations may be mentioned the pictures of a child, representing the Five Senses, by R. Mumby; Sun-Boy, by J. P. Edwards; Table Mountain from Protea, by E. J. Steer; and Pete, an ex-slave, by E. J. Steer.

It may be questioned whether Viscount Maitland's "At Litlington, Sussex," belongs strictly to the realm of photography, but its value as a work of art cannot be doubted. It is a subdued landscape, and has been so manipulated as to have exactly the effect of an engraving. Throughout the exhibition is one of high merit, and of great interest, as it includes the work of so many different societies.

A copy of No. 1 of the "Half-tone Times" has been forwarded us by Mr. Carl Hentschel. We note that it is also the only number, and its price is ten minutes (of our time). The publication contains much that is bright and witty, and is embellished with many excellent half-tone reproductions. We think possibly Mr. Hentschel may reconsider the matter and produce a second number.

Patent News.

The following applications for patents were made between April and April 23, 1904:—

Plate washer.—No. 8,839. "Print and plate washer for photographic purposes." George Tom Harrison.
Imprinting upon negatives.—No. 9,105. "A process for imprinting matter upon photographic negatives." Complete specification Frederick William Sears.
Shutter release.—No. 9,182. "A new or improved means for releasing photographic shutters and the like." Frederick Pernewley.

FORTHCOMING EXHIBITIONS.

May 11-18.—Plymouth Photographic Society. Hon. Secretary, Wilfred Grist, 105, Old Town Street, Plymouth.
May 16-23.—Photographic Society of Ireland. Hon. Secretary, E. Webb-Smith, care of Royal Dublin Society, Kildare Street, Dublin.
May 24-28.—Devonport Camera Club. Hon. Secretary, A. J. Catford, 78, Charlotte Street, Devonport.
June-October.—Glasgow Photographic Exhibition. Secretary, A. Gallery and Museum, Kelvingrove, Glasgow.
November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.
November 23-26.—Hove Camera Club. Hon. Secretary, A. F. Sargeant, 55, The Drive, Hove.
December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.
December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104 West 101st Street, New York.
December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.
December 13-20.—Southampton Camera Club. Hon. Secretary, S. G. Kimber, Oakdene, Highfield, Southampton.

DATE OF THE GENERAL ELECTION.

CONFIDENTIAL COMMUNICATION.
(From the "Half-tone Times.")

THE following important telegrams and letters have passed between us and the Prime Minister:—

10, Downey Street,
April 1, 1904.

To Messrs. Carl Hentschel, Ltd.

Gentlemen,—In considering whether to resign or dissolve Parliament, or what to do, I must be guided in some measure by your preparedness. Are you ready to execute members of our Party—mean their portraits—both for posters and circulars, not to forge the bumptious, unnecessary portrait post-card.

A few of my men are very cross grained. Does that matter? Please wire reply, as I may want to make announcement.

While writing—what would you want to refuse to portrify any of our opponents?—Your obedient servant,

ARTHUR JAMES BALFOUR.

Hentschel's to Balfour (wire): Resign at once. We mean to say we're ready. What's portrify?

Balfour to Hentschel's: Philosophically doubtful about resigning. Let resignation wait. For portrify, see Murray's Dictionary: means make portrait blocks.

Hentschel's to Balfour: C.B. has curiously made us same proposal if we'll refuse portrify men of your side. We're children in these matters. Please advise.

Balfour to Hentschel's: Better settle it by commission.

Hentschel's to Balfour: Surprised and grieved that you should seek commission.

Balfour to Hentschel's: I mean Royal Commission.

Hentschel's to Balfour: Sorry. That's all right now. Since writing have been summoned for furious driving of our dynamos under pressure of customers. Can you interfere discretion magistrates? Greatly appreciate.

No answer.

EDINBURGH PHOTOGRAPHIC SOCIETY'S SURVEY SECTION.

OBJECTS.—I. To make a comprehensive collection of original paintings, engravings, prints, photographs, lantern slides, and illustrations every description of Edinburgh, Leith, and district of the past.

2. To secure permanent photographs (such as by carbon or platinotype process), drawings, etc., of streets, buildings, monuments of Edinburgh, Leith, and district as they now exist, and of all public open spaces in and around the city, and to obtain representations of the civic and social life and customs of the city. It is desirable that two copies of each print should be submitted.

3. Contributions will be received irrespective of size, but it is recommended that photographs should not be smaller than quarter plate nor larger than whole plate.

4. Information regarding the subjects contributed or photographed, where possible, should be sent, along with the contributions, on a card which may be obtained from the secretary of the section, one card to accompany each separate print, etc.

In connection with the reorganising of this section, which was recently decided upon, the Council have resolved:—

I. That an exhibition of prints, maps, plans, etc., contributed to the survey section, be held in the first week of December next; and that medals be awarded in connection therewith.

II. To effect this object, that all members of the society be asked to submit two prints (preferably in platinum or carbon) from any negatives they may have of Edinburgh and district, past and present; or to lend such negatives to the Council to be printed from; or plans, prints, etc., to be copied.

III. In order to carry out this latter recommendation, that an official photographer be appointed whose duty it would be to take prints from all negatives, and copy all plans, etc., accepted by the Council; and that Mr. J. F. Duthie, 13, South St. David Street, be appointed to the office.

In order to preserve continuity with the scheme as originally constituted, Mr. James Burns, the original hon. secretary of the survey section, was appointed hon. secretary. All correspondence regarding the survey, and all contributions, prints, negatives, slides, etc., should be addressed as follows:—Mr. Jas. Burns, Hon. Secretary, Survey Section, Edinburgh Photographic Society, 38, Castle Street, Edinburgh.

The request for two copies of each subject contributed is one members are particularly requested to note, the intention being to use the two copies in making up two sets in albums, one of which would be kept for reference in the Society's Library and the other probably lent to one of the city museums accessible to the public.

With a view of gathering together a complete record past and present of the district between the Castle and Holyrood (both inclusive) as early as possible, contributions relating to that district are gently requested.

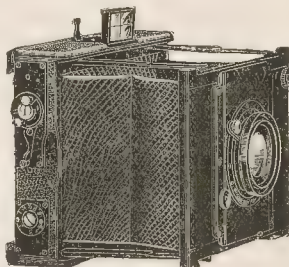
SOUTH LONDON PHOTOGRAPHIC SOCIETY.—For the meeting on May 16 the S.L.P.S. have been fortunate enough to secure Mr. John Sterry (hon. treasurer R.P.S.), who will lecture on "Controlling Gradation in Bromide Prints and Lantern Slides." As it is rarely possible for Mr. Sterry to give lectures outside the Royal, the committee, feeling this is a unique opportunity for London photographers, have engaged a large hall and sent invitations to the principal London and suburban photographic societies. The committee are anxious to secure a large attendance, and the hon. sec., H. Creighton Beckett, 44, Edith Road, Beckenham, S.E., will be glad to send a ticket to any unattached photographer or to members of societies to whom this may be the best notification.

GLASGOW SOUTHERN PHOTOGRAPHIC ASSOCIATION.—At the third annual general meeting of this association, held on April 26, the following officers were appointed for the year:—President, James M. MacLean; vice-president, R. B. Thomson; honorary treasurer, Edward Grant; honorary secretary, William A. Frame, 28, Bank Street, Hillhead, Glasgow; hon. assistant-secretary, B. Lindsay; council, T. Lawson, W. S. Morren, D. Horn, James Keith, D. Linton, and William H. Wilson; auditors, R. Young and W. Milroy. At a special general meeting held on the same evening it was resolved that the annual subscription be raised to 7s. 6d. and the nomination fee to 5s., from April 1 last. Any person desirous of joining the association can have full information on application to the honorary secretary.

New Apparatus, &c.

The Goerz Anschutz Folding Camera, 1904, Model. Made by C. P. Goerz, 1-6, Holborn Circus, London, E.C.

For the season 1904 a new model of the Goerz-Anschutz Folding Camera has been introduced, in which a focal plane shutter, giving time exposures as well as the fastest instantaneous exposures, replaces the original pattern. The blind of this new shutter contains two apertures; the first, the full width of the plate, will, when allowed to travel across the face of the plate, give an exposure of 1-10th of a second. The shutter can be so set that this aperture will remain open for focussing or long time exposures. By turning a dial at the side of the camera the following exposures are automatically obtained, $\frac{1}{2}$, $\frac{1}{3}$, 1, 2, 3, 4, and 5 seconds. A pneumatic release is used for



discharging the shutter when set for these exposures. When instantaneous exposures shorter than 1-10th of a second are to be made, the first aperture of the blind is wound up, and another portion of the blind with an adjustable slit—the old form of Goerz-Anschutz Focal Plane Shutter—is brought into operation. The special point of interest in the new form of shutter which will probably appeal at once to the user of the camera is the fact that the shutter can be completely wound up with but one turn of the winding screw. The usefulness of this improvement will be at once apparent. The camera in all other respects remains the same as the old pattern. The pull-out front and focussing mount to lens are unchanged. The finish of the complete instrument is perfect. The price has not been altered.

Thornton Pickard Time and Instantaneous Shutter with new Patent Disappearing Cord. Made by the Thornton Pickard Manufacturing Company, Ltd., Altrincham.

Every user of this now familiar type of shutter who has, at one time or the other, experienced the annoyance caused by the string and tassel becoming entangled before or during the exposure, and so spoiling a plate, will welcome the new patented device which the Thornton Pickard Company have introduced this season. The improvement is termed the "Disappearing Cord." After the shutter



has been set, which operation is done in the usual manner by pulling the cord, the winding cord runs back into the shutter, and is re-wound on a spring drum. The advantage of this will be appreciated at once. When the exposure is being made the cord is out of the way, and therefore cannot wrap round the pneumatic release or get caught in the shutter mechanism when photographing in a wind and the exposure spoiled. This device can be fitted to new or old shutters at a reasonable cost, and is well worth the money.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

May.	Name of Society.	Subject.
2 to 7 ..	Kodak Exhibition	Cardiff, Andrews Hall.
6	West London Photo. Society ..	Outdoor Work: Arranging Summer Programme.
9	Southampton Camera Club	Demonstration of Development, Reduction and Intensification, and Toning of Slides and Bromide Paper with "Tabloid" Chemicals. Messrs. Burroughs, Welcome & Co.
9 to 14 ..	Kodak Exhibition	Swansea, Albert Hall.
10	Royal Photographic Society ..	Progress in Enlarging. Mr. Howard Farmer.
10	Nelson Photographic Society ..	Enlarging Demonstration. Mr. F. Pinder.
10	Birmingham Photo. Society ..	An Exhibition of Enlarged Negatives, Transparencies, &c.
11 to 18 ..	Plymouth Photo. Society ..	An Exhibition of Members' Work.
11	Everton Camera Club	Half-day Outing.
11	North Middlesex Photo. Soc. ..	The Life and Work of George Tinworth. Mr. H. Barnard.
12	Everton Camera Club	Half-day Outing.
12	Richmond Camera Club	General Meeting.
12	Camera Club	Annual Dinner.

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

APRIL 28.—Mr. Haddon in the chair.—Mr. A. G. Bull, of the Northampton Institute, gave a lecture, entitled "Some Experiments with Tricolour Filters." Slides were exhibited of three-colour negatives, transparencies, and the finished result. Experiments were made showing how the theoretical requirements of the three-colour methods were met in practice, the various filters, and their effect upon the spectrum were explained and illustrated by means of a very ingenious and elaborate projecting apparatus.

The various screens performed their functions of absorption, and transmission of the spectrum, but the photographic plate did not reciprocate properly, hence the results were not always so good as they should be; but the introduction of many new dyes, pinachrome, orthochrome T., ethyl red, etc., had put much more power into the hands of the tricolour worker. Factorial development was a necessity in the production of the three negatives, which must be alike in gradation and density. A cell of solution of quinone was mentioned as a useful addition to the filters, in order to cut off the blue and violet rays not visible to the eye, but which had an effect upon the photographic plate, which was not at all beneficial to the rest of the spectrum.

CAMERA CLUB.

WHEN an observant man has the opportunity of being thrown in with any particular phase of human industry, and has the help of a camera to record his impressions, he is much to be envied. And it is to be feared that most persons who possess such advantages seek their opportunities abroad rather than in their own country. For this reason, Mr. S. W. E. Schrivell, who is a hop grower in Kent, and who gave an admirable lecture descriptive of a hop garden in that favoured county, is to be much commended. He has sought and found much that is picturesque and interesting within the borders of his own domain, and has been able to give a marvellously complete picture of a Kentish hop garden, and all that it contains.

And perhaps there is no place within a short journey of London Bridge that affords a more varied picture of human nature than does a hop garden when the picking season comes round. It is the annual opportunity for hundreds to get away from their usual squalid surroundings at the East End of London, or elsewhere, and spend a time amid healthy conditions in the Kentish wolds, and persons whose ordinary rule of life is to avoid work of any kind, if they can, are not averse from the pleasant toil of picking the fragrant hop blossoms from the bines. The lecturer described every phase of the labour, and explained it all in a racy fashion as he went along, his remarks being illustrated by a first-rate set of lantern slides, which were from negatives, as he explained, by Mr. Cornell, of Tunbridge Wells. These pictures contained some admirable specimens of good grouping, while some of the studies of gipsy life were beyond praise. The lecture was given on the 25th ult., and a cordial vote of thanks

was awarded to Mr. Schrivell as an acknowledgment of its excellence.

On the 28th, the Club was occupied with a very different subject and a large audience assembled to hear Mr. H. Blackwell discuss on psychic photography, in which he is an earnest believer. He stated that he had had many wonderful manifestations of this phase of photography, and that he could present an array of facts and testimony suggesting an enlarged scope for the use of the camera. In recounting some of his own experiences, the lecturer proceeded to give a short history of his subject, which we will endeavour to summarise.

In the year 1851 a photographer named Boursenell, employed in Fleet Street, quarrelled with his partner because so many of the plates he handled were marked with blemishes—curious patches which sometimes took the form of hands or faces. A Miss Houghton, also of London, had similar experiences, and in 1882 published a book called "Chronicles of Spirit Photography," which contained more than fifty reproductions of pictures taken by Mr. Hudson. Other photographers, both in this country and America, reported having obtained similar abnormal appearances on their plates. Dr. A. Wallace, F.R.S., appears to have been the first man of scientific training to testify to the same occurrences, and he spoke in a public lecture room of the reality of these appearances, both on the part of professional and amateur photographers. The same observer gives in his book, "Miracles of Modern Spiritualism," the names of those who had secured these abnormal effects.

Next, Mr. Blackwell referred to the researches of Sir William Crookes, and his successful endeavours to produce on photographic plates portraits of unseen sitters, and quoted from Sir William's book "Researches in Spiritualism," an account of the way in which he, in the old wet plate days, had five cameras at work under the electric light, and secured forty-four negatives, some very good, and others failures.

After quoting from some American authorities, Mr. Blackwell showed on the lantern screen a number of pictures, in the majority of which he was represented as sitting, with shadowy forms by his side. These pictures, he stated, had been selected from a collection of more than four hundred, of which he was the owner, and declared that they had been taken under conditions which gave no negative any suspicion of fraud.

Mr. David Christie Murray, the well known novelist and writer upon philosophical subjects, who occupied the chair, said they had all been interested by Mr. Blackwell's discourse; but he did not think anything in the way of evidence of the reality of these appearances. One could accept the personal dictum of any man upon a subject of this kind, and he would say it without meaning the least disrespect or offence to the lecturer, who, with all honesty of purpose, might have been deceived. He had had experiences of his own, not photographic in their nature, of a most wonderful kind, and he believed from that that telepathy was a real, established fact.

A long discussion followed the chairman's remarks. Three or four gentlemen spoke of having had appearances on photographic plates which bore out the lecturer's statements, but the general feeling of the meeting appeared to be hostile, while some did not hesitate to state their belief that the pictures shown were faked. The meeting closed at a late hour, with the usual compliments to the lecturer and the chairman.

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION, EDINBURGH BRANCH.

APRIL 15.—Present: Messrs. Salmon, Bibbs, Warren, Banks, Drummond, Young, and Moffat, hon. secretary. Mr. Bibbs occupied the chair. Apologies of absence were received from Messrs. Crook, Balmain, and Crawford. The following subjects were discussed: (1.) Which is the better business method for photographers? Credit at time of sitting or credit. Most of the members present advocated the former method, but it was pointed out that it depended very much upon who the customer was; for well-known people it was more profitable to get them as credit customers than make them pay cash down. (2.) Should photographers allow their copyright photographs to be reproduced in the local papers, free of charge? It was pointed out by the secretary that at present it was the custom in Edinburgh for photographers to allow the two Edinburgh evening papers to produce their copyright photographs free of charge. The question

for which was the advertisement they got by having their names acknowledged as from their photographs. The meeting, after considerable discussion, were strongly in favour of members of the Association combining to charge a modified fee for these copyright photographs. It was ultimately agreed to bring this matter up again at the next meeting.

An interesting discussion also took place on the free portrait trade and residues.

RICHMOND CAMERA CLUB.

APRIL 28.—Dr. Rodman showed a stereoscopic radiograph of a shell which the details of its internal convolutions were very well displayed. This is probably the first attempt at producing stereoscopic effects by means of the X-rays. Dr. Rodman explained that to produce the effect the shell was first placed upon a photographic plate two inches from one side of the vertical line through the centre of the illuminating tube and at a distance of ten inches below it. After exposure it was placed upon a second plate at a distance of two inches from the other side of the vertical line and again exposed, the exposure given in each case being about twenty-five seconds.

The business on the agenda for the evening was the exhibition and judging of members' competitive prints. Mr. Cembranc acted as judge, and awarded the club medal to Mr. Huddy for three fine hole-plate prints, and he adjudged the second place equally to pictures shown by Mr. Gibson and Mr. Sargent.

HULL PHOTOGRAPHIC SOCIETY.

APRIL 30.—There was a splendid attendance to visit Barrow and Harrow Haven, the latter forming material for more plates than one could spare. The lanes en route from New Holland were alive with amateurs and cameras, who eventually got into smaller parties, and it is hoped much good work will result therefrom. As to the social part of the afternoon, this was everything that could be desired, and the members who did not trouble to carry a camera thoroughly enjoyed advising and assisting those who had, in some cases, two. The early part of the day was somewhat unpromising, but by train time it cleared off, and was for the rest of the afternoon charming, and accompanied with a high wind, which dropped for the evening. The bulk of the exposures being made after tea. The half-hour so at the tables is always a sign of animation, and that at Barrow was no exception to the rule. After satisfying the inner man a move was made, and the most serious work was done, and by the time the light failed all traps were packed up, and a charming walk of three miles along the Lincolnshire coast of the Humber brought a most successful outing to a close, proving that the special efforts of the new president and the secretary had borne that fruit they richly deserved. Prints from the negatives are to be submitted at the monthly meeting on Thursday, May 5, for criticism and each other's edification, which will be kept up through the summer, and it is thought, to the pleasure and instruction of younger members, who are to receive every possible attention and encouragement.

The next outing is to Westella, May 14, by 'bus, train, or "bike." and should call for even a larger attendance and greater enthusiasm than ever.

NORTHERN Photographic Exhibition.—The successful termination of this exhibition was celebrated on Friday evening at the Hotel St. George, Liverpool, by a dinner given to the hon. secretary, Mr. C. E. Inston, to whose hard work and perseverance the great artistic, as well as financial, success of the exhibition was due. After dinner the chair was taken by Dr. Llewellyn Morgan, who read a letter from Councillor John Lea, Chairman of the Arts and Exhibition Subcommittee, regretting his inability to be present. After giving the royal toasts, the Chairman proposed "Our Guest," and presented Mr. Inston with a handsome silver tea and coffee service, as some slight recognition of his work as hon. secretary. Mr. Inston, in returning thanks, said he considered that all the credit was not due to himself, a great deal being due to other members of the committee. The remaining toast, "Our Society," was proposed by Dr. John W. Ellis, and responded to by Mr. Fred Schierwater, President of the A.P.A. Several musical items were rendered by Messrs. Thomas Steel, J. Ryalls, George Theakstone, and Harry Gandy, Mr. Edward Hugh acting as accompanist.

News and Notes.

THE Thornton Pickard 1904 Catalogue is to hand. It is very complete and well illustrated, and contains many new specialities in shutters and cameras. A copy containing full particulars and prices will be sent gratis and post free on application to the Thornton Pickard Manufacturing Company, Ltd., Altrincham.

THE Royal Photographic Society of Great Britain.—An ordinary meeting will be held at 66, Russell Square, on Tuesday, May 10, 1904, at 8 p.m. "Progress in Enlarging" (with examples and specimens) will be given by Mr. Howard Farmer. "Irradiation as a phenomenon in negative making and printing and its application to colour photography" (with specimens), by Mr. Howard Farmer and Mr. Guy Symmons.

HEPORTH Manufacturing Company, Limited.—This Company has been registered with a capital of £4,000 in £1 shares. Object, to acquire the business of cinematographers, now or lately carried on by C. M. Hepworth and H. V. Lawley at Walton-on-Thames and 17, Cecil Court, Charing Cross Road, W.C., as Hepworth and Co., and to carry on the same. No initial public issue. The first directors are C. M. Hepworth, S. Barker, and E. J. Humphrey. Registered office, 17, Cecil Court, Charing Cross Road, W.C.

MESSRS. HOUGHTON, Limited, have kindly sent us a print from the flash-light negative taken on the occasion of the inaugural dinner of the Company, held at the Trocadero Restaurant on April 9. We shall value the print as a souvenir of an interesting celebration. Technically it reflects great credit on its producers, Messrs. J. Jacks and Co., of 22-24, Glasshouse Street, London, W., the exposure being full, whilst the likeness of each person present at the dinner is well rendered.

THE Cripplegate Photographic Society held its annual social evening on Saturday, April 23. A most enjoyable programme was rendered, mostly by members, and the society is to be congratulated on having such excellent musical talent among its members. Some hundred or so of members and friends gathered together in the pretty and comfortable hall of Cripplegate Institute, and altogether a most enjoyable evening was spent. The medals awarded at the recent exhibition were presented during the evening.

THE Photographic Dealer's Annual for 1904 is to hand. In addition to containing a mass of reliable information likely to be of great help to the dealer, the advertisements themselves of which there is a goodly collection, will also prove useful for reference. Among the articles we notice "The Testing of Photographic Lenses," by S. D. Chalmers, M.A.; "Recent Changes in Modern Chemistry," by Edwin Banks; "The Care of Photographic Stock," by A. Lockett; and "An Outline of Tricolour Photography," by A. C. Jolley.

ART Union of London.—The general meeting of the members of the Art Union of London was held last week at the rooms of the Society of Arts, John Street, Adelphi, when the annual report of the council was presented and the prizes of works of art distributed. As the subject for the coming year's presentation etching the council have chosen the picture by Mr. Alfred East, A.R.A., entitled "The Miller's Meadow," which was exhibited in the New Gallery Exhibition of last year. The picture, which was generally recognised as one of Mr. East's finest compositions, was selected by the Royal Commission as a representative British painting for the coming exhibition at St. Louis. Unfortunately, the necessity for its being in the engraver's hands until the present moment prevented its being sent to America.

THE Duke of Argyll, in giving the toast of "The Chairman, and Prosperity to the Royal Society of Painters in Water Colours," at the centenary dinner of the society, said the society had been established for a long time, and it was the father if not the patriarchate of the art of water-colour painting. After remarking that they all deplored the fate of the distinguished Russian artist Verestchagin, he recommended artists to visit Canada, where they would find every characteristic they wished for. Another reason which should induce some of them to go to Canada was that modern art in that country was more appreciated than it was in Europe. We were apt here to slavishly adore a picture simply because it was by an old master. For that reason alone it would be well if some of them were to visit Canada and the United States.

FREE Newspapers.—Not content with the monster newspapers which they receive in exchange for a cent Americans are beginning to discuss the possibility of being supplied with free newspapers, without money and without price. The idea is that the advertiser should pay the entire cost of production and provide the newspaper proprietor's profits. This is declared feasible on the ground that a newspaper given away for the asking would constitute the richest of all advertising bonanzas. Will English advertisers take this view, however, and hold to it? We can see in the future the "Daily Thunderer" advertising for subscribers to read that paper; one guinea a year offered to every one who will undertake to wade through the contents of its mammoth sheet, the inducement being that its advertisements are drawn up by the leading literary writers of the day.

THE Blairgowrie and District Photographic Association has arranged to hold an international exhibition—the fourth promoted by the Association—just after the Scottish Salon of 1905—pictures shown at the Salon will be forwarded to Blairgowrie, free of charge. The open classes are: Champion, landscape, seascape, and river scenery; portraiture and genre, including animals; any subject not included in above; lantern slides; and illustrated lecturette. The associates of the Scottish Photographic Federation have one class—any subject—reserved for them, and the societies forming the Federations are offered a special prize for the best collective exhibit. A special silver plaque will be awarded to the best picture in the exhibition. Messrs. J. Craig Annan, Glasgow; Wm. Crookes, Edinburgh; and Arch. Cochrane, Glasgow, will judge the exhibition; and Mr. Alex. Keighley, Keighley, will judge the lecturettes.

ALPINE Photographs.—The hall of the Alpine Club, 23, Savile Row, is well filled with photographs of mountain crest and peak, seas of ice, fairy-like snow pictures, and delightful glimpses of the world above the clouds, which make the exhibition in its way unique. That the everlasting hills change but little is true, but the new methods of expression and original points of view which many of the exhibitors exemplify lend the necessary charm of variety to the Alpine Club's long succession of similar displays. Of the numerous clever works perhaps the most notable is No. 58, "Lakes of the Val Pivoia from the Col Tanicola," by Mr. E. J. Garwood, a fine piece of technique and a striking subject. Much the same may be said for Mr. Henry Speyer's "Signalkappe." A mountain top soars above a sea of clouds which look like waves of mist beating against its flank. Other notable exhibits are those contributed by Mr. John Gunston ("Mer de Glace"), Mr. J. W. Wyatt ("The Rathhorn"), Mr. J. J. Withers ("Montanvert"), and Mr. Sydney Spencer, whose graceful and decorative effects of melted snow, dark crags, sunshine, and fir trees at Pontresina merit approval. Dr. W. Hunter Markman shows a number of Himalayan scenes, in some instances of peaks which he was the first to scale in 1903.

At the Mansion House Police Court on May 2, William Freise Greene, of 8, Cliff Villas, Dovercourt, appeared upon a summons before Mr. Alderman Burnett charged with obtaining £72 from Mr. Favina, secretary of the Commercial Intelligence Bureau, Eastcheap, and £60 from Mr. Aitken, East India merchant, of 29, Mincing Lane, without disclosing the fact that he was an undischarged bankrupt. Mr. Cohen prosecuted and Mr. Langford defended. The accused, who had been a photographer in Regent Street, failed in 1891, with liabilities amounting to £2,152, and assets nil. He had not since received his discharge. In August last a petition was again presented against him, when his liabilities were set down at £227. The defendant, who was described as an inventor and patentee, appeared to have shortly before his second bankruptcy obtained loans for the amounts in question from Mr. Favina and Mr. Aitken without disclosing the fact that he was an undischarged bankrupt. In cross-examination Mr. Favina said the defendant was the owner of several inventions but he did not know whether they were valuable or not. Mr. Langford: Is he the original inventor of the cinematograph?—The Witness: I cannot say. Do you doubt it?—I do rather. Then he is the inventor of printing by electricity and of animated pictures?—He has taken out patents in connection with them. Did he not register the Animated Picture Syndicate, Limited, and were you not anxious to put money into it?—No, I was not. What I wanted was to act as an agent for the introduction of purchasers of the patent. And proposals were made by which you were to have a substantial interest in the invention?—I was to have an interest. Mr. Aitken said the defendant told him he had sold a motor engine patent to a Cardiff firm for £15,000,

and required £50 of the £60 as a temporary loan. The defendant who reserved his defence and pleaded not guilty, was committed for trial, being allowed bail in one surety of £100.

SIR ERNEST WATERLOW, R.A., in his speech at the centenary dinner of the Royal Society of Painters in Water Colours, said that the members and associates were celebrating this year the 100th anniversary of the founding of the society. It was an event which no body of artists in this country, except the Royal Academy, had hitherto celebrated. Its history was recorded down to the year 1804 in the two large tomes of Mr. Roget. From that time, however, they had been without a chronicle, and he mentioned this in the hope that there might be a historian among them to bring the history up to date. Their historian reminded them that the Annual Register for 1804 recorded the death of Nelson, but failed to record the birth of the society. It was truly lamentable that such a sturdy infant, as they might take it the society was, should be unregistered and therefore be unable to produce a birth certificate. The fact, however, remained, and they could only impress it upon those present that the Annual Register was incomplete. The coming together of water-colour painters for the first time on November 30, 1804, laid the foundation not only of this society, but of the success of an art which had since extended its peaceful influence to all civilised countries. From that time forward the art of water-colour painting took strong hold upon the public favour, and the election of a new member of the society ensured the attention of the writers of the day to his work. A propos of this, they found no less eminent a personage than Thackeray in his critical essays referring to one of their members: "A new painter somewhat in the style of Harding is Mr. Callow. This was written in 1840, and Mr. Callow was still an honoured and most active member of the society, painting as well as ever at the ripe age of 92. He trusted it would be the constant aim of the society so to improve upon the methods and practice of their predecessors that it might be said of them in the future, as they could say of those who had gone before, that they also had done something worth of remembrance for the essentially British art of water-colour painting."

PROPOSED Optical Convention.—At the instance of the Optical Society a meeting was held on April 26, at the Society of Arts, to consider the advisability of organising an Optical Convention in this country. Dr. R. T. Glazebrook, who occupied the chair, said that the need for further co-operation between the various members of the optical industry was widely recognised—more fully, perhaps, in Germany and in France than in this country. It was this fact that had led some members of the Optical Society to issue a letter inviting an expression of opinion as to whether a convention should be held for the discussion of matters of interest to the optical trade. The reply had been favourable, and this meeting was the result. This convention, it was thought, should be independent of existing organisations, and he himself hoped that along with it there would be an exhibition of optical instruments to show what the English optical trade could do. The resolution in favour of such a convention, to be held in London, was proposed by Mr. C. Hyatt-Woolf, who said that it was remarkable that up to the present so important an industry as the optical had not seen the necessity of combined meeting and inquiry. He thought that the convention should not be confined to the education of opticians and the enlargement of their sphere, but also to the education of the public as to the progress of the optical craft. Mr. Cornbeck, in seconding the motion, said that he found that among scientific men there was a generally accepted idea that the British optical industry was dying, if not dead; and, holding this opinion, they could not be expected to take a keen interest in the optical craft. But there were still some optical industries in this country which surpassed those of any other country, while in others we had our own. The convention would aid in bringing about that close touch which was so desirable between scientific and practical men. The motion was supported by a number of speakers, including Mr. W. M. Christie, the Astronomer Royal, who said that lately he had been pleased to notice a distinct awakening in the photographic branch of the British optical industry, and it was carried unanimously. It was further agreed that an organising committee be appointed, and suggestions were invited and received for names of gentlemen who should be asked to serve.

When ordering half-tone blocks, photographers will usually get better results if the block-maker is given a certain amount of

ration. The following excerpts from notes on the subject in the "American Printer" should prove useful:—Obtain the best possible photographs or drawings of subject to be reproduced. State the style of finish preferred—straight edge, oval, circle, outlined, or cut-top, vignetté, or with fancy drawn border. State the number of inches wide you want each plate, or the number of inches high. Give clear instructions as to parts not wanted, the fixing up of incorrect portions, or making additions. If a price has not been quoted, state about how much the job will stand for extra work of artists, photographers, or finishers. State any special orders concerning printing; mounting plates can be blocked flush on either side or on both sides. Say how much time can be allowed. Carefully protect plates against rough handling in transit. Now some don'ts: Don't rely on the backs of unmounted photographs. Don't send untinted or unfixed photographic prints; better send the photographer's negative. Don't expect half-tones at regular rates from coloured plates. Don't give dimensions, both length and breadth, of plates required. Don't send smaller photos than plates are to be, if it can be avoided. If the plate is to be used in a newspaper and stereoscopic with type formes, then order, according to the subject, the half-tone to be made through a 55, 65, or 75-line screen and on zinc, for on this metal engravers are able to get greater depth on the plates, a valuable help in obtaining results from half-tones when compared from stereotyped plates. If the newspaper publisher prints plates from half-tones, still order them made through a coarse screen either the 85, 100, or 120, according to the subject, and to be made on zinc on account of the cost price, and the printing quality. Depth most helpful when cheap ink and coarse paper are used. On the other hand, the half-tones required are for the higher grades of printing, such as trade papers, high-class magazines, catalogues, booklets, etc., the printer will order his half-tones made either through 133 screen, 150, 175, or 200, according to preference, quality of paper to be used, or the detail required in the plate. A portrait will look better than any other subject made through a coarse screen. In reproducing machinery, scenery, and mechanical articles in catalogues, the finer the screen the more true to the copy the result will be when printed.

ROYAL INSTITUTION.—The annual meeting of the members of the Royal Institution was held on May 2, Sir James Crichton-Browne, D., treasurer and vice-president, in the chair. The annual report of the Committee of Visitors for the year 1903, testifying to the continued prosperity and efficient management of the Institution, was read and adopted, and the report on the Davy Faraday Research Laboratory of the Royal Institution, which accompanied it, was also read. Seventy new members were elected in 1903. Sixty-two lectures and twenty evening discourses were delivered in 1903. The books and pamphlets presented in 1903 amounted to about 229 volumes, including with 694 volumes, including periodicals bound, purchased by the managers, a total of 923 volumes added to the library in the year. Thanks were voted to the president, treasurer, and the honorary secretary, to the committees of managers and visitors, and to the donors for their valuable services to the Institution during the past year. The following gentlemen were unanimously elected as officers for the ensuing year:—President, the Duke of Northumberland; treasurer, Sir James Crichton-Browne; secretary, Sir William Bouverie; managers, Dr. Henry E. Armstrong; Sir William Abney, Sir Sheldford Bidwell, Sir Alexander Binnie, Mr. J. H. Balfour Browne, K.C., the Hon. Sir Henry Burton Buckley, Sir Thomas A. Blane, la Rue, Bart., Dr. J. A. Fleming, Sir Victor Horsley; Lord Kelvin, Dr. Ludwig Mond, Sir Owen Roberts, Sir Thomas Henry Anderson, Sir Felix Semon, and Mr. W. H. Spottiswoode; visitors, Mr. J. Mitchell Bruce, Mr. J. B. Brodin-Morison, Dr. F. Clowes, Mackenzie Davidson, Mr. W. B. Gibbs, Mr. Francis Fox, Mr. C. Melchers, Mr. R. Mond, Mr. J. Callander Ross, the Hon. Walter H. Russell, Mr. Maures Horner, Mr. A. A. Campbell Swinton, Mr. J. Veze, Dr. G. Johnstone Stoney, and Mr. G. P. Willoughby. A demonstration of "Photolinol" was given before scientific and press representatives at the works and studios of Photolinol, Limited, 10, Holland Park Avenue, London, W., on Friday last. An extensive selection of work showing the capabilities of the process was on view, and many of the examples might be classed as works of art. Some charming coloured effects were also shown, and an ingenious studio arrangement, the idea of Mr. Otto Fulton, one of the inventors of the

process, proved what could be done with Photolinol as a studio accessory. Some of the chief advantages claimed for this photographic linen are extreme ease of manipulation; having a bromide emulsion it may be enlarged on or printed by contact in the same manner as bromide paper. The material is practically indestructible, waterproof, and impervious to the action of the sun, and has a high transparency. It can be rolled, pasted, or stretched without the slightest injury to the photograph. The picture thoroughly permeates the fabric, and has every appearance of being woven into the material. When coloured it presents the appearance of a solid oil painting, by reflected light, and by transmitted light, it gives a perfect coloured transparency. Without close inspection, or touching the material, it would be possible to mistake it for a stained glass window of most costly design and execution. Pictures up to 15 feet height and any reasonable length can be produced. It also serves as a basis upon which the artist may produce a picture in oil or water colour, the foundation of which may be a photograph taken by himself or by others, the material being exactly similar to the canvas usually used for oil paintings. It can also be used as a foundation for art needlework. For the production of photographic enlargements where at present bromide paper is used, also for backgrounds for photographic studios. For pictorial window blinds, illuminated posters for the theatrical profession, show cards, and fashion plates, etc. Messrs. J. Griffin and Son, Limited, of Sardinia Street, W.C., have been granted the sole agency for Great Britain and the Colonies for the plain materials.

THE St. Louis Exhibition, which was opened on Saturday last, is at last an accomplished fact, and the result of five years' constant labour of over 30,000 workmen is open to the world's inspection, while newspaper readers are probably already aware that nearly 300,000 people were present when President Roosevelt set the great cascades going, unfurled all the flags, and started the machinery by pressing a button in far-away Washington. Of the British exhibits, which will perhaps be the first item of interest to the British visitor, our country will be found to be very fairly represented in many departments, as may be judged from the fact that the official catalogue is a bulky volume nearly three inches thick. According to the "Times" correspondent, it is perhaps strongest in the sections of art, the liberal arts especially, photography, chemistry, mining, and metallurgy, and social economy, and it is noteworthy that in these cases the Royal Commission appointed a year ago, with the Prince of Wales as president and Lord Peel as chairman, has taken upon itself the task of superintending the organisation of a collective exhibit. Applications made to individuals before the Royal Commission came on the scene with a supply of funds to back combined and systematic effort proved of little avail. In regard to manufacturers, in many cases no response at all was made to the letters. In others, when replies were sent, the writers seemed disposed to detect an insult to their intelligence in the suggestion that they should exhibit goods in a country protected by hostile tariffs; or they intimated that they were so full of orders that to exhibit would do them no good; or they displayed that melancholy self-sufficiency which thinks it has nothing to learn from others, and stated that they did not propose to educate the foreigner in their own superior methods. The policy of arranging for, and often paying the expenses of, collective exhibits—a new one for Great Britain—was therefore found to be inevitable, if, as was plainly desirable, this country was to take an adequate part in the Exhibition. The Governments of other countries have long adopted this method of advertising their productions to the world, and have not hesitated to spend liberally in order to carry out their purpose. For example, on the present occasion Germany, although her trade interests with the United States are less than those of this country, is spending more money on her collective exhibits, and in addition she has allocated a large sum to enable some of her artisans and mechanics to pass a fortnight in inspecting the exhibition and in learning what her trade rivals are doing. It can scarcely be supposed that she spends her money just for the fun of the thing, without some expectations of gaining solid advantages from the expenditure, and perhaps some day the people of this country will come to believe that tangible benefits are to be obtained from participation in international exhibitions. But at present it must be admitted that such exhibitions are not popular among us.

Correspondence.

* * Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.

* * We do not undertake responsibility for the opinions expressed by our correspondents.

THE KODAK COMPETITION.

To the Editors

Gentlemen,—We have pleasure in informing you that the following well-known gentlemen have consented to act as judges in the Kodak £1,000 competition, for which entries will be received until June 30:

Sir William de W. Abney, K.C.B., R.E., D.C.L., F.R.S.

J. Craig Annan, Esq.

Frank M. Sutcliffe, Esq.

Will you have the goodness to convey this intimation to your numerous readers in the next issue of the BRITISH JOURNAL OF PHOTOGRAPHY?—Yours faithfully,

KODAK, LIMITED.

41-43, Clerkenwell Road, E.C.,

April 28, 1904.

PROTECTING PROOFS.

To the Editors.

Gentlemen,—With very great interest I read your "Ex Cathedra" paragraph on "Frauds on Photographers." As I was a victim of these malpractices for many years, I from time to time tried many methods by which I may impress upon sitters that the rough proofs I send out are my sole property and must in no case be retained by them. But no method has been a complete success until I adopted the one I now employ, an illustration of which I enclose that you may see for yourself, and if you think the idea as good as I find it you may pass it on for the benefit of your readers.—I am, yours faithfully,

HENRY J. COMLEY.

"The County Studio," 10, Russell Street, Stroud,
May 2, 1904.

[Our correspondent encloses a print perforated in three places with the word "Proof."—Eds. B.J.P.]

A DISCLAIMER.

To the Editors.

Gentlemen,—A warning notice directed against me and published in your magazine was brought to my notice some time ago. I have been doing a mail order business up to about 50,000 dols. per annum, and like all American dealers, I was obliged to exchange used cameras and lenses. Quarterly I issued bargain lists, requesting my customers to state first, second, or third choice, reserving the privilege to substitute other goods, however, with the assurance to the customer that money would be refunded if any of the goods proved unsatisfactory.

Mr. Walter Bruce, the writer of the article, sent 8 dols. for a lens, which upon receipt of his order was sold. We sent another, which he returned. A refund check was mailed, but by an oversight was enclosed in another customer's letter; however, another refund check was mailed to him on November 30, and was received by him on December 1. He did not cash this check before December 26.

To again return to the accusations published by you, I desire to state that I have manufactured photographic lenses for over six years. Messrs. John J. Griffin and Sons, Limited, had purchased goods from me very extensively, as per order enclosed. I enclose you German catalogue, showing you plainly that the goods were manufactured by me. Mr. Bruce cannot name the five friends in his city which he claims have been swindled.

If "Amplisopes" would be inferior, they would not have been bought by all. "La Revue Scientifique," Paris, "Scientific American," New York, and all photographic magazines, would have never praised the goods, and if you will look over the records, you will find that I have been the inventor and first manufacturer of supplementary lenses. Focussing finders are in use in England, and Mr. George Eastman at a time seriously considered the same.

Your article has been the means of great loss to me. I have been

obliged to turn over my business to my clerks at a sacrifice. You have without investigation ruined the tedious work of many years and your action is so extremely unfair, that it is not in line with your long experience and your standing as a publication, and it is no encouragement for the younger element to push ahead.

I have now an opportunity to connect myself with the above having assigned to them an exceedingly valuable patent, as copy enclosed, but before such is possible you must make good the great wrong you have done me.—Yours truly, N. NEHRING.
The Scientific Lens Co.

Manufacturers of High-grade Lenses,

704-714, East 166th Street, New York,

April 19, 1904.

[Accompanying Mr. Nehring's letter was a catalogue (in German) his Amplisopes, and a copy of "Western Camera Notes" (Mimnapolis) in which that periodical states that its business relations with Mr. Nehring have always been satisfactory. Three original letters from American photographers were also enclosed, and these testified that his goods were as represented to the writers. Finally, Mr. Nehring sends us the original order from a London house for a large number of his Amplisopes. We are extremely sorry if the publication of Mr. Bruce's letter exerted any adverse effect on Mr. Nehring's business, and trust that the foregoing disclaimer and these appended evidences of Mr. Nehring's bona-fides will exonerate him from the accusations made by our American correspondent.—Eds. B.J.P.]

PSYCHIC PHOTOGRAPHY.

To the Editors.

Gentlemen,—In regard to spirit photography, Mr. Boursnell, photographer having a shop and studio in Uxbridge Road, is the only taker of spirit photographs in this country. Since 1895 he has been taking them regularly by the side of clients who applied to him. He is naturally clairvoyant, which means that he can see spirits both in daylight and darkness, and like all clairvoyants, is a spiritualist, for birds of a feather flock together. He soon found that he had to contend against sceptics, and put himself in a state of defence, entrenching himself the best way he could in the stronghold of truth. To that end he had cards printed on which were code of rules constituting the conditions on which he would meet the demand for a spirit photograph. One of the rules was that the applicant must bring his own plates, three or four in number, and that they must be already marked with the name or initials of the owner. Another of the printed rules was that the applicant must go into the dark room himself (if a photographer, whether amateur or professional) to put plates in slides, and again to develop the plate after due exposure. Mr. B.'s rôle in the performance being confined to the small part of taking at the camera the photograph of the client on the platform. And it was here where his service as clairvoyant was indispensable, for he would see a denizen of the spheres, a man, a woman, or child, posing calmly by the sitter's side. After usual exposure on the sitter and covering the lens the camera has to remain undisturbed for a minute or so to finish taking the spirit. The spirit being less dense, takes a longer time to photograph, and mysteriously enough, the cap is no hindrance to the spirit light-rays impinging on and focussing through the lens. There is thus another light besides the everyday commodity we are familiar with. In less than fifteen minutes all three plates brought and produced by a client will have been exposed and developed, and a spirit picture revealed on one of them, sometimes on two. If the applicant is not a photographer he must enter the dark room with the operating medium before and after exposure.

During nine years Mr. Boursnell has catered for hundreds of customers of every rank, including army officers, university professors, clerics, Jesuits, photographers, medical gents, members of Parliament, from all parts, including Paris.

The Boursnell photographs are a series by themselves, and exceed over all the previous ones mentioned in Mr. Henderson's ancient history in his recent letter anent the seventies. Mr. Boursnell is now seventy, and feeble, and I do not know of any other to be relied on for a spirit photograph.

J. E. STERLING.

91, Latchmere Road, S.W.

P.S.—I had the honour some five years ago of submitting to Mr.

Anderson at the rooms of the Land Photographic Society a number of specimens of Mr. Boursnell's psychic photographs. He was much pleased, and apparently satisfied. He promised me that he would suddenly on Boursnell with half-a-dozen marked plates in his bag, and demand a spirit photograph on one or more of them within the usual limit of time—three or four minutes for each. Had he done so he could have produced some light on the subject in recent letter, which vouchsafes no information, only a cry for help from other quarters. In 1895 I showed Mr. J. Traill Taylor, then editor, some of Mr. B.'s photographs of spirits, and he, I could see they were not "fakes," but genuine, and told me with every expression of satisfaction. Last October Mr. Boursnell was the recipient of a beautiful illuminated address from a large company of gentlemen of high social standing, to recognise his gift as a spirit photographer, and his immaculate probity and dealing. It can be seen framed at his house.

A RECORD in Block Making.—A few nights ago several artists were invited by the "Daily Chronicle" to Portsmouth to draw the sad scenes of the burial of the Submarine A1 victims. The firm of Carl Schuchel, Ltd., received their finished sketches at 11.15 p.m. In an hour and twenty minutes the chief in person hurried over to the "Daily Chronicle" office with plates equal to about three-quarters of full-page size; all perfectly finished; thoroughly deeply etched, clear and clean at all points. Thus Portsmouth and other readers of the "Daily Chronicle" have fine illustrations of the historic scenes on their breakfast table. The record which secured the warm congratulations of the editor of the "Daily Chronicle." What a far cry to the days of forty years ago, when, in publishing the news of Lord Palmerston's death, a dingy illustrated journal announced that in a few weeks it hoped to present a portrait of his lordship.

ON Lead Poisoning and Water Supplies.—The second volume on the above subject has recently been issued by the medical officer of the Local Government Board. The former volume contained information concerning Dr. Houston's study of waters derived from moorland filtering grounds in Lancashire and Yorkshire; the present volume gives details of an extensive series of laboratory experiments bearing on the general subject and conducted by Dr. Houston. They have been published in order to facilitate the interpretation of the results obtained when studying the solvent or erosive power of a water on lead pipes, with the view of counteracting these dangerous qualities. Particular attention is directed to observations on "standards" (p. 10) in this volume, where methods of measuring the solvent and erosive powers of a water upon lead are given enabling an opinion to be formed as to the degree of risk arising from the contact of such water with lead surfaces. The report is illustrated with drawings of the apparatus employed in the investigations, and photographs have been reproduced to show the actual amount of deposit remaining in tubes in which erosion of lead by water has been allowed to take place. From the nature of this report it will be understood that the substance of it consists of the tabulated results, together with brief descriptions of the experimental methods adopted. The main conclusions arrived at were stated in the previous volume, but a general summary of all conclusions is also given in Section IV. of this volume. Reference to this summary will be found useful to those who are concerned with the consideration of dangers of lead poisoning arising from water supplies. The summary starts with an explanation of the meaning of the term "erosion," and proceeds to state that bright lead is rapidly eroded by rain and by snow water, as well as by distilled water; then follow the names of substances which do not influence the erosive power of water when introduced into it, as well as of substances which delay and inhibit the action. Moorland waters are next considered in regard to their erosive property, and the conditions which increase, diminish, or prevent their erosion are stated. Then follow cases which do not fall under the above classification, together with remedial measures which may be adopted to avoid danger. A similar classification and consideration of waters as regards plumbo-solvency then shortly entered into, and, finally, the conclusions arrived at in chemical and bacteriological experiments as to the cause of acidity in moorland water are given. The summary terminates with a selection of conclusions which have already appeared in the former volume.

Answers to Correspondents.

- * * *All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.*
- * * *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*
- * * *Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.*
- * * *For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

PHOTOGRAPHS REGISTERED :—

- G. H. Henshall, 8, Violet Road, Linacre, Liverpool. *Photograph of Raby Mere, Bromborough, Cheshire.*
- J. Shivas, 88, Queen Street, Peterhead. *Photograph of View of Peterhead.*
- R. P. Gregson, 37, Church Road, Lytham. *Photograph of the English Association Football Team v. Wales, 1904. Photograph of the English Association Football Team v. Ireland, 1904. Photograph of the English Association Football Team v. Scotland, 1904.*
- H. Wiggins, South Parade, South Shore, Blackpool. *Photograph of Stormy Sea at Blackpool.*
- H. Waters, 117, Crown Street, Ipswich. *Photograph of H. Wilmetts, Neger Comedian on Pedestal.*

J. H. HELSLY.—We must trouble you to put your query in a more definite form, as we do not understand what you mean by a formula for "sensitising, developing, and fixing solar prints."

ADDRESS WANTED.—"PICTORIAL" says: "I should be obliged to you if you can give me the address of S. Hildesheimer and Co., London and Manchester, postcard firm." In reply: Finsbury, London, E.C., will be sufficient address.

R. W. BROWN asks: "I should be obliged if you could inform me where I could purchase a camera for taking photo post-cards to be finished in a few minutes. I am thinking of doing the same here during the season, but am at a loss to know how they are done." In reply: We are not aware that there is such a camera on the market.

COPYRIGHT IN INDIA.—"H. C. S." (Bombay) asks: "Could you inform me whether there is a Copyright Act in India, and if so, where should I apply to have photographs registered?" In reply: We must confess that we are unable to answer the question as to copyright in India. As our correspondent is resident in India, we should advise him to inquire there.

TRIPOD asks: "Will you kindly supply me with the names of two or three of the best books on posing and lighting for artistic portraiture in studio? I do not want little handbooks; good standard books will be of most use." In reply: We advise you to get "The Studio, and what to do in it," by H. P. Robinson; "The Lighting in Photographic Studios," by P. C. Duchochois; "Artistic Lighting," by James Inglis; "The Pose in Portraiture," Photo Miniature No. 2.

RESIDUES.—H. HOLDEN says: "I should be glad to know (1) the best way to collect the precious metal from used toning and fixing baths. (2) Could both baths be treated in one operation, that is, together? (3) And should I not obtain gold and silver residues, as there is sure to be a little gold left in the old toning bath." In reply: (1) The gold may be precipitated from the toning baths by an acidified solution of protosulphate of iron; and from the fixing baths by a solution of sulphide of potassium. (2) The baths should be kept separate. (3) Yes.

VALUE OF LENS.—Q. W. L. asks: "Would you kindly inform me what is the value of a portrait lens by C. C. Harrison, New York, No. 5,217? It was made in 1858, and will take a full-length portrait 34, by 25, or larger, the whole of the figure being sharp." In reply: We are not valuers of old apparatus, so can give no actual opinion. We should imagine, however, the lens has comparatively little commercial value at the

present time, as when portraits of the size mentioned are required they are produced by enlargement.

OPINION WANTED.—C. DE B. (Jersey) says: "I enclose you four rough prints, two before retouching and two after. May I ask you if you would kindly give me your opinion of the work, and how many ought one to retouch of that size in a day? I am rather slow; I can only just manage to do five or six. Could I apply for a berth and say that I can retouch?" In reply: We cannot say much for the work; we should advise our correspondent to improve it before applying for a situation as a retoucher. He might do well, perhaps, to read the article on another page.

SPOTTY PRINTS.—T. R. HAMMOND writes: "For some time past I have been troubled with spotty prints, and have failed to trace the cause; I should therefore be obliged by your advice. The spots appeared the morning after mounting. I have tried covering up during drying, but still they appear. All baths are made up fresh. I have worked under the same conditions for three years without trouble until now." In reply: Judging from the appearance of the spots, we should say that they are caused by minute particles of injurious matter coming in contact with the prints while they were wet. Is the water free from iron?

CHARGE FOR USE OF DARK ROOM.—G. W. LANE writes: "I am a photographic dealer, and have just had a very convenient dark room made, which I intend 'letting' for the use of amateurs. It is fitted with running water, sink, and all the usual accessories. I should be glad if you could give me a scale of charges usually made." In reply: There is no regular scale of charges; every one fixes his own according to his ideas. Some dealers make no charge to their customers for the use of a dark room for changing plates. Others make a charge according to the time the room is occupied, and again others according to the purpose required, i.e., plate-changing or developing, etc.

COLLOTYPE.—"RUSTICUS" writes: "I have read your very interesting article in to-day's B. J. on colloid printing. You mention in the latter part that there one or two simpler modifications of colloid, without a glass plate, particularly useful for post-card work. When only a few copies (comparatively) are required off each negative, can you give me any information about these: Is 'Sinop' such a one? or should I find it in Fithian's 'Practical Colloid'?" In reply: "Sinop" is well suited for the production of picture post-cards, but with it a glass plate is employed. The Photo-auto-copist is also good; with it plates are not employed. The address of the Auto-copist Company is 64, Queen Victoria Street, E.C. Fithian's is a good general work on colloid.

PHOTOGRAPHING IN AMERICA.—E. PHELP asks: "Will you be so kind as to give me an answer to the following question:—Is there any statutory prohibition to taking photographs of public or state buildings in the United States of America? With a desire to photograph public or state buildings, would you advise me to carry a passport? My reason for asking this question is that I am an amateur photographer, planning a holiday in U.S.A. for the next two months, and do not wish to carry my camera all the time if there is any great restriction on same." In reply: So far as we are aware there are no restrictions as regards photographing public buildings in the States. But you can make sure on the point by applying to the American Consulate in London. No passport is required in America.

SUPPLEMENTARY LENSES.—E. Y. E. N. asks: "(1) What focus spectacle lens should be added to a 5in. Busch anastigmat (f.6) to convert it into a 3½in. focus lens? (2) The front is the most convenient; is this the best position? (3) Would it be possible to get two such spectacle lenses to fit exactly a pair of stereo lenses? (4) Is this a right calculation for query 1? Assuming a 12in. spectacle lens is used, then $\frac{12 \times 5}{12 + 5} = \frac{60}{17} = 3.53$ (nearly)." In

reply: (1) To find the focal length of supplementary lens necessary to reduce or increase the focal length of a given lens, multiply the focal length to be altered by the final focal length desired, and divide the product by the original focal length less the final focal length $\frac{f \times F}{f - F} = \frac{5 \times 3\frac{1}{2}}{5 - 3\frac{1}{2}} = 11\frac{1}{2}$, therefore a

positive lens of 11½in. focus will give you the focal length required. (2) It is the most convenient in practice, and positions that supplementary lenses are usually fitted, and properly mounted, the best. (3) We expect you would have to get them made to the size. (4) The formula given above is better.

UNSUCCESSFUL SUIT.—J. BAILEY writes: "I enclose herewith cutting from the 'Southampton Observer and Hampshire News' of April 16 last, which I think may interest you. I was plaintiff in the case there reported, and although the defendant did not appear, nor was he defended in any way (except by the judge), you will see that I was unsuccessful in claiming damages. It is evident there was negligence somewhere although according to the judge's ruling in this case it was not negligent of a driver to run over and smash one's camera. The judge's decision notwithstanding, it is still an open question as to whether my operator, who was in charge of the apparatus at the time, or the defendant's driver was guilty of negligence. I shall be pleased to hear your opinion on the matter, and whether you think I have good grounds for appeal, the case being undefended." In reply: As the case was undefended, and the judge decided against you, evidently had a good reason for doing so, as the report of the case proves. Your man was clearly at fault in leaving the apparatus unprotected as he did. As to the question of your appealing, you had better consult your solicitor about that.

COPYRIGHT.—J. SHAW says: "(1) In January last I sold a print to a person to use for his post-cards, no written arrangement entered into as to the use he intended it for, but he said he would issue post-cards, which he has done, as I have seen some of them (I had not this photograph copyrighted). (2) In March I find this same photograph issued by another firm in post-card form (the week following I copyrighted my photograph). This week I find the same firm has issued letter-cards with their name on cover, which they have not applied for in permission in any way for use of same, nor paid me anything. This week they have prepared for sale 20,000 letter-cards ready for delivery to shops in Blackpool. (3) Could you inform me I have any claim on this firm for reproduction by them? If so, should I place it in the hands of a solicitor and ask for a sum, say 20 guineas, and threaten to take proceedings against them if no satisfaction? (4) What would be the cost of such fees I would have to find if I proceeded against them, if I have any case against them, and which way must I proceed? In reply: (1) As the copyright was not registered you have no claim. (2 and 3) You cannot recover penalties for anything done before registration; but you may obtain an injunction restraining sale after registration, and probably damages. (4) You had better consult a solicitor well versed in copyright law. We can give no idea of the costs.

ENSIGN Film Competition.—In order to simplify the entering of photographs for this competition, Messrs. Houghton, Limited, have decided that competitors will only be required to send mounted prints made from Ensign film negatives, and not the films themselves, but they still reserve the right to ask for any film negative from which a winning print is made.

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THE BRITISH JOURNAL OF PHOTOGRAPHY" JUBILEE NUMBER (1854-1904).

To celebrate the completion of the fiftieth year of the BRITISH JOURNAL OF PHOTOGRAPHY we shall issue on June 10 next a Special Jubilee Number of the publication, which is universally recognised as the oldest and most influential of its kind in the world.

The ordinary issue of the Journal of June 10 will be more than doubled in size in the text portion, and amongst other features will include, by way of supplement, an illustrated history of THE BRITISH JOURNAL OF PHOTOGRAPHY, with Portraits and Biographies of the Eminent Men of Science, Journalists, and Photographers who have been identified with the conduct of the paper during the last fifty years.

As a souvenir of a unique celebration in photographic journalism the "B.J." Jubilee Number will undoubtedly be in enormous request, as it is not too much to say that the history of the paper during the half-century of its existence is most intimately bound up with the history of photography itself.

Of this Special Issue of THE BRITISH JOURNAL OF PHOTOGRAPHY many thousand extra copies will be printed, as the normal demand for the paper will be very largely augmented. Moreover, it is intended to give the Jubilee Number a specially organised world-wide distribution, so that the greatest possible publicity will be secured for the paper on the completion of its fiftieth year of existence.

EX CATHEDRA.

Photography Half a Century Back.

The reprints we have given from the "Liverpool Photographic Journal" (now THE BRITISH JOURNAL OF PHOTOGRAPHY) seem to have taken some modern workers quite by surprise as to the state the art was in fifty years ago, as they had looked upon it that, at that period, it was in a very benighted state. Now, however, they see that it was not so to the extent they imagined. For example, at the meeting of the Liverpool Society, held April 4, 1854, some prints were referred to that were shown in the Exhibition to illustrate 'photolithography, by which it is understood that the picture is first produced by the agency of light on a lithographic stone, and afterwards copies are printed off by the ordinary lithographic process. Of course, at that period the collodion process was in its infancy, but it will be noticed that the advice given to amateurs by one of the speakers is similar to that now given them with regard to gelatine plates. He recommended them not to be impatient to use new formulæ. A person, he said, working steadily with one collodion would meet with more success than if he ran about from one formula to another. If that advice were followed by many amateurs of the present day, who are continually changing their developers, brand of plates, and makes of papers, they would meet with greater success than they are now doing

* * *

Lens Testing.

The discussion which took place on a paper by Mr. Chalmers, which was printed in the March number of the "British Optical Journal," appears in the April number of that paper. There seems to be some hope that the method of testing used at Kew may be improved. The Kew certificates have found very little favour amongst photographers, and very good reasons might be adduced for the fact. But if a new system be adopted, it is of great importance, not only for the credit of the country, but also as a matter of true economy, that the best should be selected. We think it must be admitted that the Hartmann method is the best. On the 22nd April we were fortunately able to publish a translation of a paper by Dr. Hartmann upon the subject, and those interested in the subject would do well to read it. To illustrate the accuracy of the Hartmann system, we may mention three facts. The Hartmann instrument depends largely upon the use of the telescope. If the lens under examination had a focus of 20c. and the telescope of the optical bench a focus of 100 c.c., then the conjugate foci of the two combined would stand in such relation that if the shorter were displaced by 1 mm. the longer will be displaced as much more as the square of the ratio of the focal lengths of the

B

instruments. In this case the ratio is 1 to 5; therefore the displacement of the greater conjugate will be $1 \text{ mm.} \times 5 \times 5 = 25 \text{ mm.}$ The great sensitiveness of such a method must, of course, permit of great accuracy of measurement. Secondly, the ground-glass screen is not used for focussing. What this means may be understood from particulars taken from Dr. Hartmann's previous paper published in *THE BRITISH JOURNAL OF PHOTOGRAPHY* on the 20th February, 1903, p. 146. A series of measurements was made with red, orange, green, and blue light, separately. It was found that the mean error of focussing with the telescope was $\pm 0.062 \text{ mm.}$, whilst a similar series obtained by use of a fine-ground glass screen and a magnifier showed a mean error of focussing of $\pm 0.2 \text{ mm.}$ Thirdly, the errors of the optical instrument used in testing are accurately determined and deducted from the results. If the authorities at Kew are permitted to give certificates expressing the data of a lens, quantitatively, those data should be as accurate as possible. Any doubt about them must inevitably bring discredit upon the Institution. We know that the Hartmann system is used in Germany by certain opticians as a test. Such being the case, what value would attach to a Kew certificate if the standard of accuracy were below that of a Continental manufacturer?

* * *

The Object of Lens Testing.

Whilst drawing attention to this subject, it may be well to point out that the nature of the test should be determined by the work the lens has to perform. This is referred to by Dr. Hartmann in his last paper. In the final paragraph he says that his apparatus is not intended to give information of the kind that usually interests the photographer. More often than not the photographer looks for certain qualities in the lens which have no exact meaning. In such cases a few camera trials will give him more information as to what he requires than a Hartmann test. We might instance as an example the amateurs whose æsthetic ideas are associated with coma and astigmatism, and who are so intolerant of the school which seeks to produce pictures giving the greatest accuracy. The Hartmann tests are purely scientific and tell you in figures the optical results the lens will give. The question might also be asked, Does the user of a lens, in most cases, know what qualities will suit him best? The remarks of one speaker in the debate on Mr. Chalmers's paper prompt us to express the doubt. He is reported to have said "that the exposure was usually made at $f/64$ in photo-mechanical line work, and practically the only advantage of a high-class lens was that focussing could be done at a large aperture. Thick lenses were disadvantageous to process work, owing to the necessary increase of exposure." In the first place, such a statement implies that the majority of photo-line-etchers use lenses of an inferior order or do not understand their use. With a good lens there is no gain, but rather a loss, of sharpness in reducing the aperture below $f/32$ for photographing a line subject the same size as the original. At the same time, it is best to use the same aperture for the exposure as for focussing. If the results are not satisfactory and the greatest accuracy is required, then the focus should be found by trial and error. Thick lenses, of course, imply a certain loss of light from absorption, but if "thick lenses are disadvantageous," why should the only practical advantage of a high-class lens be "that focussing could be done at a large aperture"? Would not the loss of time in exposure be compensated?

* * *

Ancient Lights.

The question of "Ancient Lights" is one that is interesting to photographers in, perhaps, more ways than one. If the light

in their studio is blocked out by some new building it becomes a very serious matter to them particularly if they can obtain no compensation for the injury done, and in many instances that is the case. In other cases the question of "ancient lights" may be interesting to them from quite a different point of view, that is, when they are called upon, as a matter of business, to take photographs of buildings and their surroundings; in law cases, where the question of ancient light lead to litigation; then it brings grist to their mill in the shape of substantial fees for their work. It may here, perhaps, be well to explain to many what is the law with regard to ancient lights. Any one can erect on his own premises anything he likes, regardless of the light he may stop off from his neighbours, provided the neighbour's unobstructed light has not been enjoyed for more than twenty years. If it has, then putting up anything that will obstruct it becomes illegal, as he is entitled to retain, unobstructed, his ancient lights, and he can obtain an injunction to restrain, or recover damages. We know of several cases where photographers and others have obtained very substantial damages where their ancient lights have been interfered with. A case of very great importance in connection with this subject was decided one day last week in the House of Lords by the Lord Chancellor and other Lords. It was an appeal from a judgment of the Court of Appeal reversing an order of Mr. Justice Joyce. It involved an important question of obstruction of ancient lights, and had twice been argued before their Lordships. Briefly stated, the case was this, as we gather it from the daily Press reports of the case. A building was put up that obstructed the light that had been enjoyed for over twenty years, and it was sought to have it pulled down. It was not contended that the new building would not stop off more light than the old ones did, but the appellant contended that the amount of light that would be left would be sufficient for the respondent's business in ordinary trade, and this was the view taken by the House of Lords. The Lord Chancellor, in delivering judgment, remarked that if the respondent could restrain in the way he thought he could, and the Court of Appeal had decided that he could, towns could not grow, and expansion would be unduly restricted. In the end judgment was given for the appellant with costs, and costs in the Courts below. It should be kept in mind, in this case, the respondents were a firm of grocers, the "Home and Colonial Stores," and the new building still left them sufficient light for their ordinary business purposes. Had the case been that of a photographer it might possibly have ended differently. A certain amount of light stopped off from a grocery establishment may not materially interfere with the carrying on of the business. But in the case of a photographer it might be widely different, as any material obstruction of his studio light might, especially in confined spaces, seriously effect the quality of the work he produces.

* * *

The Royal Academy and Sartorial Art.

The Royal Academy Exhibition was opened to the public on Monday last week, and it has been exceedingly interesting to read the critiques on the pictures shown that have appeared in the daily Press, and the diversity of the opinions expressed on their merits. We always look forward with interest for what our good friend the "Tailor and Cutter" has to say about the paintings of portraits in the annual show, and this year it is, as usual, very severe on many of the artists. Here is an example: "After carefully inspecting the pictures of the year, we have come to the conclusion that many of the painters cannot draw with any degree of accuracy, and some of them blend their colours in such an

original way that they border on the grotesque." Our contemporary then goes on to criticise some of the pictures in detail. One is Professor von Herkomer's portrait of the Right Hon. Joseph Chamberlain. Of this it says that an "at breast pocket is placed too low down, and the coat has but one button, and the vest two, that are far too large, the collar of the coat is too heavy, and the lapel is veryumpy. Mr. Chamberlain's trousers also come in for condemnation; they are said to be not of a good colour, being strongly suggestive of inferior material, worn too long, and which has, consequently, turned a greeny brown, whereas the protected parts are black. Nevertheless, Mr. Chamberlain's clothes are better than those of Mr. Goscombe John, A.R.A., as depicted by Mr. Arthur Hacker, A.R.A., in No. 3. The sculptor's coat is a smudge of black and has no buttons. These are also missing from the vest, which overlaps one way at the top and another at the bottom. Bad, too, are the coats of Mr. Russell J. Kerr, M.P., painted by Mr. Frank Bramley, and of Sir William Emerson (119), for which Mr. Shannon is responsible. According to the tailor-critic Sir William's frock-coat has, among many other faults, no collar on the right side, and the outside edge to the lapel is "like a dog's hind leg." But the severest criticisms are reserved for Mr. Seymour Lucas, A.R.A., whose holiday in Spain will be overcast with gloom the "Tailor and Cutter" circulates in the Peninsula. Mr. Lucas's portrait of Sir John Neilson Guthbertson, the leg-coverings (he refuses altogether to call them trousers) fill the critic with despair; from the tailor's point of view he has seen nothing so bad. It would most seem to be the idea of the "Tailor and Cutter's" critic that men were made for tailors. He did not tailors for men, and that every one could be clothed according to the tailor's notions and in accordance with the wearer's comfort. If, however, the wearer has his garments made according to his liking, and the artist portrays him in such clothes he must expect rating from the sartorial organ. Why do not artists, before attempting to paint a portrait, study the dummies shown in clothiers' windows, and their "graceful" poses; they would then escape the ire of the "Tailor and Cutter," speaking of painters not being able to draw with any degree of accuracy, it may at once be admitted they cannot, that if the fashion plate issued with the number of our contemporary that contains the strictures on the R.A. pictures, is to be taken as its criterion of art. The drawings of that, and the pose of the figure is—well! But after all we must, we suppose, accept it as the sartorial ideal of Art.

ROYAL INSTITUTION.—A general monthly meeting of the members of the Royal Institution was held on Monday afternoon (the 9th inst.), the Duke of Northumberland, K.G., President, in the chair. The Chairman announced that he had nominated the following Vice-presidents for the ensuing year:—Sir William Abney, K.C.B., Mr. Alfred Bidwell, Right Hon. Lord Kelvin, Dr. Ludwig Mond, Sir Thomas H. Sanderson, G.C.B., Sir Felix Semon, Sir James Crichton-Browne (Treasurer), and Sir William Crookes (Honorary Secretary). The following were elected honorary members:—Professor E. H. Riefler, Professor J. M. Crafts, Professor E. W. Morley, Professor C. Pickering, Professor L. P. Cailletet, Professor and Madame Curie, Professor H. L. Le Chatelier, Professor G. Lippmann, Professor J. W. Bruhl, Professor G. H. Quincke, Professor E. Fischer, Professor F. W. G. Kohlrausch, Professor H. Landolt, Professor L. Boltzmann, Dr. H. Kamerlingh Onnes, Professor H. A. Lorentz, Professor G. Lunge, Professor P. T. Cleve, and Professor P. Zeemann. The special thanks of the members were returned to Mrs. Frank Lawson and to Sir Thomas Sanderson, G.C.B., for their donations to the fund for the Promotion of Experimental Research at Low Temperatures. The following were elected members:—Mr. P. M. Brophy, Mr. W. J. Canter, Mr. Eyre Crowe, Mr. H. T. Ellis, Miss E. Morgan, Mr. Berkeley Portman, and Mr. Burnett Tabrum, J.P.

DIAGRAM LANTERN SLIDES.

II.

WHEN dealing with this subject recently we made a half promise to give further hints on the making of this particular class of slide—a promise we now proceed to redeem. Slides, where there are no half-tones, no picturesque features to occupy the mind, nothing to lead the observer's attention from trivial irregularities or spots that may be present in broad expanses of pure white, require a delicacy of handling and a care in every stage of their production, speaking, of course, of their mechanical manipulation, far in excess of what is needed for an ordinary view-slide. The tiniest speck of dust, a broken line instead of one crisp, sharply-cut and even, a slight stain due to the use of plates kept too long, are fatal departures from perfection; they attract and distract attention—to the defect and from the lecturer's remarks. No one but an experienced lecturer knows the annoyance of seeing or hearing whispered comments or heads brought together or in disparagement of a slide so departing from a high mechanical standard. Nowadays there are always a number of photographic amateurs in every audience, who, if their skill in slide-making equalled their power of fault-finding, must be among the most able experts who ever handled a camera or developed a plate, or, more especially, pressed a button. The only method of over-reaching them is to produce a perfect slide. The method of giving white lines on a black ground overcomes many difficulties; but, as the photographer has mainly to carry out his client's instructions, and as the white ground is still generally adopted, he will have no choice, and will have to supply the "usual thing." To avoid broken or uneven lines, correct exposure in making the negative is necessary, and is also very helpful in obtaining solid blacks; an under-exposed plate is difficult to get thoroughly opaque, and is liable to give grain, through showing the texture of the paper. We have seen many slides defective through imperfect definition at the margin, a fault very liable to occur when copying a small original. The virtues of a modern anastigmat are conspicuous here; but, as many photographers do not yet possess such a lens in their outfit, they must obtain the needful crispness of line by well stopping down their lenses of the old type, and avoid grain by careful and even illumination and full exposure. Where slide-making is frequent it is highly desirable to use a special plate—either a "process plate" or, which is still better, a "photo-mechanical plate," some manufacturers producing both kinds, the latter being the slower still, but giving the greater density. It is, however, in the production of the transparency (and here also the use of the special plates named is of advantage) that particular care is necessary. Our recommendation to make an over-dense slide, and clear it by the reducer is important, and has the further advantage of giving such perfect transparency in the whites that if occasion arise to use the knife to pick out a dust spot, or to remove a line or letter, it can be done without showing the erasure on the screen, as would be the inevitable result if grain or the faintest greyness in the white ground were present. A single experience would teach this without instruction; but it is well to refer to it for, as such patching would usually be done afterwards, the experience would be bought dearly, as either an imperfect slide, or the reprinting, when perhaps everything had been put away, would result. A further hint may be here given. Particular care should be given to the washing, as this stage is fruitful in the deposition of small opaque particles, which could never be seen in a view, but which put with large expanses of white, would at once be noticed. Hence the plate, before being placed in the rack to dry, should be carefully rubbed with a pledget of wet cotton-

wool, and care be taken that no dust be raised in the drying apartment, and, above all, that the slide be not placed resting on a shelf or table, as any possible dust particle would instantly be drawn up by surface tension, and probably deposited in a conspicuous portion of the diagram.

We may here observe that, not only for lantern slides, but for all negatives, especially portrait negatives that are to be afterwards retouched, a plate is far better put to wash upright in a tank than horizontally under the tap.

Surface stains, from an over-kept plate, and showing, by reflected light, iridescence which would not matter, and by transmitted light a yellowing of the whites which would matter, are easily removed by rubbing with cotton-wool, wetted with a very dilute solution of ferricyanide—one grain to the ounce is ample for the purpose.

A remarkably effective slide, which is of the nature of a diagram, is made by taking from a half-tone process-block print an enlarged photograph of, say, the head only of a popular character, and of such size as to fill the screen. A series of dots only will appear, with scarce a semblance of features. The same head can be next shown on a smaller scale when, of course, a proper representation of a face will be seen, the tones being produced by dots of various sizes. If the block is available, time and trouble will be saved by getting the printer to pull a print on to a waste celluloid dry-plate, from which the image, or the silver-salt, has been thoroughly removed. An excellent negative may thus be produced. A chloride film fixed thus gives the clearest transparency.

When anything has to be added to a finished slide, either by altering a diagram or writing a title or explanation, as simple a plan as any is to scratch deeply with a sharp needle, rub fine lamp-black in, or what is more readily obtainable, the powdered "black chalk" (known among artists as stumping sauce), finishing by removing the surplus black with a camel-hair duster, and not by blowing it with the breath, which would tend to become "dirt"—that is, matter in the wrong place, as Lord Palmerston is credited with calling it. If Indian-ink be preferred, it should be freshly rubbed up, and if it requires moistening, on no account must it be wetted by the mouth; it then would inevitably run "clotty." The addition of a little oxgall makes Indian-ink "bite" well.

Where slight alterations or additions are required to a slide, much may be done by treating the surface with retouching medium, and adding what is necessary by means of the usual finely-pointed lead-pencil.

Occasions may arise when a copy of a process-block print is wanted in a hurry. A good result may be obtained by getting a print on celluloid as just explained, or it may even be made on thin tracing-paper, pasted upon glass, and then varnished. An emergency slide can be made out of an albumenised paper print. It should be placed for a while in boiling water to remove as much of the size as possible, then pasted on to the glass, and well dried, and finally heated and rubbed while hot with a piece of paraffin (a piece of paraffin candle will answer the purpose admirably).

We may now conclude our survey by concentrating our advice. If perfection of slides is aimed at, obtain fully-exposed negatives and scrupulously clear transparencies.

BEAUTIFUL peeresses and actresses are expressly excluded from the latest beauty competition on the ground that they already enjoy a monopoly of the "beauty pages" in the leading magazines—"Sketch," "Tatler," etc. Messrs. Gee and Watson, of St. Bride Street, London, are offering a prize of five guineas (and three guineas to the photographer) for the photograph of the most beautiful woman in the United Kingdom (not titled nor an actress) which they receive before the end of May.

AMERICAN NOTES AND NEWS.

HAND CAMERAS AT THE WORLD'S FAIR.—Intending visitors to the World's Fair will be interested to know (writes "Wilson" that official notice has been received by the Eastman Kodak Company to the effect that hand cameras up to 4 in. by 5 in. size will be admitted to the ground without charge, but cameras may not be used with tripods, however, but must be literally hand cameras. It is but fair to add that the effect of the Eastman Kodak Company toward the acquirement of this concession have probably had much to do with bringing it about. The coming Exposition will be the first in the country that has viewed the matter of photographic concessions from the hand camera workers in this spirit of breadth and liberality, and we opine that the management will have no reason to regret having made the concession. Its effect upon the Exposition ought to, and we believe will, be distinctly good from an advertising standpoint, and its value to the visitor who desires to take away with him interesting, instructive, and otherwise valuable records of the great meeting will be inestimable.

NEED BIG CAMERAS.—Modern warfare does not really lend itself to photography. Action nowadays is too spread out unless under extraordinary circumstances, for one to get much of it within the scope of any camera. The new panorama camera has promising possibilities (says a contributor to "New York News"), but even that will fail in most cases. I went through two wars before I succeeded in getting a good picture of real fighting. Soldiers are taught now (and good teaching is, too) to conceal themselves as much as possible while in action, even when not actively participating in any movement. The immense range of modern firearms means that a given area is swept with projectiles during a battle, and troops to within supporting distance are generally well within range and lie down when not in motion. Then, much depends upon the character of the terrain. I have often been right with troops on the firing line, with my camera in my hand, and yet waited for hours before I could get a single picture that promised any adequate photographic results.

THE POSE OF THE HANDS.—"W. E. W.," in "Wilson's Photographic Magazine" for April, points out that one of the greatest difficulties in posing hands has been the nervous consciousness of the sitter; but this fact is, fortunately, becoming a thing of the past. The greatest troubles nowadays are the slight exaggeration of the short focus lens, and the belief in many minds that hands are smaller than they really are. Do (he adds) let the sitter hear a word about her hands—try to let her forget them. Do not let the hands be placed symmetrically, so that the head looks like the apex of an isosceles triangle. Hands look more prominent on dark dresses than on light ones. A hand may be partly hidden by the fold of a dress, or its size may be apparently reduced by placing it sideways to the camera. If it is a natural pose, a hand supporting the cheek or chin usually looks well. If the fingers are relaxed, the hand looks smaller and more natural than when the fingers are stiff. Treat each pair of hands on their merits, usually by leaving them to the natural unconsciousness of the sitter, and the difficulties of posing the hands will to a great measure disappear.

NON-CURLING GAS-LIGHT PRINTS.—In order to prevent prints curling, Mr. Milton Wade, in the "American Amateur Photographer," makes the following practical suggestions: Lay out blotters. On these place muslin from which starch has been washed out, and keep the muslin for just this purpose. Take prints from the wash water and lay face down on the muslin. When prints are just dry enough so that films will not adhere, and yet while quite damp, they are rolled film out, around a roller 1½ in. to 2 in. in diameter (I use

piece of background roller, the sort they are shipped round), then a small rubber band is placed round each end and the roller removed, leaving a circular form of the rolled prints. All are prepared in this manner and takes less time to do than to tell, and they are allowed to become stone dry while in this shape, thus allowing the pores of the gelatine film to stretch. The rubber bands are then removed, and if necessary three or four prints at a time are rolled the other way around the roller to make them lie flat. Having been stretched while drying they will not curl again. I find it advisable, when heavy paper with smooth surface is used, to, before placing on the roller, curl the ends of the print backwards with a ruler, to prevent the sharp edge marking across the face of the print during the drying process.

BACKGROUNDS.—It has often occurred to us: Why do the background painters paint their subjects in a blurred way instead of making the objects composing them definite and distinct? Look, for instance, at a professional portrait with a scenic background (remarks "The Camera"), and if you have any artistic feeling, and have not been led by habit to admit such conditions, you will perceive at once the incongruity of the arrangement. When you look at a person in the woods, with the natural trees behind him, your attention is by no means specially attracted to the background, simply because the person is in harmony with the scene. The trees or shrubbery nearest to him have more or less distinctness; the distant objects only are hazy and blurred. If the near objects should appear to you blurred, your attention would be forcibly attracted. It would seem to you unnatural, unreal, and yet it never strikes you as unnatural when you pose a figure before an all-over blurred scenic background. Now, when you consider further that in making a portrait you usually place your subject some distance from the background, and are anxious, for obvious reasons, to get your subject sharply defined, with no desire to sharpen the background, so that you have it considerably out of focus, thus adding further to the blur, why not employ a background in which the foreground is definitely represented—painted with accuracy of detail and true perspective, aerial as well as linear. Scene painting, of course, is an art peculiar to itself, and requires a different handling from a painting which is intended to be viewed at a short distance only; but there is no reason for the conventional way they are painted.

PERSONALITY IN PORTRAITURE.—I was talking to a brother photographer the other day, and as we rattled along on various topics of photography my friend casually remarked that he made pictures from a photographic standpoint, that he did not care what he could get a well-finished picture, but that the latter had to get the expression. "Now, my friend," said I, the "I" being Mr. A. W. Franklin, in "The Photo-Times Bulletin"), "if you should go to a doctor to have him cut off your finger, and he told you in the most matter-of-fact way to have a seat, and then proceeded to cut it off without offering to administer gas or chloroform, without giving an encouraging word or look of sympathy, would you be attracted to him; would that kind of dealing appeal to you? Could you recommend him to your friends, and do you think that doctor could make a success?" When your sitter walks into the studio she naturally needs sympathy. Let us suppose she has never entered one before; can you reasonably expect her to be composed, to have a pleasant expression, if you do not make any effort to entertain her, making her feel at ease? Show your sitter that you are especially interested in getting a good portrait; if not, can you expect to get a natural expression? We are governed greatly by our surroundings, and when we are in strange places, and have strange duties to perform, we feel uncomfortable. We hope for sympathy and a kind look or word from some one will make us feel more at ease. If a

photographer can realise this, and will give his customer a hearty handshake or a word of welcome, he is no longer a stranger. I was once making some negatives of a friend, and while I was picking up the plateholder he said, "Take it quick, while I am myself." I made the exposure and several others, but he insisted that he was in one picture only.

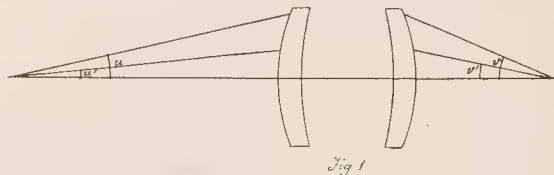
THE SINE AND TANGENT CONDITIONS AS AFFECTING PHOTOGRAPHIC LENSES.

[Translated from the "Zeitschrift für Wissenschaftliche Photographie."]

IN recent publications concerning geometric optics, the relation to one another of two conditions, the so-called sine condition and tangent condition, has either been totally neglected, or treated in a very indistinct manner. But a clear statement of their relationship is very necessary, as these two conditions play a very important part, for instance, in the construction of photographic lenses. As the constructors of these are not always thoroughly educated mathematicians, it is not surprising if they are sometimes wanting in definiteness of thought upon matters connected with these conditions. Such a shrewd mathematician as Herr Thiessen believed he had proved in his treatise, "Contributions to Dioptrics,"* that Professor Abbe in comparing the sine and tangent conditions had mistaken two different angles. Professor Abbe, on the contrary, had only in view a strained and unusual employment of a microscope objective in the statement instanced by Herr Thiessen.

In the following remarks I will endeavour to show in a way that may be generally understood, whether the sine and tangent conditions stand in definite relationship to each other or not, so far as they concern photographic lenses. For this purpose we will take an optical system surrounded by air, that is to say, both contacts, front and back, are with the same medium, air. Photographic lenses are optical systems of this kind. We will then define separately the two conditions.

The sine condition demands that all rays proceeding from an object-point, situate on the axis, shall converge in such a manner, after their passage through an optical system of finite aperture, that the relation of the sines of the angles, formed by the rays with the axis, in front of, and behind, the system, is constant:—



$$\frac{\sin u}{\sin u'} = \frac{\sin \alpha}{\sin \alpha'} = \text{constant.}$$

The error which arises from non-fulfilment of the sine condition is therefore one of the image point situate on the axis. It only occurs in a system of finite aperture, and the photographic objective is such a system. The distribution of light in the image point is no longer symmetrical; that is to say, in the disc, representing the point in the image at the picture plane, the light is no longer arranged in the same order from centre to margin, as it is where it strikes a circle situate in the plane of the front vertex of the optical system. For this reason this error was called deformation by A. Steinheil, who, as is well known, satisfied the sine condition in all the photographic lenses he constructed.† It was consequently known to him long before it was baptized.

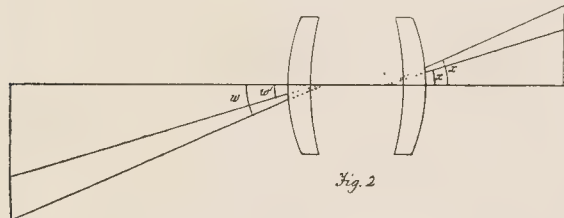
* Sitzungsberichte der Royal Prussian Academy of Science, Berlin, vol. xxxv, 1890, p. 18.

† See M. von Rohr's "Theorie und Geschichte des Photographischen Objectives," 1899, p. 307.

with its present name. Charlier, no doubt for the same reason, called the sine condition the symmetry condition.

To repeat, therefore, the sine condition is concerned with the various rays which proceed from one point in the object, which point must be situate upon the optical axis, and the system upon which the rays are incident must be of finite aperture.

The tangent condition demands that the principal rays proceeding from different points in the object, in a plane perpendicular to the optical axis, shall emerge from the optical system, so that the relation is constant between the tangents of the angles they form with the axis, in front and behind the system.



$$\frac{\text{tg. } \omega}{\text{tg. } \omega'} = \frac{\text{tg. } \chi \lambda}{\text{tg. } \chi \lambda'} = \text{constant.}$$

A ray which passes obliquely through the optical system, without refraction, I call a principal ray. Or, in other words, a principal ray is one which forms the same angle with the optical axis, both before and after its passage through the system. In oblique pencils of light the principal ray plays the same part as the axial ray in the axial pencil. It passes through the system without refraction.

The error which occurs through non-fulfilment of the tangent condition relates to surface. It only occurs when the object is one of extension, and its consequence is that the image does not resemble the object. The drawing of the former is incorrect, and the error is consequently called distortion. It is not necessary that the aperture should be finite. Distortion occurs rather with very small apertures. The characteristic of the tangent condition is that it relates to principal rays.

If we wish to picture to ourselves when the sine and tangent conditions should be simultaneously satisfied in one point, this would be the case if principal rays of the system fell upon one point, for which the sine condition was satisfied. But, according to our definition, a point in the object, for which the sine condition is satisfied, must be upon the optical axis. Only one principal ray can fall upon a system through an axial point for which the sine condition is satisfied, and this single principal ray is the optical axis, for it is the only ray which can traverse that point, and then pass through the system without refraction. Consequently, there can be no question of tangent condition, regarding a point in the object, for which the sine condition is satisfied. If aplanatic points are defined as those for which spherical aberration is corrected and the sine condition simultaneously satisfied, then there are only aplanatic points upon the axis. As we have already said, there is no question of tangent condition regarding any object points situate on the optical axis, consequently a contradiction between sine condition and tangent condition can never occur. Confusion can only happen when rays, otherwise defined, are called principal rays. The observant reader will meet with this in the most diverse of recent literary productions. As one instance only, we may mention the description in Dr. J. Clasen's "Mathematical Optics," paragraph 53, page 111, which certainly cannot be understood generally.

DR. R. STEINHEIL.

February 7, 1904.

LIGHT IN CRYSTALS.

[From the "Scientific American,".]

RAYs from a sacred ruby are fabled in the Rabbinical legend to have lighted the ark of Noah. The idea of a crystal as fountain of light has been in all times congenial to the poet's imagination, and nature is less averse to poetry than is sometimes supposed. Many crystals shine in the dark, and some very pretty experiments showing this may easily be made. Many diamonds are thus luminous—a property which may enhance in our eyes the value of these precious stones. rubbed with a woollen cloth or against a hard body, they appear surrounded with light. In particular, the pretty experiment is recommended of rubbing a diamond upon gold, when it shines "like a burning coal excited by the bellows." Friction while frequently aiding luminescence, is not its true cause. The essential condition of shining is previous exposure to light. The gem has been lying in the sun's rays, and these it has imprisoned, and now sets free in the dark. The sunbeams of Laputa were stored up in cucumbers; the real sunbeams are more fittingly stowed away in diamonds, and the crystal prism acts as though because the light it holds is of no mere earthly fire goes on shining even under water, like the fairy palace under the sea. In warm water, indeed, the light becomes brighter or may be made visible when not otherwise so. We read that in the thirteenth century the alchemist Albertus Magnus saw a diamond which shone when it was put into warm water, and this indicates the early discovery of an important law. In all cases where bodies shine after exposure to the sun, heat hastens the emission of light. It does not increase the total amount of light emitted, for though the body shines more brightly in proportion to the rise of temperature, yet the light lasts a proportionately shorter time. Borrowing a metaphor from coarse material things to describe this truly ethereal phenomenon, it has been said that the phosphorescent body soaks up light like a sponge, and heat squeezes it out.

The effect of friction on phosphorescent diamonds has been proved to be independent of electricity, and may be a modified form of the heat effect. Some facts, however, would seem to render this doubtful, as when Dana, speaking in his "Mineralogy" of the phosphorescence of sulphuret of zinc blende, says: "Merely the rapid motion of a feather across some specimens will often elicit light more or less intense from this mineral." The effect of friction in disentangling the imprisoned light may therefore appear to be still mysterious. The property of phosphorescence in diamonds is very capacious. Dr. J. W. Draper, in his Memoir on Phosphorescence, relates that a lady who was a relative had a pair of earrings in which were set two large and beautiful diamonds, both of which he found to be phosphorescent. They shone after exposure to the electric spark, which here took the place of sunlight. She had another pair, and the diamonds in both of these phosphoresced also. Yet in the necklace belonging to this set, containing thirty-eight fine stones, only one was phosphorescent. These were white diamonds. A yellow colour would seem more favourable; thus Du Fay found that of four hundred yellow diamonds all were phosphorescent, while some that were white, rose-coloured, blue, or green were not. We cannot always experiment freely on diamonds, but we may obtain equal beautiful effects with fluorspar crystals, especially those of the variety called chlorophane. A crystal of chlorophane, dropped into water nearly boiling, spreads around it a soft light like that of a glow-worm in the grass on a summer night, delicately tinged with olive green, and illuminating beautifully the transparent form of the crystal. Or the fluorspar may, after dark, be placed on the kitchen stove. It soon becomes visible by its pale glow, then brightens till it seems filled to overflowing with the soft green-white light. The reader cannot be advised to try these experiments on his fine cabinet specimens, for if they be more than slightly heated, they will be cracked and

coloured. Ten or twenty cents' worth of broken crystals may be bought of a dealer in minerals, and the following very pretty experiment made:—The pieces are ground in a mortar and some are powdered, others remaining of various sizes. They are then sprinkled on a sheet of iron that has been heated somewhat below red heat in the colourless flame of a Bunsen burner—the experiment being of course done in a perfectly dark room. The fragments begin at once to shine, growing rapidly brighter. They pass through a fine series of colour changes, the order of colours varying in different specimens. They may have greenish-white or orange changing to light blue, then rose colour, then violet, which, passing through shades of deepening blue, finally becomes dark. The fine powder changes more rapidly than the coarser bits, so that the sheet appears strewn with rainbow colours. Some green fluor used by the writer gave a beautiful effect, the crystal dust turning quickly to an exquisite rose colour, while the unbroken rectangular crystals shone like elfin lanterns, casting around a fine illumination—olive-green, orange, or blue.

Colourless or very clear fluor crystals ordinarily shine feebly, not at all; besides, the green, the violet, and blue generally shine well. Draper had a pale, flesh-coloured crystal of chloroform, which excelled all his other specimens in the splendour of its light. It shone of a superb emerald-green colour after receiving the rays of the sun. The warmth of the hand in a dark place made it shine. There is no fixed relation between the colour of the crystal and the emitted light. At the moment when, after heating, the crystal becomes dark, its colour is permanently discharged. There is also decrepitation, on which account it may be well to screen the operator's eyes. If, in performing the above experiment, the reader grinds the crystals in the dark, he will see that eddies of light follow in the cracks of the pestle. Breaking, scratching, or cleaving a crystal is another mode of eliciting the light it holds thus "veiled in its transparency." Fluorspar is phosphorescent both on heating and by cleavage; other crystals may be phosphorescent by cleavage, which on heating shine little or not at all. While packing up oyster-shells on a block of white marble of the variety called dolomite, the writer was one evening surprised by a flame-coloured glow appearing where the dolomite was struck by the hammer. This spot in the white stone shone like kindled coal, creating the curious impression that the stone was becoming red-hot under the hammer. It was, however, not hot to the touch. The effect was at first supposed to be due to the oyster-shells, which are well known to yield, on polishing, the phosphorescent calcium chloride. It was, however, found that the dolomite, which came from a neighbouring quarry at Hastings-on-Hudson, was phosphorescent independently of the oyster-shells. It is well known that some dolomites have this property. A piece of the stone, rubbed with another, or scratched with a sharp instrument, shows in the dark flashes or streaks of fine orange light. Harder pressure or a smart blow of the hammer gives a flame-red glow. The orange streak is nearly instantaneous, but the reddish glow remains a moment before dying out. Pieces of ordinary hard and fine-grained marble do not phosphoresce, and among dolomites the softer varieties with large crystals give the best results. More lively in its manifestations than this dolomite is a kind of stone found in northern New York, and called significantly "hell-fire rock." Anyone scratching with a sharp instrument a piece of this sulphurous-looking stone will see, in the dark, the true Mephistophelean fire. The streak is yellow, resembling that of sulphur matches.

The most beautiful exhibition of this kind was made by rubbing together briskly two fine pieces of rose quartz. The crystals, each the size of one's fist, were completely illuminated by brilliant flashes, which shed a light around, rendering the operator's hand visible. The flashes were instantaneous, resembling the illumination from electric sparks. The colour

of the light was generally white or light yellow, but sometimes the crystals sparkled orange colour when their angles struck together and chipped. The experiment was of course most conveniently made by rubbing together broken surfaces of the crystals, so as not to impair handsome specimens. Smoked quartz and other varieties gave sparks as well as the rose. In making the above experiments an accident illustrated how it so often happens in the history of science that the investigation of one thing brings another to view. In the dark a finger was inadvertently thrust through a hole in the broken mica chimney of a drop-light, whereupon the bent edges of mica emitted a faint flash of light. The edges of the sheet must be struck obliquely, for it is the cleaving of the thin laminae of the mica crystals which causes emission of light. It is interesting to note that the separated laminae possess charges of opposite electricities, although from other evidence we suppose the phenomena of light and electricity independent. Phosphorescence on cleavage is a property of a number of other crystals. The interesting case of loaf-sugar has been described in a former number of the "Scientific American." The most beautiful example of all is said to be the phosphorescence of nitrate of uranium crystals. Each crystal broken in the dark is all lighted up, and, provided they are thoroughly dry, it is only necessary to shake up a bowl or bottle of the crystals to cause a splendid display. This is of especial interest on account of the connection of this substance with the discovery of radium. Seeing that the shattering of the crystalline bonds causes emission of light, one naturally inquires whether crystals ever give out light in forming. We find that some crystals do, a most beautiful illustration being found in the crystallisation of arsenious acid, the common "white arsenic" of commerce. As this experiment requires some laboratory apparatus, and as success in it involves careful attention to certain details, it is reserved for a future article. A solution of the substance, properly prepared and set to cool slowly in the dark, sparkles as each tiny crystal forms, while the effect on shaking the solution resembles a fine display of the phosphorescent light at sea.

It is said that molten silver phosphoresces at the moment of solidification, and that water, when made to freeze with great rapidity, emits a flash of light clearly visible in the daytime.

A. C. MAURY.

SOME SPECTROSCOPIC EXPERIMENTS WITH TRICOLOUR FILTERS.

[A Demonstration given before the London and Provincial Photographic Association, April 28.]

OBJECT of the Experiments.—I propose to bring before you this evening a means of testing the filters, plates, and printing colours used in trichromatic photography. This method is most readily applicable to processes such as Lumière's or Sanger Shepherd's where the final colour print is in the form of a transparency. The test consists essentially of a comparison between colours photographically selected from a spectrum of white light by the filters and plates and the colours of the dyes used to reproduce them.

Manner of Reproduction of a Spectrum.—We will firstly consider how a spectrum of white light may be reproduced by a tricolour process. For this purpose we will divide the spectrum into five regions—viz., red, yellow, green, blue-green, and blue-violet. The yellow and green regions will be narrow. The colour filters and plates should be so adjusted to each other that the red negative should record the red and yellow regions, the green negative should record the yellow, blue-green, and blue-violet, and the blue negative the blue-green and the blue-violet regions. That is to say, these regions will be recorded by a silver deposit—the negative—and in printing from these negatives in pigments, the pigment will in each case be printed upon the regions not recorded in the particular negative being

used and should therefore be one which is transparent to all the colours of those regions, while absorbing the colours recorded. According to this argument the printing colours should be as follows:—For printing from the red negative: a pigment absorbing the red and yellow of the spectrum and transparent to the green, blue, and violet. This colour will be a greenish blue. For printing from the green negative: the pigment should transmit the red and violet and absorb the intermediate regions. The hue of this will be crimson. For printing from the blue negative: a yellow pigment should be used that is transparent to the red, yellow, and green regions and opaque to the blue-green and blue-violet.

The reproduction of the spectrum will then be made by printing these three colours in succession from their respective negatives. In this reproduction it will be noticed that the regions of the three primary colours, red, green, and blue-violet, each of which was only recorded by its own particular filter and plate, are reproduced by the superposition of the printing colours in pairs. That is to say that the red region, for example, which is recorded only in the red negative, is in the reproduction rendered by the superposition of the printing colours of the other two negatives, viz., crimson and yellow. Now, the crimson absorbs the yellow, green, and blue-green of the spectrum, and the yellow pigment absorbs the blue-green and blue-violet. So that the only colour that can pass through them both is the red. This region is therefore reproduced by a uniform hue of its own mingled tints. In the same way, the green and blue-violet regions are rendered by the superposition of the greenish-blue and yellow pigments and greenish-blue and crimson pigments respectively, and they are of a similar nature, that is, they consist of uniform hues made up of the mingled light of their own regions. The yellow region recorded by both the red and green filters is reproduced by the yellow printing colour of the blue negative, and the blue-green region is rendered by the printing colour of the red negative. The division of the spectrum into five regions should be so made that these latter pairs of colours match each other as nearly as possible.

Apparatus.—The apparatus used consists of a spectrum camera in which a nearly normal spectrum is produced by means of a prism-grating. An image of this may be projected on the screen by means of a large lens or by moving the lens back so as to focus an image of the grating the colours are combined again to white. Photographs may be taken of the spectrum by this apparatus, and then optical experiments made with them. A beam of white light is diverted by means of an unsilvered mirror, and in this comparison colours can be placed.

Nature of Complementary Colours.—I now wish to demonstrate that the term complementary cannot be regarded as a full and sufficient description of the relation of the printing colour to the colour recorded in the negative. This blue colour which you now see on the screen consists of that part of white light which is recorded by a blue negative, and here is a yellow light which, when mixed with the blue, gives the appearance of white. These two are therefore complementary. If we now form the spectrum of the yellow we find that it consists of only a narrow band of the spectrum. Here is another yellow, which, as you see, also forms white when mixed with the blue. But its spectrum tells us that it consists of pure red and pure green lights only. A third yellow answering the same test comprises all the colours not recorded by the blue negative, and this is the only one which would be of any use in tricolour printing. So that the printing colour must not merely be complementary, but must with certain reservations consist of all the colours not recorded in the particular negative.

A Direct Test for the Complementary Condition.—If a contact

transparency be made from a filter record of a spectrum, and this placed back in the spectrum, it will allow to pass only the light originally recorded. And if a gelatine film dyed with the printing colour be placed by the side of it in the spectrum, and the transmitted light be combined to a uniform patch; this patch can be made white by a slight lateral adjustment of the two if they are complementary. This experiment is not very satisfactory with the apparatus I am using to-night. The reason is that the chromatic aberration of the condenser is sufficiently great to give a red fringe to the cone of light thrown on the collimating lens, with the result that a little of this is lost and the white patch produced by recombining the spectrum is a trifle too violet, so that it does not exactly compare with the reflected white beam.

Different Effects of Filters in Copying Light and Dark Colours.—I cannot show you to-night the varying effects which some filters have in reproducing light and dark shades of the same colour, but I can show you the variations in the record of the spectrum of white light by comparable variations in the exposure. Ives' Red Filter, for example, records with medium exposure the red and a little of the green, while, with fuller exposure (25 times) as much green as red, so that this filter will act differently in copying different parts of the same picture. Another series which I have shows but very slight variation in the character of the record with exposure. This is one of the filters in use at the Bolt Court School.

Comparisons of the Visual Colours of Filters and the Colours Photographically Recorded, and Comparisons of the Printing Colours with the Theoretical Colours.—The variable effects we have just seen which occur with some filters form a disturbing element in any such experiments as these. In dealing with filters such as Ives', perhaps the best photographic record to take are those which (with exposures given in the ratios of the camera exposures) appear during development at the normal time. The negatives of the experiments I am about to show you were made in this manner. A contact transparency from the negative is placed back in the spectrum, it therefore allows only that light to pass which was originally recorded; by combining this light to a uniform patch its hue may be compared with the visual hue of the filter placed in the white beam of light. And the instances shown will demonstrate the uselessness of any visual test in this class of work. By placing back in the spectrum the original negative the colours there recorded will be stopped, and, according to my ideas, the light transmitted should be the same as the light transmitted by the correct printing colour, which in cases of comparison may be placed in the white beam.

For greater convenience these experiments are published in tabular form:—

Filters.	Visual Colour.	Colour Photographed (positive in spec.).	True printing complementary. (Neg. in spec.).	Printing colour used.
Ives	Orange.	Lighter orange.	"	"
	Yellow-green.	Yellow-green.	"	"
	Greenish-blue.	Blue-violet.	"	"
	Orange-red.	Yellow-orange.	Blue-green.	Blue-green.
	Green.	Green.	Crimson.	A less violet crimson.
S. Shepherd	Blue-violet.	Blue-violet.	Very pale yellow.	Yellow.
	Red.	Slightly orange-red.	Blue-green.	Blue.
Lumiere	Green.	Green.	Very pale pink.	Crimson.
	Blue-violet.	Blue violet	Pale yellow.	Yellow.
	Light orange.	Light orange.	Greenish blue.	"
	Light yellow-green.	Green.	Crimson.	"
Klein's for collodion emulsion.	Crimson.	Blue.	Yellow.	"

The colours recorded through the red filter are always more orange than the filter itself when using dry plates, because of the deeper red not photographing. In cases like Ives'

filters, where some green is transmitted by the blue filter, it is rarely recorded.

I have here a rather interesting filter. Its colour is red, but a spectrum positive made from a negative on a Lumière B plate shows the colours photographed to be crimson. The reason is that it transmits a little violet, barely enough for the eye to see, but enough to affect the photographic plate equally with the red. By placing the negative in the spectrum its complementary is seen to be green. Another red filter, one made with Scarlet R.R., shows no visual defect, but when photographically tested is found to transmit the ultra-violet.

Comparison of the Region Photographed with the Region Absorbed by the Printing Colour.—This can be effected by cutting the dyed films and the spectrum negatives into strips and placing a piece of negative and its printing colour side by side in the spectrum, and noting whether the light is stopped by each in the same manner. Taking Sanger Shepherd's filter first, we see that, whereas the whole of the blue and violet is stopped by the yellow dye, some of the blue is allowed to pass by the blue negative, which is the reason why we saw its complementary to be a pale yellow. This is one of those cases where the true printing complementary to the filter record would be quite impracticable for use. Both the green negative and the "minus green" dye, and the red negative and the blue-toned lantern plate match each other very closely in the region stopped, with the usual want of transparency to violet in the former. With all three of Lumière's filters and dyes, the region absorbed by the filter is considerably greater than that stopped by the negative.

A Scheme of Testing.—We will next consider how a fairly complete set of tests may be made, and for this purpose I will take a set of filters which I have used on plates orthochromatised with ethyl red. The filters were composed of the following dyes:—A methylene blue for the blue filter, naphthol green for the green, and a mixture of Biebrich scarlet and naphthol yellow for the red. The dyes used for staining the gelatine reliefs were brilliant yellow, erythrosin, and fast green (blue shade).

(A.) Hues of the Dyes and their Complementaries.—I have here the three negatives taken of this spectrum through the filters on a Castle plate which has been bathed with ethyl red. On placing these back in the spectrum and combining to a uniform patch of colour the light which they allow to pass, and comparing these colours in turn with the printing dyes, we see that the brilliant yellow matches exactly the colours not stopped by the blue negative, the erythrosin is redder than the colours passing the green negative, while the fast green does not quite match the complementary of the red record, being a trifle too green. (B.) Absorption Regions of Dyes and Regions Photographed.—On projecting an image of the spectrum and placing side by side in it, in pairs, the negatives and films stained with the printing dyes, you will notice that the brilliant yellow stops the blue and violet light in exactly the same manner as does the blue negative. The region of greatest absorption of the erythrosin corresponds to the region stopped by the green negative, but the blue and violet are somewhat damped. The fast green absorbs the yellow-green and the violet a trifle too much, and also transmits a trace of the extreme red. Now, although, as you see, the extreme red is not recorded in the red negative, it should not occur in its printing colour. (C.) The Blue-Violet of the Spectrum and its Reproduction.—The part of the Spectrum recorded only in the blue negative will be reproduced by the superposition of the erythrosin and fast green. If I now place the green negative in the spectrum, and cover up the red part, only the light of the region so recorded passes. This you observe is a fine blue-violet colour, while, by superposing the two dyes in the path of the white beam, this colour is seen to have

a purple tinge, due to the want of transparency of the erythrosin to violet and the slight transparency of the fast green to red. (D.) The Blue-Green of the Spectrum and its Reproduction.—I have here a transparency which has been made by exposing a lantern plate first under the green negative and then under the blue negative. The only part that then remains clear is where the plate was protected from the action of light by both negatives, i.e., where they overlapped. On placing this in the spectrum that particular region only is allowed to pass, and on comparing it with the fast green with which it would be rendered, a very close match is seen. (E.) The Green Region of the Spectrum and its Reproduction.—Provided that all the negatives overlap each other, which they do in the case we are considering, the part of the spectrum that is only recorded in the green negative can be picked out by exposing a plate firstly under a contact transparency made from the red negative, and then under one made from the blue negative. The part of the spectrum transmitted by this should match the colour produced by superposing the brilliant yellow and the fast green, which it does very closely. (F.) The Yellow Region of the Spectrum and its Reproduction.—This is picked out in an analogous manner to that used for the blue-green. Two successive exposures are given a plate under the red and green negatives. This, when developed and finished and placed in the spectrum, passes the overlapping region reproduced by the brilliant yellow. The match is seen to be fairly good, although the light from the spectrum is very dull, owing to the region being narrow. (G.) The Red Region of the Spectrum and its Reproduction.—This part is picked out by using the green negative and covering up the violet. The colour produced by placing the erythrosin and the brilliant yellow in the path of the white beam is a little less orange than the spectrum colour it is intended to imitate, which is rather an advantage. (H.) The Unrecorded Red.—By placing the red negative in the spectrum and covering up the green, blue, and violet parts, the deep red which was not photographed is seen on the screen.

A. J. BULL.

PREPARATION AND PROPERTIES OF PURE COLLOIDAL SILVER.

[The following translation from the "Bull. Soc. Chim." Series 3, vol. xxxi., No. 1, appeared in the "Chemical News" of May 6.]

In these new experiments I prepared colloidal silver according to Schneider's method ("Berichte," Vol. XXV., p. 1,281) by mixing 500 c.c. of a 10 per cent. solution of nitrate of silver, 500 c.c. of a 30 per cent. solution of ferrous sulphate, and 700 c.c. of a solution containing 280 grms. of crystallised citrate of soda. A reddish deposit is obtained, which is separated from its ferruginous mother-liquor, by means of a filter-pump, after having stood for half an hour. The precipitate is redissolved in a stream of distilled water, and the solution is treated with about twice its volume of alcohol at 95 deg. The addition of the alcohol causes a bluish-black deposit to be formed, precipitate of sol. The mixture is filtered through a Chamberland cylinder. The alcoholic solution of ferric citrate traverses the filter, and is collected in a recipient ad hoc; the precipitate of colloidal silver is deposited on the outside of the filter in the form of a pasty crust; after some time the filter no longer acts; it is then withdrawn from the liquid, but the aspiration is continued until the crust assumes an iridescent, brilliant metallic appearance, and seems to be dry. Then placing the filter in a glass containing distilled water the sol is allowed to redissolve.

I have observed that the Chamberland cylinder, the pores of which are obstructed by the colloidal molecules of silver, acts as a dialyser, and that on adding water and applying the vacuum we can cause the ferric salts and other impurities to

pass through into the interior, the sol of colloidal silver remaining in the outer solution. The solution may be again precipitated by alcohol at 95 deg., and again purified, as has just been described. If we have been careful to avoid the presence of all crystalloids, and especially of mineral acids, these operations can be repeated several times, and the colloidal silver retains its properties of a sol. Solutions of pure colloidal silver have no longer any tendency to become precipitated as a gel. Thus, while in the presence of the mother-liquid during its preparation the black insoluble gel. is produced in a few hours, solutions of colloidal silver free from electrolytes can be kept for several weeks without any change.

It is interesting, in practice, to notice the action of the alcohol; when we are obliged to leave the colloidal silver in very impure circumstances, it is sufficient to cause the precipitation of the sol by means of alcohol; the colloidal silver thus precipitated retains its properties of a colloid for a very long time, even in the presence of an excess of crystalloid salts, which under ordinary circumstances would rapidly transform the colloidal silver into the insoluble gel. By applying this method of purification, I have succeeded in obtaining, after a first purification, a solution of colloidal silver containing per 100 c.c.:—0.480 grm. of material dried at 100 deg., 0.478 grm. of material stable at a bright red heat, and 0.383 grm. of silver, that is 81.7 per cent. of silver; the difference was almost entirely iron. After two purifications, 100 c.c. of the solution contained 0.300 grm. of material dried at 100 deg., and 0.2897 grm. of silver, or 96.59 per cent. of silver. This pure solution of colloidal silver has all the properties of colloids, which have been published by my friend Posternak and myself, and which have been partly observed by others. The various electrolytes, dilute carbonate of soda, nitrate of potassium, perchloride of iron, sulphate of copper, etc., cause the precipitation of the gel.

If we evaporate the solution in vacuo, and dry the pasty mass collected on a Chamberland filter, metallic silver is formed. On the other hand, the aqueous solution of the sol is very stable. We can even keep this precipitated sol on porcelain in concentrated alcohol. Colloidal silver thus purified dissolves in alcohol, but only in the presence of water; it is insoluble in absolute alcohol. Purified colloidal silver dissolves easily in glycerin at 30 deg. We obtain organosols observed by Schneider, which will be the subject of a future paper. If we treat a solution of pure colloidal silver with another colloid, such as gum, gelatin, or a sodic solution of acid-albumose, we can obtain, by evaporating in the cold in vacuo, a solid mass in which the silver has preserved its physical colloidal state, and can be redissolved in distilled water. I shall return to this in a future paper on these preparations. The summary of all these facts makes us admit with Carey Lea (*"Zeit. Anorg. Chem.,"* Vol. XIV., p. 341) that all the preparations of colloidal silver contain the silver, not in a special allotropic form, but that the fine particles of silver, which were unable to become conglomerated at the moment of their production have remained in the free state in solution.

The transformation of the sol into the gel, and into metallic silver, takes place naturally every time the physical molecules are condensed or brought into contact one with the other, either under the influence of electrolytes, by precipitation, by crystallisable salts, or by reason of the loss of liquid support through dilution; by the evaporation of solutions of pure colloidal silver, or by simple mechanical action, as we have shown by grinding up colloidal silver. On the other hand, the colloidal form of silver is stable in pure solution in water, alcohol, or glycerin. In the presence of other colloids we can again conserve silver in the colloidal form, even in the solid state, as shown by Paal (*"Berichte,"* Vol. XXXV., p. 2,224), with lysalbinic acid.

A. CHASSEVANT.

THE PHOTOGRAPHING OF SPLASHES.

[A paper read before the Royal Photographic Society.]

THE branch of photography to which I draw your attention—that of photographing small objects in motion with the aid of the electric spark, is somewhat unusual, possibly on account of a certain element of danger attending the discharge of a large number of Leyden jars, and probably because of certain technical difficulties. The photographs I have taken are of one of our commonest phenomena—a splash—followed throughout its brief, but eventful history. Through a curious coincidence, these photographs (a series of which I showed at your exhibition last year) are deprived of their originality, as it appears that similar results have already been obtained by Professor Worthington, who published them in a magazine two or three years ago. His results, however, were produced by methods entirely distinct from those to which I refer in this paper. I shall have occasion to use the term "surface tension" whilst describing my slides, and it may be advisable to explain what is meant thereby. The nature of surface tension can be judged only by its effects, one of which is the manner in which every fluid, when unsupported, immediately assumes a globular shape. The only logical hypothesis which will explain this and other phenomena of surface tension, is the inference that, in some manner, the external surface of any fluid, whether molten steel or water, is possessed of a very high degree of elasticity. One may imagine the surface of a fluid to be coated with an elastic film, so thin that even a soap film must have its coating on either side, yet leaving a sandwich, so to speak, of ordinary water in between. Among other phenomena due to surface tension I may mention capillary attraction, the fact that the end of a column of mercury in a barometer is convex, that a needle can be floated on water, and the breaking of a jet of water into drops. This natural force is illustrated by the clinging together of the hairs of a large badger softener after immersion in water. There is no difference in the appearance of the brush, whether totally immersed or dry, but when withdrawn from the water, the surface tension of the water draws the hairs together, an effect that is not due to the weight of water held by the brush, as the force remains the same, whatever the position of the brush. The phenomenon of a splash is due to the same force which I believe is scientifically defined as "that force possessed by the external surface of all fluids which forces it, when unsupported, to assume the shape having the least area"—which is, of course, the sphere.

The first twenty slides are from photographs of the splash caused by a rough steel sphere falling into milk:—the formation of the "coronet," its alteration to a "crater," and later to a flat ring through surface tension. The emergent jet characteristic of this form of splash and its dissolution, and the formation of the concentric ripples are clearly shown. Then follow five slides dealing with the splash, or rather the absence of one, caused by a highly polished steel sphere falling from the same height, each picture of the series being separated by a timing interval of 1-1000th second. Next come two slides of the splash caused by a rough steel sphere falling from a height of 18 inches, showing the large crater formed, and its occasional change into a bubble. In the complete series, the photographs follow each other with the regularity of a cinematograph; each, however, being that of a separate and distinct splash. Repeated experiments prove that a splash is one of the most regular of natural phenomena, provided that each splash is produced under identical conditions, of which the most important is the height from which the object causing the splash is allowed to fall. This condition is easily fulfilled provided the same fall be retained in all cases; it may reasonably be assumed that the same sequence of events will occur during the splash, and this assumption is supported by the photographs. It only remains, therefore, to devise some means by which a spark is timed to occur at the instant at which the ball touches the fluid, the image of the ball being focussed and the room being in darkness. The negative, when developed, will show the ball in the position named. Then, timing the spark for, say, 1-200th second later than the former one, the next negative will show a stage of what is, virtually, the same splash, later than the first photograph by that amount of time. It is by the repetition of this process that I have obtained the photographs which I have shown. The timing is effected by a chronograph of peculiar construction. "Chronograph" is perhaps an unsuitable description, as the function of a chronograph is to record periods of time.

the instrument I employ is a refinement inasmuch as it determines time periods of time up to three seconds with great accuracy. It consists of a train of wheels actuated by a heavy weight. The axle of the wheels is continued outside the case containing the rest of the mechanism, and carries two drums, one of which is fixed to the axle, the other being free to revolve loosely, or by means of a nut, capable of being firmly clamped to the fixed drum so that the two may revolve as one. The fixed drum is divided on its periphery into 300 divisions, and as it revolves once in three seconds, it follows that each division corresponds to 1-100th second. The movable drum has a dial engraved on its surface by which the divisions on the fixed drum can be subdivided into tenths. In this way a reading to 1-1000th second, or any longer period up to three seconds is obtained. Placed vertically, at the zero line on each drum, is a metal stud, and on the plate of the machine are two weak brass springs, which, in their normal positions, rest on a brass bar, from which they are lifted at each revolution of the drum, thus breaking the electrical circuit. When the spring which is touched by the stud on the fixed drum is released, it is led to the apparatus which allows the ball to fall at the instant of the breaking of the circuit. From the spring actuated the vernier drum a second wire is led to and discharges a battery of twelve quart Leyden jars. The chronograph is set in motion with the drums adjusted to the calculated period, but until required it is put in circuit with the jars. The ball is then placed in the releasing apparatus and the high tension connection made. When the jars are charged, the circuit is completed, the ball is released, and spark made automatically; the result being a photograph of the ball in the predetermined position. I have stated that Professor Whithington obtained his results in a different manner, by means which appear to be scientifically more correct. In place of the somewhat complicated "chronograph" which I have described, he used his own chronograph—the attraction of gravitation. He employed two spheres, one to cause the splash and the other to discharge the jars. The "timing" sphere in the case of the first photograph, was allowed to fall from the same height as the "splash" sphere, passing in its fall between two electrodes in series with the Leyden jars and the spark gap. The two spheres were on the same electrical circuit and both commenced their fall at the same instant. The height from which the "splash" sphere fell was constant, while that of the "timing" sphere was adjustable, so that by increasing the height from which the "timing" sphere fell by a calculated amount for each photograph, a series of photographs was obtained free from the magnetic or clock errors to which my process is unfortunately liable, though they are eliminated as far as possible.

ARTHUR C. BANFIELD.

RECORD WORK AND LOCAL PHOTOGRAPHIC SOCIETIES.

[From the Handbook of the National Photographic Record Association.

The importance of record work is now being more generally recognised is shown by so many of the photographic societies having set up record sections, and the interest taken in the movement by librarians of our public libraries and curators of the museums, valuable local collections are now being formed. Many reports have been received, and, as a specimen of the work being done, the following extracts may prove interesting. The first photographic survey started was the survey of Warwickshire, which has been worked in a most systematic and thorough manner, and a collection of prints, now numbering thousands, has been made and deposited with the municipal authorities of Birmingham.

Brentford, Middlesex.—Up to the present there has not been any great effort to systematically work a photographic survey in this district, but Mr. F. A. Turner, librarian, Free Public Library, has tried what should prove a very useful collection, which ought to excite some enthusiasm in the local societies. The local album now contains some 200 photographs by Mr. Turner of buildings which have either disappeared or will soon do so, and in addition to these the section comprises a valuable collection of photographs of water-colour drawings of local interest and the reproduction of many of the old Middlesex maps and prints. And it is expected before the year is out that Mr. Turner will have made a complete series of pictures of the houses and shops in Brentford High Street, where some considerable alteration must take place. In addition

to his work at Brentford, to the Richmond Public Library he has contributed a collection of over 300 similar views.

The Photographic Survey of the Bristol District.—Mr. A. E. Hudd, F.S.A., hon. sec., is now at work in accordance with a scheme drawn up by the Clifton Antiquarian Club, and includes the City of Bristol and about 130 villages of Gloucestershire and Somerset in the neighbourhood.

Dundee and East of Scotland Photographic Association.—Survey section.—O. B. Hatch, hon. sec.—After an exhibition at Dundee of a collection of Sir J. Benjamin Stone's photographs, a survey was started, and the organisation would serve as a model for any society taking up similar work. There are two committees, one having undertaken to do the photographing, and the other, including Mr. MacLachlan, City librarian, Mr. A. H. Miller, F.S.A., literary editor of the "Dundee Advertiser," and other antiquarians, supplying all the antiquarian and literary information. The town is divided into three sections, and each section has a committee of workers. The negatives taken are sent in to a selection committee and those suitable are sent to a firm of printers, and three prints are made from each, one for the photographer, one for the town, and one for the association. The fund for carrying on the work is provided by the Town Council, who have made a grant of £50 a year for three years. Up to the present about 400 negatives have been selected.

The Ealing Photographic Society.—President, Mr. W. T. White. The survey of the Borough of Ealing was commenced in 1902. The six wards of the borough are allotted to various members, and a director appointed to organise the work in each ward. Persons who possessed old negatives, prints, documents, etc., were invited to lend them for copying, and up to date about 300 record views of Ealing have been secured, which will be deposited in the Free Public Library, Ealing.

County of Essex.—With regard to this county, Mr. Wire writes that a paper was read by Mr. Briscoe, Principal of the West Ham Technical School, at a meeting of the Essex Field Club, on a proposed organised survey of the county, and a start was made and a good deal has been done by individual photographers and a survey committee for the memorials of Greater London. Mr. C. R. Ashbee, chairman, has issued four monographs on the Trinity House in Mile End. The Church of St. Mary, Stratford; Bow; the Old Palace of Bromley-by-Bow, by Ernest Godman, and the fourth, just ready, of the Great House, Leyton; all these works being illustrated by photographs of the committee. Another committee, of which Mr. Wire is an active member, are at work on monographs of Stepney Church, Waltham Abbey Church, West Ham Church, East Ham Old Church, and Chelsea Parish. Colchester has been exhaustively done by a resident, and it is to be hoped the Corporation will secure this photographic collection. The Essex Archaeological Society have also published many pictures.

Herefordshire Photographic Society, record section (president, Mr. A. Watkins; C. Gethin, hon. secretary) have succeeded in collecting about 300 prints, which they have mounted in the same style as the National Record Association and deposited in the local museum at Hereford. The collection comprises the following subjects: St. Ethelbert Cathedral, Hereford; ruins of some of the Norman (Border) castles; ancient fonts; remains of several abbeys, etc., and a few old customs. The bulk of the work has been contributed by the president and hon. secretary.

Hull Photographic Society, survey section (Mr. J. W. Atkinson, hon. secretary) have photographed the district of Holderness, East Yorkshire, and have forwarded to the National Photographic Record Association an interesting collection of 63 prints of the churches of Patrington, Hedon, and Paull, Holderness.

Ipswich Scientific Society.—The photographic section of this society has been at work for some years, and a valuable collection of prints has now been deposited in the Reference Library under the charge of Mr. Frank Woolnough.

Survey of Leicestershire.—Major W. J. Freer, F.S.A., president; Mr. H. Alfred Roehling, M.I.C.E., hon. secretary. The survey was started in 1901, when two committees were formed, the archaeological and the photographic, and the following five Leicester and Leicestershire societies are represented:—The Literary and Philosophical Society; Architectural and Archaeological; Society of Architects; Footpath Association; and the Kyrle Society; with a view of making active search of all existing records, etc., and the drawing up of

a complete catalogue of all points of interest relating to archaeology, history, etc.

North Middlesex Photographic Society.—President, Mr. C. Beadle.—This society, established in 1885, holds its meetings at Hanley Hall, Sparsholt Road, Crouch End, London. In the early part of last year the council determined to start a photographic record section for the purpose of securing photographs of buildings or other objects of historical or archaeological interest in the northern part of the county of Middlesex now being so rapidly destroyed by the advancing growth of London. Up to the end of the year some 70 prints have been received, taken by the president, Mr. Marchant, Mr. Mummery, etc., including Salisbury House, in which the notorious Judge Jeffries resided, and of Bury Hall, both of Lower Edmonton, an old 14th century Tudor residence once occupied by Bradshaw, the regicide. At the annual exhibition of the society 33 prints were hung.

Oxford Camera Club (Sir W. J. Herschel, Bart., president) are supporting the committee formed for a complete photographic survey of the county.

The Rotherham Photographic Society have formed a record section, and have drawn up a scheme for a photographic survey, and have published a list of places to be included in the survey, but up to date not much progress has been made with the work.

Photographic Record, Shropshire.—The survey was commenced by Mr. F. R. Armytage, the late secretary of the record committee, and over 200 prints have now been deposited with the Borough Librarian at Shrewsbury, and it is the intention of the book committee to have them mounted in albums for public reference.

Somerset Archaeological Society have formed a photographic record committee, with Mr. C. H. Bothamley hon. secretary.

The Photographic Survey and Record of Surrey.—Right Hon. Viscount Midleton, president; Mr. H. D. Gower, hon. secretary.—This society was inaugurated 1902, and the collection now numbers about 700, and are arranged in six sections—architecture, art and literature, anthropological, geological, natural history, scenery and passing events, and is permanently housed at the Public Library, Croydon, under the charge of the hon. curator, Mr. J. S. Jast, chief librarian of the Croydon Public Library. The prints are mounted on individual mounts, and are stored in suitable boxes so as to allow any print to be located immediately.

The Woodford Photographic Society (Mr. F. G. Emler, president) have been doing some very useful photographic work in their district, and have collected some 200 prints, which are being bound up and will be deposited in the Public Library.

Other societies have been established at Wirral by the Birkenhead Photographic Association, Y.M.C.A. prints will be deposited in the Birkenhead Library, and by the Coatbridge Photographic Association, Mr. G. W. Campbell, hon. secretary.

Many other photographic societies are also engaged in record work of which no particulars have come to hand.

No. 8 of the "Practical Photographer" Library Series has reached us. This month the pictorial work of Frank M. Sutcliffe is dealt with in an able manner, while the greater part of the book is devoted to hand-camera work. Many useful articles, hints, tables, and scales are included.

In a recent issue we noticed the photographic work done by Prince Khilkoff, Minister of Ways and Communications of the Russian Government, and the use of the Kodak and Kodak Developing Machine in warfare, applied particularly to the crossing of Lake Baikal by the Russian troops. Kodak Limited draw our attention to an error which inadvertently crept in: the films were developed on the spot by Prince Khilkoff and were sent to the St. Petersburg branch of the firm to be printed from only.

A new price list is to hand from Thomas Illingworth and Co., Ltd., Willesden Junction, N.W. Enlargements, photographic printing, carbon tissues, mounts, and special frames for photographs are some of the firm's specialities. We understand that the firm has lately greatly improved and increased its plant, and no pains will be spared in future to ensure prompt and punctual delivery. Special discounts are offered to professional photographers and dealers. A postcard to the above address will bring full particulars.

WHERE THE HOUGHTON CAMERAS ARE MADE.

THE average man who handles a camera, although perhaps admiring its finish and the accuracy with which it is made, seldom gives thought as to how or where it came into being. We are all, nowadays, too ready to take things for granted, and do not trouble ourselves much about what is not immediately under our notice. Suffice it is that the article is there and that we possess it, and that it answers the purpose for which we bought it. The making of a camera, instance, is far more complicated, and requires a far greater number of separate and distinct operations, than one would ever imagine, if it were not for the perfection of modern machinery, the construction of a camera, like the "Sanderson," for instance, would cost so much that it could not be sold for less than five times its present price. Practically all our cameras (says "Houghtons' Monthly"), and a great number of the other articles that we sell, are made at works at Hackney, and as many of our dealer friends will not do so, we are interested in the manufacturing side of the goods that they handle, we purpose giving a short description of the work that goes on at the Spratt Bros. branch of Houghtons, Limited. When one enters the whirling mass of machinery amidst which four hundred employees are all busily engaged making camera fittings, and the thousand and one articles connected with the photographic and optical trades, it is difficult to imagine that twenty years ago this vast business was such a small concern, and that the engineering plant consisted of a "two-man power" engine and a single circular saw. Yet that was all that was when the three Messrs. Spratt entered the business, succeeded by their father, who was a well-known instrument case maker in the early days of the Victorian Era.

It is significant to see how business enterprise and forethoughtful men who have realised to the fullest degree the possibilities of mechanical tools have created a business of this magnitude. In the 'forties and 'fifties of the last century, the work was confined to the making of surveying and drawing instrument cases, and the work, of course, was entirely done by manual labour. Now there seems to be a machine or series of machines to do everything. The requirements of the work demand perfection, and if a machine cannot be purchased to do what is required it has to be built on the premises. There are, in fact, more than a dozen machines now running at the Tudor Works that were designed and executed by the mechanicians employed by Messrs. Spratt Bros., and it is largely owing to these fascinating and almost human pieces of machinery that beautifully constructed perfect instruments can be produced at a price that would have been impossible a decade back.

Looking down into the stokehold of the boiler house and watching the stokers bank up the furnaces of the great boilers, one almost imagines that one is on board an ocean liner instead of at a factory, and as the red glow lights up the faces of the half-naked stokers, one cannot help feeling how little the busy scene suggests the photographer's camera and its eminently peaceful surroundings after it has left the works where it had its genesis. Then commences a tour of the various shops. The noisy metal rooms where the tools are made, the brass turning and stamping rooms where curiously fashioned and fascinating machines shape from the solid brass the fittings that form such a prominent feature on our cameras. Machines that are turning out lens mounts and tripod heads and cutting through the soft metal as if it were soap; machines that are stamping out the ends of film spools, the hinges of dark slides, the points of tripods, the struts, bushes, finder covers, and endless other fittings often, in the crude state difficult to identify, whirling, twisting, humming, and throbbing in every direction. Not a machine idle, all going at full speed, for the pressure of work is heavy, and every man in the building seems alive to the part that he and the machine he is responsible for has in the great undertaking.

Then we pass into the cabinet-making shops, where thirty or forty circular saws buzz and sing through their work. The fine grain of wood produces a very different note from that heard when a coal-cut saw is coughing and spitting its way through a rough plank in a builder's yard or a sawmill. Here all the wood employed is of the finest, and the song of the saw is sung in a richer, fuller note. Here one sees the camera in the making. The cases are piled high, yet only the ghosts of what they will be, but solid, substantial shapes for all that, and made so perfectly, joined so faultlessly, that it seems

ity to cover them with leather and hide the beauty of their workmanship. Ascending to the upper floors we find many other operations in progress. Here is a room where forty or fifty girls are French-fitting cameras, dark slides, and instrument cases. Another room contains a young army of men putting cameras together, screwing and taping and piecing all the fragments into one complete instrument. Another room is full of girls lacquering brasswork, another full of workers gluing on leather. Here there are men making iris diaphragms. There are others putting together tripod legs. Every spare inch of space is occupied; everyone busy, everyone with his hands full of work, from the smallest machine boy to the foreman, and everyone useful. Surely, a model factory and a model staff.

Although there are from 25,000 to 30,000 cameras made at the Tudor Works every year, the Messrs. Spratt Bros. in no way confine themselves to camera making, for they still make articles for use by surgeons, astronomers, opticians, and architects, and in this capacity they have large Government contracts for the War Office and Admiralty. Much of this work is of extreme importance, and the precision construction necessary has been excellent schooling for camera-making. Scarcely a month goes by without a new labour-saving machine being added, and the Tudor Works have for years past been the largest, finest, and best equipped photographic apparatus manufactory in the kingdom.

The three brothers, Alfred, Henry, and George Spratt, all take an active part in the management of this department of Houghtons Limited. As Mr. Alfred Spratt said at the inaugural dinner the other day, it is "by their works ye shall know them." No better and more fitting monument to their energy and acumen exists. They have identified themselves with their "works," and well may they be proud of them.

New Book.

Bibliothèque Photographique: Le Téléobjectif et la Téléphotographie." By Thomas R. Dallmeyer. Traduction Française augmentée d'un appendice bibliographique, par L.-P. Clerc. Published by Gauthier-Villars, Quai des Grands Augustins, 55, Paris.

It is very gratifying to see that Mr. T. R. Dallmeyer's work on telephotography commands so much interest that a French version has recently been published. The popularity of the book in this country makes any reference to the text of Mr. Dallmeyer's work superfluous, but we desire specially to bring under the notice of our readers the valuable addition which has been made to it by the translator, M. L.-P. Clerc. This is a résumé of the principal dissertations upon the subject which have been published since 1834, when Peter Barlow and G. Dolland brought under the notice of the Royal Society the value of an achromatic concave lens for increasing the magnification of a telescope. The fact to which Dr. M. von Rohr draws attention in his work on the "History and Theory of the Telephoto lens," that Porro was the first to construct such an instrument, receives confirmation by an abstract of the notice in the "Comptes Rendus de l'Académie des Sciences, 1851," Vol. XXXIII., pp. 128 and 91, concerning the photographs of the eclipse of the sun taken in 1851. A further abstract from the "Bulletin de la Société Française de Photographie," makes it apparent that Porro obtained his idea of the construction of a telephoto lens from Professor Petzval's orthoscope. Much interesting and valuable information concerning telephotography may be found in these bibliographical summaries made by M. Clerc, and we recommend the volume to all who use the telephoto lens.

We have received from Messrs. Dawbarn and Ward, Ltd., 6, Harrington Avenue, London, E.C., a copy of their latest list of publications. It forms an alphabetical subject-title index to a most comprehensive series of handbooks and guides for the photographer, the model engineer, the artist, the amateur craftsman, the electrician, etc. A copy will be sent to any of our readers on application.

THE ILFORD COMPETITIONS.

The following particulars of the Ilford £750 competitions are given in the May number of "Photographic Scraps":—Professional and amateur photographers at home and abroad are cordially invited to take part in this competition. The classes are so arranged that professionals do not compete with amateurs. The name and address of a successful competitor will not be published except at the request of the competitor concerned. Competitors in the Colonies and in foreign countries can, if they prefer to do so, hand their prints ready packed to their dealers, who will arrange to send them on to Ilford at the ordinary rates. Secretaries of photographic societies can obtain extra copies of the conditions, post free, by applying to Ilford, Limited, Ilford, London, E., stating the number of copies required. It will be noticed that the prizes are offered for prints on Ilford papers, or lantern-slides from negatives on Ilford plates. By this means competitors are saved the trouble and expense that would be involved in forwarding their negatives from all parts of the world. In making the awards, however, attention will be paid throughout to the qualities of the negatives as well as to the merits of the prints themselves, and, if it should appear desirable, competitors will be asked to send on any particular negatives for examination. Such negatives should be carefully packed, first in a card-board box, well padded, and then in a wooden case, and be insured against all risks. Restrictions of all kinds have been avoided in order to leave photographers unfettered, both in their choice of subject and their treatment of it.

OPEN TO THE WORLD.

CLASS P. PROFESSIONAL. For Professional Photographers

Prints from negatives on Ilford plates or flat films, any size or subject.

First prize	£35 0 0	£35 0 0
Second prize	25 0 0	25 0 0
Two prizes of	15 0 0	30 0 0
Four prizes of	10 0 0	40 0 0
Eight prizes of	5 0 0	40 0 0
One hundred prizes of	2 2 0	210 0 0

116 prizes £380 0 0

CLASS A. AMATEUR. For Amateur Photographers.

Prints from negatives on Ilford plates or flat films, any size or subject.

First prize	£35 0 0	£35 0 0
Second prize	25 0 0	25 0 0
Four prizes of	10 0 0	40 0 0
Five prizes of	5 0 0	25 0 0
Twenty-five prizes of	2 2 0	52 10 0
One hundred prizes of	1 1 0	105 0 0

136 prizes £282 10 0

CLASS JA. JUNIOR AMATEUR. For Amateur photographers under eighteen years of age.

Prints from negatives on Ilford plates or flat films, any size or subject.

Two prizes of	£5 5 0	£10 10 0
Four prizes of	2 2 0	8 8 0
Twelve prizes of	1 1 0	12 12 0
One hundred and twelve prizes of	10 0	56 0 0

130 prizes £87 10 0

The Photochrome Company, Ltd., 35 and 36, Hosier Lane, Snow Hill, E.C., have sent us some specimens of their latest productions in coloured postcards. They say: "It is a matter for regret that in some cases a great quantity of inartistic work of poor execution has been dumped on the market, with the natural tendency to bring contempt on an otherwise interesting and artistic hobby. The knowledge of these facts has encouraged us to the production of a series of coloured postcards on a scale never before attempted." The cards are very excellent examples of colour printing, and appear to be produced by the same methods and process used in the well-known photochrom pictures adopted by the railway companies, etc.

AMERICAN PROFESSIONAL PORTRAITURE AT THE KODAK GALLERY.

THE Kodak Company have on view this week at their principal London branch, No. 43, Clerkenwell Road, E.C., a collection of photographs which should prove of interest to our professional readers, who will be afforded every opportunity of personally inspecting and examining the prints. The exhibition consists of a number of large direct portraits produced by Stein, Falk, and many other prominent studio workers in the principal American cities. To the best of our recollection no representative collection of Transatlantic portrait work has hitherto been shown in this country, although we ourselves at the Great Paris Exhibition a few years ago saw many examples of it. Readers of the more "advanced" periodical photographic literature of the United States, England, and the Continent are by this time tolerably familiar with the work of those ambitious pictorial portraitists whose avowed endeavour it is to eliminate from their prints all traces of their photographic origin. The consistent manner in which this "sort of" photography, to borrow Lord Halsbury's famous expression, is passed off may give rise to the idea that there exists amongst the public an appreciable demand for such "freaks," as our American confreres contemptuously, if not quite accurately, describe them. For "freaks," as we understand them, are spontaneous productions, whereas photographs of the ultra-pictorial or impressionistic kind—the terms are used for purposes of illustrative convenience—trace their origin to a strenuous energy of effort, which is perhaps both futile and misapplied, and so might be devoted to other and more profitable ends. It is still the "usual thing" of the good and pronouncedly photographic kind which pleases—"all the world" (or most of it) and his wife—oh, yes, especially Son Altesse.

The dominant characteristics of American professional portraiture of the kind submitted to our inspection this week may be succinctly described as combining well concentrated effects of lighting with ease, freedom, and dignity of pose, the print registering every nuance of a well-graded negative. You are conscious in looking at these prints that they are the outcome of a thorough mastery of technique; so many object lessons, in fact, of non-mystical lighting, posing, developing, and printing. As such the collection is well worth studying by our professional readers, who may wish to know what is in request by the profitable clientèles which, we understand, abound in the States.

A feature of this very fine display is that the prints are made on Aristo collodio-chloride, a process in great popularity with American professional workers, the tone being obtained by gold and platinum, a beautifully effective depth, richness and delicacy of effect so resulting. We understand that "Aristo" will be brought more prominently under the notice of British photographers. From the same source also comes the Aristo self-toning (collodio-chloride) paper, which yields results quite comparable in appearance to the best class of albumen prints. Of these papers we shall, no doubt, have future opportunities of writing from practical trial. Our present purpose is to draw the attention of our "bread and butter" readers to a notable show of American portrait work, a study of which should on no account be missed.

WILL "Q. W. L.," who wished to know the value of portrait lens made by Harrison, New York, and to whom we replied in last week's "Answers to Correspondents," kindly communicate with W. Kent, 27, Upperton Gardens, Eastbourne.

WE have received a copy of "The Lecture Agency Date Book" from the Lecture Agency, Ltd., the Outer Temple, Strand, W.C. This "Date Book" has been specially compiled for the use of ministers, lecturers, public speakers, musicians, entertainers, secretaries of societies, and others who are compelled to make engagements a long time in advance, and before the ordinary diaries for the following year are available. It contains space for every day to June 1906, and a table up to December 1910, showing on what date Easter and the other Feast Days and Holidays fall, together with various other items of useful information. The "Date Book" includes an insurance policy of £100 in case of death by railway accident for the twelve months ending June 30, 1905.

Patent News.

The following applications for patents were made between April and April 30, 1904:—

- Borders.—No. 9,515. "Improved means for printing borders on photographs." Percy Archibald Hillhouse.
 Changing Boxes.—No. 9,720. "Improvements in or relating to photographic changing boxes or apparatus for changing flat sensitive surfaces arranged as a pack." Arthur Lewis Adams.
 Sheaths, etc.—No. 9,725. "Improvements in and relating to sheaths or wrappers for packing, exposing, and developing photographic plates or films." Arthur Reiner.
 Cameras.—No. 9,902. "An improved appliance for use with photographic cameras." Arthur Hubbard.

FORTHCOMING EXHIBITIONS.

- May 16-28.—Photographic Society of Ireland. Hon. Secretary, E. Webb-Smith, care of Royal Dublin Society, Kildare Street, Dublin.
 May 24-28.—Devonport Camera Club. Hon. Secretary, A. Catford, 78, Charlotte Street, Devonport.
 June-October.—Glasgow Photographic Exhibition. Secretary, Gallery and Museum, Kelvingrove, Glasgow.
 July 14 to September 30.—Vienna Photographic Society. Secretary, W. Burger, Karmelitergasse 7, Vienna 11.
 August 1.—Andover and District Horticultural Society. Photographic Section. Hon. Secretary, W. L. Gradidge, Jubilee Hall, Andover.
 November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.
 November 23-26.—Hove Camera Club. Hon. Secretary, S. Sargeant, 55, The Drive, Hove.
 December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.
 December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102 West 101st Street, New York.
 December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.
 December 13-20.—Southampton Camera Club. Hon. Secretary, S. Kimber, Oakdene, Highfield, Southampton.

FORTHCOMING COMPETITIONS.

- May 31.—Ensign-Vidil. £100 in prizes for negatives on Ensign-Vidil films. Houghtons, Limited, 88-89, High Holborn, London, W.C.
 June 30.—"Photographic News" Quarterly. Money prizes, silver and bronze medals for prints. Any subject. "Photographic News," 9, Cecil Court, Charing Cross Road, London, W.C.
 June 30.—Kodak. £1,000 in cash prizes for pictures taken on Kodak films and plates, etc. Kodak, Limited, 41-43, Clerkenwell Road, London, E.C.
 October 1.—Thornton-Pickard. £100 cash prizes for pictures taken with Thornton-Pickard cameras and shutters. Thornton-Pickard Manufacturing Co., Altrincham.
 October 31.—Coxin. 68 prizes for users of Coxin. Judging two pictures. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.
 December 31.—Barnet. Nineteen classes. Prizes valued at £100 for lantern slides and prints made with Barnet products. Elphinstone and Sons, Limited, Barnet, Herts.
 Ilford. £750 in prizes for negatives on Ilford plates. Ilford, Limited, Ilford, E.
 Luna paper. £240 cash prizes for prints on Luna paper. Lucien Allegre and Co., 59a, New Oxford Street, London, W.C.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

May.	Name of Society.	Subject.
.....	Everton Camera Club	Half-day Outing.
.....	Camera Club.....	<i>Fearful Monsters.</i> Mr. S. C. Kaines Smith, M.A.
to 11	Kodak Exhibition.....	Masonic Hall, Birmingham.
.....	South London Photo Society	<i>A Simple Means of Controlling Gradation in Bromide Prints and Lantern Slides.</i> Demonstrated. Mr. John Sterry.
.....	Bowes Pk. and District Ph. Soc.	Competition. Outing Prints.
.....	The Optical Society	<i>Standardisation of Spectacles and Eyeglasses.</i>
.....	Birmingham Photo. Society.....	<i>Gum Bichromate Process.</i> Demonstrated. Mr. J. Page Croft.
.....	Bialgowrie and Dis. Ph. Assoc.	<i>Pinhole Photography.</i> Mr. James Richardson.
.....	Croydon Nat. His. and Sc. Soc.	<i>The Croydon Bourne.</i> Mr. Baldwin Latham, M.L.C.E.
.....	Nelson Photographic Society	Demonstration. Mr. F. Whitaker.
.....	North Middlesex Photo. Soc.	<i>Printing and Toning P.O.P.</i> Mr. S. H. Bentley.
.....	Everton Camera Club	<i>A Simple Developer.</i> Demonstration. Mr. E. C. Alcock.
.....	Watford Camera Club	Competition—"Producing the Best Picture from an Exposed but Underdeveloped Plate."
.....	Camera Club	<i>Domestic Life in India.</i> Mr. J. D. Reek, C.I.E.
.....	London and Prov. Photo. Asso.	Open Night.

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

MAY 2.—A special meeting of the General Committee was held to arbitrate a case remitted to the Committee of the Association for decision by His Honour Judge Russell of the Reading County Court, involving the reasonableness of a charge made by a photographer for photographs supplied. Present: Messrs. Alfred Ellis, F. A. ridge, Wm. Grove, S. H. Fry, H. E. Hull, Martin Jacolette, A. Jackie, H. S. Mendelssohn, Edgar Scamell, Ralph W. Robinson, and Lang Sims. Mr. Alfred Ellis, President, in the chair.

After careful consideration and examination of the photographs, decision was agreed to, but as the case is sub judice until the decision is confirmed by the judge, the particulars cannot be published.

A letter from Mr. Wm. Crooke, of Edinburgh, was read, consenting to allow his collection of portraits now on exhibition at the Royal Photographic Society, to pass to the Exhibition of Professional Photography to be held at Derby in the summer, and a similar letter from Mr. Frederick Hollyer.

Letters were read from two members thanking the Committee for valuable advice in cases of difficulty.

CAMERA CLUB.

MONDAY, MAY 2, was an open night at the club, which means that there was no formal lecturer, but that members were invited to bring forward any matter of interest, or to call attention to any novelty. and it is a noticeable thing that very often upon these off nights an interesting discussion is apt to arise out of some insignificant matter. Mr. Godfrey generally occupies the chair on these occasions, but he had to keep indoors by the doctor's orders, and Mr. T. C. Hepworth took his place.

Mr. Routledge showed a few slides which he had lately taken in British East Africa, where he has been the spectator of some of those minor skirmishes which take place between different tribes of natives, and which are of such constant occurrence that they do not often get reported as far as London. He spoke of the Masai as being splendid soldiers, and "the lancers of African warfare." They are well behaved, and there is among them a system of military discipline which is invaluable. Send them on an expedition to strike terror into a neighbouring tribe which has been giving trouble, and they will do the business effectually. "There is no need for an ambulance," said Mr. Routledge, significantly. Some pictures of the scenery of this part of the world were also shown and explained by their owner.

Mr. Gordon showed an interesting positive transparency of the interior of a church, because it touched upon a subject in which he

was much interested, and about which he read a paper at the club some weeks ago. The picture was produced by mingling a positive with a negative image, and the device had been so successful in this instance that all halation was done away with, while, at the same time, exquisite detail was shown in the very darkest parts of the picture. Mr. Gordon pointed out that the meaning of halation was a dense high light, which cannot be printed out sufficiently without loss of detail in the other parts of the composition, but that if the thin parts of the negative are masked with a weak positive image, a lengthened exposure can then be given without disastrous results. This particular picture has been in Mr. Hepworth's possession for about twenty years, and, if he remembered rightly, the process had been patented at the time.

The next matter dealt with was the question of the best way of fitting up a dark-room, the subject having been brought up in the form of a question. This gave rise to a discussion which was interesting, as it elicited from those present a description of the many little dodges they had adopted in the way of lighting, and arranging other details of their dark-rooms.

A number of lantern slides belonging to the club, which had not seen the light for some years, were then shown, and the Chairman suggested that as most of them bore no titles, any member who recognised a picture to which, within his knowledge, any particular interest attached, should make some observations upon it. The opportunity came when a picture of the Forum at Rome was projected upon the lantern screen; a picture which was taken about ten years ago. Mr. Casson, who had visited Rome within the past month, and who had evidently made a careful study of the excavations in progress there, pointed out that many of the houses shown in the picture had been cleared away, and that valuable archaeological finds had been made on the sites which they occupied. Perhaps the most interesting of these was the discovery of the concrete platform upon which a statue of Domitian formerly stood. Signor Boni, under whose direction the excavations are being carried on, was strongly impressed with the idea that in this mass of concrete some relics might be found, for it has always been customary—and is in our own time—to associate with a foundation-stone coins, etc., giving some key to the date of the event. After chipping away much of the hard concrete a hollow chamber was found covered with a slab of stone, and within the recess were found five very beautiful vases, one containing a nugget of pure gold, and the others the remains of wine, food, etc., which now await analysis. The date of this interesting relic is supposed to be A.D. 84, but the vases, from their peculiar pattern, are believed to date from some four centuries earlier. Here the archaeologists have somewhat of a puzzle to solve. After a brief vote of thanks to those who had spoken during the evening, the proceedings came to a close.

On the following Thursday, Mr. David Christie Murray gave a discourse entitled, "Peace and War." He spoke entirely without notes, and gave a most interesting account of some of the incidents of a most strenuous life as journalist, as a member of the Press gallery in the House of Commons, and as war correspondent for the "Times" and other newspapers. He is the prince of story-tellers, and invests every incident with sometimes pathos, and sometimes rollicking humour, together with a dramatic force which is most attractive. He had nothing whatever to say about photography, and so we are not able to devote more space to the notice of a meeting which was most entertaining and enjoyable to those who had the privilege of being present.

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

MEETING held May 5, Mr. D. W. Hart in the chair.—Mr. Teape exhibited some test strips (negatives) to show that the Howard Farmer's reducer did not act on the lights more than the shadows. A portrait negative cut in two, one half of which had been chlorised, washed, redeveloped, and fixed, then submitted to the action of the Howard Farmer's reducer, did show a decided visual reduction, but P.O.P. prints made from the two halves were almost identical.

The members adjourned to 27 and 28, Fetter Lane to see a demonstration of the Adhesive Dry Mounting Co.'s process of mounting photographs, and a very pleasant and instructive evening was spent under the guidance of Mr. Garrett, the company's representative. Prints in carbon, platinum, silver (matt and glacé), supplied by members, were mounted upon paper and upon ordinary substance mounts,

with a facility and success quite surprising, a special adhesive, like a sheet of tissue paper, being the medium, this, under the print, being placed on the mount and subjected to momentary pressure under a hot press, and the mounting was completed.

A very ingenious gridiron straight-edge was shown for trimming the margins of prints, and was much admired. Various sizes of machines (or presses) were shown in operation, from cabinet to 30 by 24, and for amateur use Mr. Garrett showed what could be done by means of a gas-heated laundry iron. The advantages claimed for the process are that whatever the surface of the print before mounting, the same is preserved afterwards; that a photograph can be mounted with equal facility upon thin paper or upon thick board; that if the machine is not large enough to mount the print at one pressure, two, three, or more pressures can be given without any markings showing on the print.

At the conclusion of the demonstration, Mr. Drage voiced the sentiments of the members by expressing his satisfaction with everything that had been shown, and hoped that the company would meet with commercial success.

Members and friends are reminded that the summer outing will be to St. Paul's Cray Common, Chislehurst, on June 25, leaving Cannon Street about 2.30. Supper at the Bickley Hotel, close to Chislehurst Station, at 7.30. Tickets, inclusive of railway fare and supper, 3s. 6d. Reserved railway carriage both out and home will be provided. Fuller particulars later on.

CROYDON CAMERA CLUB.

WEDNESDAY, MAY 4.—An exposition by Mr. E. W. Taylor, showing how a negative might be "faked" was given, and illustrated by lantern slides of prints from negatives before and after treatment, which in most cases was a drastic one. With such apparently innocent aids as retouching pencil, knife, water colours, methylated spirit, cotton-wool, wash leather, matt varnish, pencil dust, and stump, and a suitable desk, the lecturer demolished houses—not necessarily jerry-built ones—or lopped off chimneys, or turned a desirable suburban residence into a dilapidated farmhouse with the greatest ease. Winding paths were introduced where pictorial composition indicated winding paths ought to be, and undesirable figures were obliterated, and merged into the surrounding landscape. One instance, in particular, attracted especial attention, inasmuch as a print was exhibited at the club's recent exhibition. The untouched negative, and resulting print, showed a cart laden with coal sacks leading up a lane, at the end of which, forming the horizon line, was a somewhat ugly mound of earth. The revised edition showed the same cart full of straw, and the mound transformed into a pretty rustic cottage, with an indication of distance, so to speak, thrown in. All the foregoing improvements, or alterations, were effected on the negative, and, if hardly desirable for purely record work, still, in many cases, and notably the last-mentioned, the means perhaps justified the end. With the assistance of P.O.P. double printing, masking, hand work on the print, and additions made by gumming on portions of prints from the same or other negatives, and finally photographing the doctored print, Mr. Taylor showed, as might be expected, still greater transpositions and alterations might be obtained. Amongst the many practical points discussed, the lecturer laid emphasis on "going slow" when reducing with spirit; patience, rather than elbow grease, was required. He used the knife chiefly for toning down small opaque spots. It should have a thin blade, razor edge, and be manipulated at right angles to the film. As a reflector, white blotting paper was satisfactory. When making additions to a print by gumming on, say a cut-out figure, then the edges of the piece of P.O.P. representing the figure should be reduced at the back to extreme thinness by sand paper. This preventing the junction showing.

In the animated discussion which followed, Mr. Dunmore complimented the lecturer on what he regarded as a wonderful display of legerdemain, he very much doubted if it was "photography." Another member said what he had heard that night reminded him of many years ago when he was giving a lantern lecture through France. The slides illustrated English towns and scenery. The lecture unfortunately fell flat, but directly the same slides were shown to illustrate Jules Verne's "Round the World in Eighty Days," things brightened up, no one was the whitest, and everybody was pleased. At the instance of the President, Mr. S. H. Wratten, a vote of thanks was accorded Mr. Taylor.

News and Notes.

At the meeting of the Royal Microscopical Society on April 10, a large tank microscope, made by Thomas Ross, presented to the Society by the Committee of the Quekett Microscopical Club, was exhibited. It was made not later than the year 1870, and designed for the purpose of examining objects contained in aqueous fluids. It was a beautifully-made and highly-finished instrument, and admitted of nearly every conceivable adjustment.

A new edition (the sixth) of "Practical Enlarging," by John H. Hodges, has just been issued by Messrs. Hiffe and Sons, Ltd. It is a very reliable little handbook, which should prove very popular with users of small cameras. The whole course of enlarging processes has very carefully gone into by Mr. Hodges. Working diagrams are given, and the book is well got up. It forms No. 6 of the "Photographic Book-shelf" series.

We have received specimens of pictorial postcards published by the Ozograph Company, Ltd., of 145, St. Michael's Hill, Bristol. They are excellent examples of half-tone printing, and we understand the firm has spared no expense in fitting up their factory to meet the exigencies of the ever-varying English climate, which so materially affects the different processes in collotype printing. In the matter of prompt delivery, price, and general finish the firm should be able to compete successfully with Continental productions.

MR. SRS. GOLD, SMITH, AND CO., of 4, Victoria Bridge, Manchester, send us a specimen of a new line they have just put out on the market. It takes the form of a neat little "albumette," founded on the principle of the well-known "Slip-in" albums with various shaped openings, and is intended to hold stamp-sized prints. These little albums are supplied in two sizes. One holds forty-eight stamp-sized photographs, the other twenty-four of the larger-sized stamps. They are very cheap, and should prove a popular line at seaside resorts for views and portraits.

DEATH of an Eminent Chemist.—Professor A. W. Williams, F.R.S., the eminent chemist, died on May 6, at his residence, 10, Grosvenor Road, Haslemere. The deceased, who was Emeritus Professor of Chemistry at University College, London, attained his eightieth birthday recently. He had been in ill-health for the past two or three years. He received his education in England, France, and Germany, being appointed professor of practical chemistry at University College in 1849, and professor of chemistry in addition in 1855, retiring in 1870. He was the author of several publications. He leaves a widow, a daughter of Professor T. Hewitt Key, one son, and one daughter.

UNNECESSARY ARTISTS.—The struggle for existence among artists was eloquently described on Saturday evening last by Sir John Lubbock, P.R.A., who presided at the annual dinner of the Art General Benevolent Fund, which was held at the Hotel Metropole. He stated that of late the number of artists who competed for patronage had greatly increased, and now they could be counted by the sands. This all added to the struggle for existence, and he made a strong appeal on behalf of those who helped to make beautiful homes of many of those present. Are we to regard this pronouncement as encouraging to the photographer with artistic aspirations, or as a warning?

FEDERATION of Photographic Societies of Northumberland and Durham.—The annual meeting of delegates of this Federation was held at Newcastle-on-Tyne on Wednesday evening, May 4, Mr. A. Cowling in the chair. The arrangements for the annual field day at Bishop Auckland, on Whit-Monday, were completed. It was decided to accept Messrs. Elkington's quotation for supplying bronze plaques for the design for which is being executed by W. R. J. S. Bertram, Mr. Thomson, of Darlington, was elected business manager for the Federation Record in place of Mr. Dent, who resigns. The Treasurer reported that the finances of the Federation were in a satisfactory condition. The following gentlemen were elected as officers of the Federation for the ensuing year:—Chairman, Mr. A. E. Cowling; South Shields Photographic Society; Hon. Secretary, Mr. A. Payne; Blaydon and Gateshead Camera Clubs; Assistant-Secretary, Mr. A. H. Wilson, Gateshead Camera Club. Secretary's address, Arthur Payne, 6, Tyne Vale Terrace, Bensham, Gateshead.

the "Evening News" is responsible for the following:—"Queen Alexandra will not have been at fault if the photographs which she took at Lismore Castle do not prove good ones. Her Majesty is as good a photographer as will be found among amateurs. Not only does she possess the art of developing; she has that more rare gift—eye for an effective landscape. One of her pictures was attended with remarkable results. It was the means of averting a tragedy, for a negative had been developed of a view she had taken of a train passing over the bridge at Wolferton, it was noticed that there appeared to be a curve in one of the uprights of the bridge. It there should be any mistake, that the film had been disturbed or ordered, her Majesty went again and rephotographed the bridge. In the second picture the result was similar. There was an undoubted weakness in the bridge, albeit it was not apparent to the eye upon casual observation. The King was consulted, and caused an examination of the bridge to be made by an expert, with the result that the picture was found to be in a dangerous condition of insecurity. Thanks to her Majesty's care and attention to minute detail, the flaw, having been discovered, was remedied. Wolferton Bridge has been built."

The Chemists' Exhibition.—A chemists' exhibition, organised by proprietors of the "British and Colonial Druggist," was opened Monday at the National Skating Palace, Argyll Street, W. Similar exhibitions have been held annually for the past ten years, and from the commencement have attracted considerable interest among chemists throughout the country and the Colonies. The present exhibition is larger than any of those which have preceded it, the exhibits, which are arranged in the area and on the first and second tiers of the building, comprise many novelties in pharmaceutical preparations, hygienic and sanitary products, dietetic specialties, and, in fact, the whole range of articles of interest to pharmacists, manufacturing and scientific chemists, physicians, surgeons, and photographers. One of the most interesting sections, from the point of view of the general public, is that devoted to photography. It contains many more exhibits than usual, including competition photographs, exhibitors' photographs, and the displays of representative houses for cameras, lanterns, plates, papers, chemical accessories, and the like. That the chemists' trade is not confined to drugs is shown by the large number of miscellaneous exhibits, which include mineral waters, opticians' goods, and fancy soaps and perfumery, the latter being particularly prominent. Among the scientific novelties shown are radium, helium, krypton, and argon. An exhibit by Messrs. Johnson and Sons, Ltd., of London, of crystallised chloride of calcium, containing 620 oz. of the pure metal, and valued at £1,395, attracted special attention. The exhibition, which contains 125 exhibits, will remain open until Friday night.

Burglars Captured.—At the Marlborough Street Police-court, on May 7, George Esser, porter, 31, of Queen Street, Seven Dials, and John Smith, 33, porter, with no home, were charged on remand with breaking into the shop, No. 54, Haymarket, and stealing sixteen gold and silver compasses worth £30, the property of Messrs. Sinclair & Co., opticians. They were also charged with being in possession of housebreaking implements. Henry C. Paty, an assistant in the employment of Messrs. Sinclair, deposed that on April 30, when he got to the shop, he found that the window had been broken and that a plush stand containing gold and silver compass charms of value of about £40 had been stolen. The property had been recovered by the police, who were at the shop when he arrived there. William King, a "street flusher," of Seymour Street, Camden Town, said that shortly before six o'clock on the morning of April 30 he saw the prisoners standing in the Haymarket. Smith had the compasses produced sticking out of his pocket, and the stand containing the compasses in his possession. A policeman's whistle was blown, whereupon Smith threw away the jemmy and the compasses, and both men ran away. He gave chase, and caught Smith, who was detained until a constable arrived. Esser was pursued and captured by Constable 253 C. Detective-sergeant West, C Division, informed the magistrate that both the prisoners were ex-convicts. Constable 106, of the C Division, said that on the morning in question he heard a smashing of glass, and on going in the direction whence the sound came, found that the window of the shop of Messrs. Sinclair had been broken. Seeing the prisoners run away, he blew his whistle. Mr. Kennedy committed the accused for trial.

COLOUR PHOTOGRAPHY.—Dr. A. Miethe, Professor of Photographic Chemistry at the Charlottenburg Technical High School, has been asked by the German Commissioner for the St. Louis Exhibition to send out a series of German colour photographs as examples of the advances made in this country in this art. The Berlin correspondent of the "Standard" says:—"Dr. Miethe, in a paper on the latest improvements in his process, states that the most important part was the production of absolutely lasting and highly sensitive pan-chromatic dry plates, and that the first step towards this lay in the discovery, by himself and his assistant, Dr. Traube, of a new class of sensitisers. They had found that there were sensitising properties in isocyanine. Thanks to this discovery, the Professor has been able to make pan-chromatic dry plates highly sensitive to colours. In forming his colour photographs, Dr. Miethe uses a special projecting apparatus invented by himself, which consists of a triple lantern connected with three electric lamps served by an electric current, which can be varied from ten to thirty-five amperes. These lamps light up a space of from four to twenty square metres. The condensers consist of a triple system of lenses, each having three component parts. These condensers, which enable the fullest use to be made of the light, are connected with a cooling apparatus, which prevents any harm being done by warm rays to the diapositive. An interesting feature in the apparatus is the projection objective, which possesses varying focal lengths. The whole projection apparatus is extremely delicate, and can be made to suit every size and description of picture. The pictures which will be shown by Professor Miethe at the Great Exhibition consist of four series of about fifty photographs. The first represents German viticulture on the Rhine and Mosel; the second, German forest cultivation; the third, views of different German villages; and the fourth, pictures of the Southern Dolomites and Lake Garda."

In these columns we have frequently advocated the advantages of a national photographic survey of our works of art, and it is pleasant to be able to announce that an attempt, though it be as yet without State aid, is to be made to realise this ideal. The Arundel Club is a new organisation which proposes to issue to subscribers photographs of this kind to the utmost extent made possible by the dimension of the support it receives. It begins operations under the auspices of an influential committee, consisting of Lord Balcarras, M.P., Sir Walter Armstrong, Sir Martin Conway, Professor Sidney Colvin, Messrs. Lionel Cust, Claude Phillips, Herbert Cook, John S. Sargent, R.A., Roger Fry, Charles Ricketts, and others, the hon. secretaries being Miss Rachel Ricardo and Mr. Robert Ross, of 10, Sheffield Gardens, Kensington, and the annual subscription one guinea. The club—whose name is happily suggested by the old Arundel Society, which did such good work in bygone days in the reproduction of pictures by Old Masters—proposes to deal with art objects of every kind, and recognises the need of making its photographs easily accessible to students; though, as it proposes to issue them to members only, the means by which this desirable end is to be achieved are not too readily apparent. The ordinary art student has few guineas to spend. Still, the movement deserves every encouragement. One statement in the prospectus, however, is not only uncalled for, but essentially inaccurate. The committee says that "it is only in England that no such collection has been undertaken, except in so far as it is being done by a few private individuals." This argues a singular ignorance of the subject on the part of those responsible. For many years photographs of this nature have been accumulated in the Victoria and Albert Museum, and the collection, now probably amounting to upwards of one hundred and sixty thousand prints, is well known to and constantly used by the many frequenters of the National Art Library. The sections of painting and sculpture are probably among the finest of their kind in the world, and they are accompanied by large numbers of prints illustrating architecture and every kind of applied art; while the museum possesses, in addition, something like twenty thousand negatives of a kindred nature, from which prints can be bought at cost price. We do little enough, in all conscience, for art in this country; but there is no reason why what is done should be depreciated in the eyes of the public, especially with an appearance of such authority as is now given by the names of the committee of the Arundel Club. The best thing that the club could do would be to co-operate with the museum authorities by filling up gaps in the national collection and so rendering it even more worthy than it at present undoubtedly is.

Correspondence.

- *.* Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.
- *.* We do not undertake responsibility for the opinions expressed by our correspondents.

THE R.P.S. EXHIBITION. To the Editors.

Gentlemen,—I am directed to inform you that at the forthcoming Exhibition of the Royal Photographic Society of Great Britain, it has been determined to abolish the wall space charges in the Competitive Pictorial Section and the Scientific and Technical Section. The Council believe that the general body of exhibitors will be interested in this departure from the Society's custom, and they will be glad if you will give publicity to the change at your early convenience.—Yours faithfully,

A. W. W. BARTLETT, Secretary.

Royal Photographic Society, 66, Russell Square, London, W.C.

NOTES ON THREE-COLOUR WORK. To the Editors.

Gentlemen,—I much regret that Mr. E. J. Wall has left a scientific argument for the sake of an undignified personal attack, quite unworthy of him, and that it is therefore impossible to discuss the matter of Wollscharr 4B and similar dyes any further. But I am sure at the same time that those who have experimented commercially with such dyes have understood and appreciated my earlier remarks which led up to the discussion, and that therefore the matter can safely rest.—I am, yours faithfully,

T. THORNE BAKER.

1, Station Parade, Willesden Green, N.W.,

May 3, 1904.

[This correspondence here terminates.—Eds. B.J.P.]

PSYCHIC PHOTOGRAPHY. To the Editors.

Gentlemen,—Mr. Sterling's letter *re* "Psychic Photography" is very interesting, and should be convincing but for a few difficulties which need explanation. What or where are the "spheres" which the spirits are supposed to reside in or on, and how is it that if the spirits are in the habit of presenting themselves before the camera beside those in the flesh, we do not sometimes see something of them in our everyday work? Sometimes I have given excellent opportunities for any spirit to have made its presence known if it had been by the side of my customer, having my slide drawn waiting for a favourable moment to open the lens, and again after closing the lens the plate has sometimes remained in position for some minutes, but never have I seen the shadow of a ghost; and as to spirit light rays, where do they proceed from, if from the spheres? Perhaps they may illuminate the spirit substance, for we are told that "the spirit being less dense, etc."; therefore, having some density, it has some body or substance, and if the spirit photographs are to be accepted, the spirit body is of about the same form and size as the bodies we now inhabit, and be reflected from them in a way similar to that which we see in the case of the sun's rays which illumine our fleshy bodies, thus accounting for the decided studio lighting seen in some alleged spirit photographs, and also by a study of the direction of the said rays revealing the direction at least of the radiant sphere from whence the rays proceed. And here I would suggest that some astronomical friend should try some time to obtain a photograph of the said sphere, seeing its general direction can so easily be deduced from the photographs produced by it. But if the spirit is self-radiant then I fear all the above goes for nothing, and all those studio examples are manifestly gross impostures, as a self-radiant body would give no shadows nor round modelling, as we see on bodies illuminated by radiations other than their own. Then, again, it truly is "mysterious enough, the cap is no hindrance to the spirit light rays focussing through the lens," as should we try the effect of placing a cap of the clearest glass before our lenses we should find that unless the surfaces of the glass were well polished and plain, the focus would be greatly impaired, the light diffused, and the plate fogged all over. Really this spirit photography is a most mysterious thing, and I should not wonder that if the camera were provided by

the customer as well as the plates and dark slides, the would be so offended by the want of faith displayed by their work photographers that they would cease their manifestations altogether.—Trusting to get at "the truth" by-and-by, I remain, yours truly,
May 9, 1904.

E. WILLIAMS.

P.S.—Your correspondent from Bexhill states his disbel in ghosts, therefore is somewhat out of the present inquiry.

To the Editors.

Gentlemen,—Referring to Mr. Sterling's letter, it may save a deal of needless trouble to state that Mr. Bournsall has not a studio in Uxbridge Road, he, I regret to say, having had to go business owing to failing health and advanced age, for he is between seventy and eighty. So unwell is he that he has requested my friends not to call or even write to him, as he is unable to receive any letters. Though an uneducated man, he has done a splendid work, and has earned the gratitude of thousands.

Mr. Sterling's experiences relate to a series of seances he had nine years ago, which resulted in some very beautiful spirit photographs. The negatives are now in my collection.

In your account of my lecture on this subject at the Camera Club there is one slight error. I did not say that Sir William Crookes photographed "unseen" sitters, but that he had taken a number of portraits of a fully materialised spirit who was known by the name of Katie King. Being materialised, there was no difficulty in photographing her, as she could be seen by all present, and, in fact, carried on a conversation and even vied about for the time being like an ordinary mortal.

This could only take place through the presence of a good materialising medium, of which, unfortunately, this country possesses very few.

When it is a question of photographing spirits who are not visible to normal sight, a different phase of mediumship is necessary, and is at present very rare, and now that Mr. B. has given up, I am no one at the present time in this country who can guarantee a picture. There are several amateurs who are gradually developing and occasionally get, psychic markings on their plates, but if patience is necessary, as hundreds of negatives may be taken but few results. In the United States there are altogether about half a dozen spirit photographers who have, of course, frequently given the best of tests by the sitter recognising on the plate developed the familiar features of long departed friends and relatives who had taken this means of showing that they still lived on.

Mr. Henderson's letter is written in such a needlessly off-strain that unless he apologises I decline to reply.—Yours faithfully,
May 9, 1904.

H. BLACKWELL.

THE NORTHERN PHOTOGRAPHIC EXHIBITION. To the Editors.

Gentlemen,—Your issue of last week contains a letter signed "A Disgusted Exhibitor," and for the benefit of your readers should like to supplement the writer's statements with a few facts.

1st.—The minimum entrance fee at the Royal is 5s., and exhibitors receive a catalogue and season ticket. The minimum entrance fee at the Northern was 2s., and exhibitors received a catalogue valued at 1s.

2nd.—The price of admission to the Royal is 1s., and no payment is made for the catalogue; at the Northern was 6d., and payment for the catalogue was given on application.

3rd.—The Walker Art Gallery is the property of the Corporation of Liverpool; and regulations as to what articles may or may not be taken into the rooms are made by the Corporation, and enforced by their servants.

4th.—The cloak-room is also the property of the Corporation, managed by their servants; and a charge of one penny is made for each article deposited.

5th.—No person outside the Liverpool Society spent a penny on the success of the Northern; but those who paid the highest entrance-fees also gave many hours of hard work to ensure the success of the exhibition, and purchased their season tickets. A gentleman who, not being a member of the Liverpool Society, paid the largest sum in entrance-fees was not "A Disgusted Exhibitor." I am, gentlemen, yours truly,
Liverpool, May 9, 1904.

C. F. INNES.

THE FUTURE OF PHOTOGRAPHY.

To the Editors.

Gentlemen,—Your article in last week's BRITISH JOURNAL OF PHOTOGRAPHY on "The Future of Photography for Employés" is opportune and interesting. It is a fact that there are scores (I am tempted to write hundreds) of so-called "high-class" operators, of exceptional ability, etc., who, on being engaged, turn out to be quite incapable, save by an occasional fluke, of taking a really negative that is good in pose and lighting. The writer, with twenty-five years' experience, thoroughly agrees with you in ascribing the flooding of the photographic labour market with so many incompetents to the present system of taking artied pupils with a substantial premium by firms of wide repute. It takes years to make an ordinary individual into a good operator, and the man who has to do his way up by his own exertions, and seeing what his betters is much more likely to succeed than the one who travels the road to learning, which his parents have to line with golden promises, and then imagines he is ex-officio competent to take charge of the better-class studios in the country.—I am, yours, etc.,
MAY 11, 1904. A PROVINCIAL PHOTOGRAPHER.

APPLY Expressed.—Lady Gusher: Good-by! Thanks so much! Your pictures are charming, and so unlike your usual work!—Yours truly, etc.

It is reported that the Dowager Empress of China has consented to be photographed, in order that the people may be able to worship Imperial image, as in Japan. A Japanese photographer has received orders to attend at the Palace for the purpose.

We regret to have to announce the death, on the 8th inst., of Mr. Edward Muybridge, in the seventy-fourth year of his age. Mr. Muybridge will be remembered for his work in connection with the photography of moving bodies.

MESSRS. H. FIRMAN AND CO., of Lever Place, Staines Road, Windsor, have sent us their trade list of enlarging and finishing bromide paper, opals, and canvas in oils, water-colours, and black and white. The prices are low, and prompt delivery is promised. Photographers should write for a copy to above address.

WELL AND GOODRICH, LTD.—The above-named company has been incorporated with a capital of £1,000 in £1 shares; 500 preference shares, to adopt an agreement with S. A. Sewell, A. W. Goodrich, C. T. Hine, and to carry on the business of photographers, lithographers, etc. No initial public issue. The first directors are S. A. Sewell, A. W. Goodrich, and C. Hine. Registered office, 68, Imperial Buildings, Ludgate Circus.

ANOTHER SWINDLE.—A number of people in Walton, Surrey, have been victimised by a new method of swindling. Some individual, purporting to represent a London firm of photographers, who, he said, had a branch at Halfway Green, induced them to buy 6d. tickets, entitling them, he claimed, to be photographed at a reduced price. On calling at the shop in question the victims found that the man was known of the "canvasser's" ingenious scheme, and that sixpences had been expended in vain.

THE ROYAL ACADEMICIAN.—On the old village green of Uxbridge, Herts, a Londoner was induced by a photographer (who had been his "pitch" there) to buy a "Royal Academy portrait" of himself, frame included, for fourpence. Asked why he used the name of the R.A., the camera-man said, "I am employed during the season in Burlington House as a carpenter. Out of the season I go round the countryside taking photographs, and as an assistant at the famous institution in Piccadilly I use its glory to help me in the provinces."

WE hear that the Glasgow Eastern Amateur Photographic Association desires to improve its rooms, and, incidentally, its financial position. The photographic societies of the land have therefore been asked to contribute with shilling books of thirteen penny pink tickets for a prize drawing which will take place on August 8 next. The prizes include a marble timepiece, a rainproof coat, travelling bag, bellows, pipe, etc., and as an inducement to kindred associations a plaque is offered to the club which disposes of most books. Devious are the methods of the wily secretary. We are glad to hear that the G. E. A. P. A. has studied the Lottery Acts carefully.

Answers to Correspondents.

* * * All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.

* * * Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.

* * * Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.

* * * For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

H. Linn, 31, Taylor Street, Woolwich. Photograph of Woolwich Arsenal Football Team.
J. A. Stelling, 60, Peckham Road, S.E. Photograph of the Rev. J. W. Ewing.
W. Thorneycroft, Wolverton, Bucks. Photograph of Royal Train passing Wolverton.
C. W. Heywood, 53, Osborne Road, South Shore, Blackpool. Photograph of a Stern at Blackpool.
H. Green, 67, High Street, Dudley. Photograph of Interior of Wesleyan Church, King Street, Dudley.
W. T. Carter, 43, Drake Street, Rochdale. Photograph of River Roach before opening.
P. Simms, 12, High Street, Chipping Norton. Photograph of Children in "Six Divine Princesses."
J. Snivas, 84, Queen Street, Peterhead. Two Photographs of J. Stuart.
J. W. Garratt, 9, Station Road, Ashley Down, Bristol. Four Photographs of Muller's Orphanage.
J. W. Garratt, 9, Station Road, Ashley Down, Bristol. Photograph of Muller's No. 3 Orphanage, Ashley Down.
H. Leake, 6, St. John's Square, Wakefield. Photograph of the Wakefield Trinity Football Team 1903-4.

FINISHING ENLARGEMENTS.—"ANXIOUS TO LEARN FINISHING" asks: "Will you, please, tell me what are the best materials to use for lightening deep shadows on the face, and for finishing bromide enlargements; generally in black and white?" In reply: An ink eraser is what is usually employed for the purpose.

DAGUERREOTYPES.—J. COLLINS writes: "I have one or two Daguerreotypes in my possession, of which I should like facsimiles made. Could you give me the address of a firm who would undertake the work?" In reply: We know of no source whence Daguerreotypes are nowadays commercially obtainable. Some reader might perhaps be able to supply the desired information.

UNEQUAL TONES.—"J. P." says: "I am sending four stained prints, and will take it as a great favour if you would say what you think is the cause of these stains. Is it the retouching medium or the printing and toning that are at fault?" In reply: Simply the toning. The prints were not kept moving while they were in the toning solution. Hence the uneven tones.

A. L. CRANCH.—Your outdoor photographs are better than the portrait you send. The latter is very ordinary. When your work has considerably improved we see no reason why you should not secure one of the vacant situations as operator advertised in our columns week by week. The supply, however, much exceeds the demand, and we do not think your work will secure you a very high salary to start with.

LENS.—TONING.—"PLATINUM" puts the following questions: "(1) What is the meaning of term $f/4$, etc., as applied to photo lenses? (2) Would he give me a simple but efficient toning formula for matt p.o.p. to produce a nice purple tone similar to what I can obtain in using glossy p.o.p.?" In reply: (1) $f/4$ means that the aperture of the lens is equal to one-fourth of its focal length. (2) Matt papers, as a rule, will not give the same tones as glossy, and they are not intended to do so. Try the bath you are using and remove the prints at an early stage.

F. LUCAS asks: "Will you kindly let me know how I can make a negative or transparency in very strong relief, a simple method?" In reply: We presume you require a relief for moulding from. If so, coat a glass plate thickly with, say, Nelson's No. 1 gelatine, dry, and sensitise it in a 5 per cent. solution of bichromate of potash, and again dry. Print under

a strong negative, and then place in cold water. The gelatine will then swell up in bright relief where the light has not acted. The relief can then be moulded from in plaster-of-paris.

"BEGINNER" says: "I have a bottle of liquid labelled 'Chlorwasserstoffsäure.' I understand it can be used in photography. It is of yellowish colour, tastes nasty, has an unpleasant smell, and gives off smoke. Can you tell me what it is?" In reply: The liquid you have is known also as muriatic acid, spirits of salts, and hydrochloric acid. It has many uses in photography, and is employed in various formulae. It is also very useful for removing stains, etc., from photographic dishes and measure glasses. We trust you have not acquired a taste for "Chlorwasserstoffsäure," as the bottle should be labelled "Poison."

COPYRIGHT QUERIES.—"ARTIST" says: "A buys a picture, including copyright, from B and sells the copyright for publishing purposes, to C during the artist's life. The artist dies. Can A, when seven years from the date of the artist's death have elapsed, photograph and publish, or give or sell permission to be published, reproductions of the pictures which remain in his possession without regard or reference to C, who is publishing a large engraving of the picture?" In reply: The copyright expires seven years after the artist's death; then anyone can copy the original painting, but not copyright reproductions of it.

GELATINE—"PHOTOPHIL" says: "(1) He would be glad to know of any make of photographic dry plates for either negatives or positives in which the gelatine has not undergone any alum or other treatment to render it insoluble. (2) Also of a gelatine which liquefies only at relatively high temperature?" In reply: (1) We are quite unable to reply to this query, as we are not in the secret of the different plate makers. (2) Cignet's gold label gelatine; or, possibly, Nelson's "X Opaque" would answer your purpose. Both are very hard gelatines. The former would probably require the higher temperature to liquefy it.

SECOND-HAND LENSES.—"G. A. T." says: "I have a Dallmeyer 2B portrait lens which I can remember for at least twenty-five years. Will you kindly inform me whether the lenses catalogued to-day are the same, or whether the makers claim any improvement. What I really want to know is, if I buy a second-hand Dallmeyer 3B, or a 3A Ross, are they likely to be the same property value as a new Ross or Dallmeyer?" In reply: This is a query that it is a little difficult to answer. Of course leading opticians avail themselves of all the improvements made in optical glass, so it may be fairly assumed that modern productions are superior to the older ones. You must keep in mind that there is always some little risk in buying second-hand goods.

F. JUGGINS says: "I am about to dispose of my business as a photographer. Does the transfer of my business deprive me of my copyright in such negatives I have specially copyrighted?" In reply: The sale of a business, which may include many copyright negatives, raises the serious question of whether a separate assignment must be made for each subject, and the general impression seems to be that this is so, though we know of no authority being quoted to this effect. An assignment on one form, giving a list of the subjects assigned, should certainly be sufficient; and there is no apparent reason why a general assignment of "all copyrights" should not answer the purpose. In the case of an action on any given copyright it would be necessary to prove that it was one of the subjects so assigned.

"TONER" says: "I should be much obliged if you could let me know of a formula for toning collodio-chloride, matt. P.O.P., sepia, portrait brown, and black, one which will give clean, even tones, and is fairly reliable." In reply: Good sepia and brown tones are obtained by using the following:—A. Sodium tungstate, 840 grs.; distilled water, 40 oz. B. Ammonium sulphocyanide, 360 grs.; distilled water, 40 oz. C. Gold chloride, 15 grs.; distilled water, $3\frac{1}{2}$ oz. Make up one hour before required: A., 20 oz.; B., 5 oz.; C., $1\frac{1}{2}$ oz. To get pure blacks use: A., gold chloride, 1 gr.; sodium acetate, 30 grs.; water, 40 oz. B., Potass chloroplatinate, 1 gr.; phosphoric acid, $2\frac{1}{2}$ oz.;

water, 40 oz. Tone prints in A. until purple, and continue toning in B. Wash prints between A. and B. in three changes of water. Use A. once only. B. can be used again and again until action is too slow. In all cases print the C.C. darker than required when finished.

STUDIO LIGHT, ETC.—"NERNST" writes: "Will you kindly answer the following questions:—(1) The best way of drying unmatted 12 x 10 matt bromide prints to stop curling? (2) Can you address the makers of the 'Nernst' lamps? Do you know how long one burns—the average, say? Can they be used successfully for portraiture in studio, or do you think the arc light is better? (3) Do you know of any firm selling cabinet photographs showing the effects of different ways of lighting studio?" In reply: (1) We have always employed the following method, which we find very satisfactory: Place the prints between blotting boards free from fluff until surface dry. Hang up by the corners, and when dry, pass a straight-edge flat ruler over the back, pulling the print sharply out under the pressure. Let this be done on a clean smooth surface of course. All tendency to curl will be entirely eliminated by this means, and if the prints are now kept in a portfolio under pressure for a time they will remain quite flat? (2) The General Electricity Company, 71, Queen Victoria Street, E.C. 4. Write them for particulars of the light. We have had no practical experience in the studio with the light, so can express no opinion. (3) We know of no firm that publish such portraits, perhaps our readers can assist.

TRADE DISPUTE.—"PERPLEXED" says: "A postcard traveller came on me last November for an order for postcards. At the time I did not decide on definitely or give an order for. He sent the order (if given) would be delivered early in January. In January the firm wrote stating they could not procure views of the town in question, but would supply cards if addresses of local photographers were given. At this time I had decided not getting them, or giving an order for, as I had already received views of the town mentioned. As I did not reply to the letter or give addresses, I considered the order cancelled. A few days ago I received a bill from the firm for the postcard which I objected to take or pay for, on the grounds that the order was not given for nor executed in the stated time by the traveller. (2) The traveller's terms were for six views, each, at 22s. per 1,000. No mention of charge for taking negatives, and which I understood would be included in the order. In addition to this price they have charged £2 5s. for negatives. Can they compel me to pay this, as there was no agreement for charge of negatives?" In reply: If the facts are as stated by you, we should think you would be justified in refusing to receive the goods. But something may have happened upon the conversation you had with the traveller. The advice we can offer is that you consult your solicitor on the matter.

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THE BRITISH JOURNAL OF PHOTOGRAPHY "JUBILEE NUMBER (1854-1904).

To celebrate the completion of the fiftieth year of the British Journal of Photography we shall issue on June 10 a Special Jubilee Number of the publication, which is universally recognised as the oldest and most influential of its kind in the world.

The ordinary issue of the Journal of June 10 will be more than doubled in size in the text portion, and amongst other features will include, by way of supplement, an illustrated history of The British Journal of Photography, with portraits and Biographies of the Eminent Men of Science, Journalists, and Photographers who have been identified with the conduct of the paper during the last fifty years.

As a souvenir of a unique celebration in photographic journalism the "B.J." Jubilee Number will undoubtedly be in enormous request, as it is not too much to say that the history of the paper during the half-century of its existence is most intimately bound up with the history of photography itself.

Of this Special Issue of THE BRITISH JOURNAL OF PHOTOGRAPHY many thousand extra copies will be printed, as the normal demand for the paper will be very largely augmented. Moreover, it is intended to give the Jubilee Number a specially organised world-wide distribution, so that the greatest possible publicity will be secured for the paper on the completion of its fiftieth year of existence.

EX CATHEDRA.

Psychic Photography. On Thursday evening, May 26, Mr. Henry Blackwell, whose name has recently been associated in a prominent manner with "Psychic Photography," will address the members of the London and Provincial Photographic Association on the subject, and on the same occasion will show a series of illustrative slides. The meetings of the Association, we may remind our readers, are held at the White Swan Hotel, Tudor Street, Blackfriars, London, E.C., and visitors are always sure of a cordial welcome to them. It is of interest to recall the fact that rather more than eleven years ago the late Mr. J. Traill Taylor, Editor of THE BRITISH JOURNAL OF PHOTOGRAPHY, read a paper on "Spirit Photography" before the London and Provincial Photographic Association, which subsequently gave rise to considerable discussion and comment. In view of the fact that there has been a recrudescence of interest in this extraordinary phase of photography, we take occasion this week to reprint Mr. Taylor's paper. A perusal of it may possibly give some points to some of those desirous of joining in the discussion on Thursday night next who may be unfamiliar with what has hitherto been attempted and accomplished in psychic photography.

* * *

The Convention.

By the courtesy of Mr. F. A. Bridge, the Hon. Sec. and Treasurer of the Photographic Convention of the United Kingdom, we have received an advance copy of the book of the Derby meeting, which takes place in the week July 11 to 16 next. The frontispiece is a portrait of the President Elect, Mr. G. Herbert Strutt, from a negative by Mr. C. Barrow Keene, of Derby, and included are admirable illustrations of Dovedale, Haddon Hall, the old Smithy at Curnford, etc. Old Conventioners will no doubt appreciate a reproduction of the first Derby Convention group, taken in the year 1886, wherein some familiar photographic figures are to be seen. In the BRITISH JOURNAL OF PHOTOGRAPHY for next week we shall reprint the entire programme for the meeting. The excursions to some of the most romantic parts of Derbyshire should be immensely popular with visitors to the Convention, of whom no doubt a large number will put in an appearance. As Derby is easily accessible from all parts of England we predict a numerously attended and most enjoyable function, the success of which is assured beforehand in virtue of the fact that the President Elect and the local Executive will extend a most cordial reception to all present. Personally, we look forward to the Derby Convention as giving us the opportunity of meeting many old photographic friends and supporters of the JOURNAL.

Patent Office Work.

Much has been said and written in the main, not without justification, about the ease with which a patent may be taken out where actual novelty does not exist, while, in other countries, exhaustive examinations of the claim form a preliminary step. Yet that some examination does take place in this country is evident from a recent announcement from the Patent Office that there are vacancies for twenty-four situations as assistant examiners in the Patent Office. Those of our readers interested in patents may care to know that particulars of the examination—to be held in July next by the Civil Service Commissioners—may be obtained by sending for a form of application to that body. The address is Burlington Gardens, London, W.

* * *

Colloidal Silver.

One of the most remarkable discoveries of the late American chemist, Mr. Carey Lea, whose papers formed so valuable a feature of our pages some years ago, was that of colloidal silver. Doubt upon the conclusions he formed and the results he obtained has often been expressed, but his conclusions have usually been successfully vindicated. The latest publication of results in this direction are those of M. A. Chassevant, published in the Bulletin of the French Chemical Society. He obtained the product by mixing 500 c.c. of a 10 per cent. solution of nitrate of silver, 500 c.c. of a 30 per cent. solution of ferrous sulphate, and 700 c.c. of a solution of citrate of soda, the result being a reddish coloured deposit, which he allowed to settle for half an hour, and then filtered by means of a filter-pump. This precipitate of metallic silver possesses the remarkable property of being soluble in distilled water, and re-precipitable by alcohol, re-solution in water, and so on. The point of great interest about these results is the fact, which must now be admitted, that the precipitate of colloidal form is the metal itself. "The summary of all these facts," says the writer, "makes us admit, with Carey Lea, that all the preparations of colloidal silver contain the silver, not in a special allotropic form, but that the fine particles of silver, which were unable to become conglomerated at the moment of their production, have remained in the free state in solution."

* * *

Miniature Painting.

At one time—in the earlier days—coloured photographs were very much in vogue, and pretty high prices were obtained for the colouring. Daguerreotypes were coloured, glass positives were coloured, and paper pictures were coloured; and very good some of them were when done by good artists. Just now there seems to be a rising taste for coloured photographs as miniatures; and portrait photographers will do well to cultivate it, as it will prove a profitable branch of their business. But the work should be well done or left alone, because a badly-coloured photograph is anything but a work of art. Anent the subject of miniatures, we see that at a sale of a part of the Hawkins Collection at Christie's one day last week a miniature by Holbein of Frances Howard sold for an extraordinary high price. The bidding commenced at £470, and, after spirited competition, was knocked down for £2,700. A pair of oval miniatures of children realised £1,000. High prices for pictures are sometimes obtained in Edinburgh as well as in London. A few days ago a portrait by Raeburn was, at auction, knocked down to a Glasgow buyer for 1,175 guineas; but there was afterwards some dispute, and the picture was put up again, when it realised the not insignificant sum of 2,600 guineas. Many are complaining just now that money is scarce, but from the

above it would seem that there is still some left for picture market.

* * *

Astronomy at the Sailors' Palace.

An interesting ceremony took place Friday last when the Marquess Northampton declared the observatory and telescope for the King Edward VII. Nautical School open. The observatory is at Sailors' Palace at Limehouse, which is pretty well known as "Jack's Palace." The telescope, an equatorial, is a really new one, as it was originally made in 1874—thirty years ago—but additions and improvements have been made which bring it up to date. The instrument is of the usual form of Sir Howard Grubb's standard equatorial, with an eight-inch object glass, with an eight-inch focus. In power it is manifest that it is not equal to instruments now in use in all the principal observatories, but it is such a one that many of the important astronomical discoveries have been made. At the time it was made—thirty years ago—it would be looked upon as quite equal to the requirements of any standard observatory. The observatory and the telescope, it should be mentioned, are the gift of the late Louisa Lady Ashburton. We are not aware if the telescope will be utilised for photographic purposes; but probably it will at times, when atmospheric conditions will permit, which we fear will be very frequent. Limehouse is certainly not the ideal situation for an astronomical observatory, even if photography were not an object in view. The atmospheric conditions that usually prevail in that district are conducive to successful observations by means of photography. But there is no question that the observatory and its telescope, will prove exceedingly useful to students at King Edward VII. Nautical School.

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Indecent Picture Postcards and Stereoscopic Slides.

Some months ago, it may be remembered, we directed attention to the character of many of the pictorial postcards which were to be seen in some of the shop windows, and expressed the hope that the production of such pictures would not militate against the popularity of the picture postcard, the production of which has now become an important industry. Since that time there have been several prosecutions for exhibiting for sale pictures of an indecent character. Only last week the police made two raids in the East End, and seized between eight and nine thousand of these objectionable things. In the one case the defendant had to pay 100 shillings, the costs of the court, and five guineas for the solicitor's costs. In the other the defendant was mulct in a fine of three pounds and two guineas costs. In both cases the cards were ordered to be destroyed. It is to be hoped that the vigilance of the police in this matter will put a stop to the traffic in these indecent and vulgar pictures before the popularity of the pictorial postcard becomes seriously impaired. For some two years past there has been a gradual revival in the popularity of the stereoscope. It is the very general opinion with those who can remember the time when it was once so popular in almost every house that its decadence was largely brought about by the introduction of pictures of a vulgar or indecent order. We allude to this sub-ject now because we have recently seen exhibited in some shop windows stereoscopic pictures of a very dubious character. If they were not actually indecent, they were vulgar, if not more by suggestion. This sort of thing must not be encouraged, or it will certainly militate against the stereoscope again becoming popular in good society.

**Plate
Fogging.**

A potent cause of fogging of plates, which, though we have frequently called attention to it, is still but little recognised, is one or more of the many forms of black varnish used to blacken the insides of cameras and slides. The persistence of this fogging effect, as we know to our cost, is almost incredible; we possess slides which have not been varnished or otherwise treated for years past, which have purposely been left open and exposed to a free current of air for days at a time, but in which, even yet, we should never think of leaving a plate for a much longer time than a day or two, as we know they would become fogged. Dr. Russell, a summary of whose investigations in this direction we published in these columns, gave a list of the substances the emanations from which produced this untoward effect, and the most probable acting cause on the list would seem to be turpentine, a liquid playing an important part in the manufacture of many of the black varnishes of the day. Another substance has been added to the list by Herr E. van Aubel, who finds that resin is capable of acting in the manner described by Dr. Russell. This is an important fact to bear in mind, as it also, from motives of economy, is often used to give body to varnishes, to the partial displacement of shellac. There is, however, still another direction in which its unexpected presence may be looked for. It has been notified that large quantities of resin have been exported to India, and the use for which it is suggested is the adulteration of shellac. It would be doubly hard to find this most valuable substance rendered not merely less efficient by reason of the sophistication, but also likely to become a fog producer by reason of the presence of this newly-discovered fog producer.

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**A New
Photographic
Map of
the Moon.**

Photographic representations of the moon, of various sizes and in different phases, have been produced in abundance, some being purely photographs taken direct, others enlargements more or less faked, to use an acknowledged photographic term; but, so far, a complete photographic atlas had not been published till quite recently, Professor Pickering having just brought out one of great interest, especially with regard to conditions of permanency or change in the surface of our satellite, usually considered as fixed and unchangeable, but which Professor Pickering brings forward photographic proof to show a daily change in. Apart from his astronomical interest, the views will appeal to photographers. The object glass employed—the funds for which were supplied by two anonymous donors—is of extraordinary focal length—no less than 135 feet—the diameter being 12 ins. The direct negatives obtained attain, in consequence, the great diameter of 16 ins. To produce stellar or selenographical negatives of extreme sharpness, it is necessary to work under conditions of atmospheric homogeneity that are difficult to meet with very often; and to obtain such conditions the telescope was set up at Mandeville, in Jamaica, 2,080 ft. above sea level. So excellent were the atmospheric conditions that the fourscore of views, consisting of sixteen sections, each exhibited under five different phases, were completed in the short space of seven months. The author found that changes in the appearance of certain regions, brought about by variations in illumination, were so great as to render it impossible to recognise the same formation when taken, say, at sunrise and sunset, so that it became necessary to produce photographs at times between the two. Further difficulty was experienced by the misleading results which variations in the time of exposure and development brought about.

**Postcard
Exhibition.**

The little crowds which gather round the many shops in London where postcards are displayed indicate that much interest is felt in this modern method of making up a picture gallery. And it must be admitted that many of these cards are most attractive, the purely photographic ones being masterly productions, and some of the landscape designs in colour well worthy of a place in an album by reason of their artistic qualities. Such high praise cannot, of course, be extended to the mass of pictorial cards, for some are vulgar and utterly inartistic; but the producer has many needs to meet, and the best things are caviare to the majority. There is just now being held at Paris, in the Place de l'Alma, an exhibition of postcards—a *Salon* devoted to that branch of art and nothing else. Handsome prizes have been awarded by a jury with conspicuous generosity, says the Paris correspondent of the "Daily Telegraph;" and the exhibition, generally, is a success. We are told that the postcards illustrated by photogravure are, on the whole, the most artistic, although it is somewhat difficult to understand how artistic qualities can be conferred upon a picture, except in a very minor degree, by the method of production. The landscape views printed in colours are said to be remarkably good, a few of them being as effective as hand-painted water-colours. This we can quite believe, for our French neighbours have always been good at colour printing. One of the great attractions of the exhibition is a machine which prints 2,000 postcards an hour in several colours, both the back and the front of each card being impressed simultaneously. Seeing that postcards are now so popular, it might be worth the while of our photographic societies which get up exhibitions to devote a section to camera pictures of this kind.

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**Photographic
Deceptions
on the
Public.**

More than once we have called attention to a fraud that is committed on the public by not a few unscrupulous photographers. It is the palming off of silver prints of the gaslight type as platinotypes, or those by a platinum process, at an enhanced price, and at such prices as, compared with those charged for ordinary silver prints, would permit, with a good margin of profit, of the genuine thing being supplied. After we last called attention to this subject we received a letter from the Platinotype Company, saying they were taking legal opinion as to the best way of preventing the passing off of silver prints as platinotypes. We are now given to understand that some photographers are now, instead of using the word "platinotypes," adopting the word "platinos" on their receipts. This the general public will, usually, take to mean an abbreviation of the word "platinotypes," and assume that they are receiving, for the extra price they pay, genuine platinum pictures, while they are really supplied with silver prints. We have always looked upon the term "platinotype" as a misnomer, inasmuch as the prints contain no platinum whatever—they are silver prints pure and simple. It would seem that this misleading of the public is not entirely confined to platinum. The other day we looked at a photographer's show cases and noticed on one side of the entrance a show case of cabinet specimens labelled "Ivory finish, Three for two-and-sixpence." On the other side was another case with specimens, of the same size and smaller, trimmed to long ovals or rounds, mounted on coloured boards; these were silver prints on matt paper, toned to a brown or sepia colour, and were described as "Carbon tones. Three for seven-and-sixpence"—three times the price of the full size cabinet pictures. The lay public, in paying three times the price of ordinary prints, would naturally surmise that they would receive

veritable carbon pictures, while they would be supplied with silver prints. For the credit of photography and reputable photographers, it is very desirable that this system of misleading—we do not use the term fraud—should be put a stop to. The Merchandise Marks Act would no doubt do so if put into force; but who is to do it? This is a matter we should suggest that the Professional Photographers' Association should take into consideration for the benefit of reputable members of the craft. Both the carbon and the platinotype are processes of undoubted permanency, while the stability of all silver is more or less dubious, and it would be unfortunate that the reputation of the two former processes should be sullied in the eyes of the public by their having silver prints foisted upon them while they are paying, as they imagine, for genuine carbon or platinum ones.

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Hope for Snapshotists. When it first began to be realised that the gelatine plate was so rapid in its action that a picture could be taken whilst the camera was held in the hand, the idea was entertained that such a method of securing pictures with an instrument disguised to look like something else would be of enormous service to the police. So the first hand appliances for taking photographs were known as detective cameras. We now know well enough that a photograph which detects anything is quite a rare thing. The presence of a particular person among a crowd has occasionally been proved by a tell-tale photograph, but this has been by accident and not by design of the photographer. The detective idea has long ago been discarded as an aid to the suppression of crime; but we have still with us the hooligan snapshotist, whose delight it is to take pictures of his fellow-creatures under equivocal circumstances. If this pest can only secure the picture of somebody in a position or under conditions which would be the last in which the victim would choose to be pictorially represented the hooligan is happy. Like his brother of the pavement, his notion of joy is to make others suffer; that, indeed, seems to be his one aim. Possibly persons of his class do not read the newspapers very thoroughly, and content themselves with a glance at the police reports and the sporting notes. But if their studies should extend to the shorter paragraphs which fill up odd corners of the pages they may have lighted upon an item which will raise hopes in their breasts of fresh worlds to conquer. A worthy doctor who lives at Gloucester has issued a pamphlet advocating the employment of skipping as an unsurpassed form of home gymnastics. He tells his readers that that exercise is of special value as a means of correcting the weakness of the heart, which is apt to occur in persons of sedentary life, and that it is an unequalled resource for those who wish, at no appreciable expense and with little expenditure of time, except at odd moments that are at the command of everyone, to supply the lack of outdoor exercise which those of quiet occupations suffer from. The doctor is no doubt right, and is but following the example of the great Abernethy, who would sometimes in his rude manner send away nervous patients with the intimation that instead of coming to him they should go and buy a skipping-rope. So we may expect that many persons will follow this advice, and in the intervals of writing, reading, and other studious occupations will run into their gardens and skip. Here comes in the opportunity for the photographic hooligan. He will haunt empty houses in order to secure pictures of persons skipping in adjoining gardens, and if he can only catch a well-known politician, a clergyman, or a judge on the hop he too will "leap like a hart" in his delight. And, of course, such pictures of well-known men would have a considerable market value. At present there is no law to prevent a

snapshot of a man or woman being dealt with commercially, but if skipping becomes common, and the action is the subject of surreptitious photography, the law will have to step in and put a limit upon the work of the hooligan. Skipping or no skipping, it would be a very good thing if there were some means of preventing the carriers of hand cameras from committing breaches of good taste.

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Patent Medicine Photography.

It is recorded of the late Mr. Holloway who was the first of the great nostrum advertisers, that he started with a capital of only one hundred pounds, and that he spent nearly every penny of it in advertising his pills. As everyone knows he died a very rich man, and as he spent the bulk of his fortune in good works—of which the Holloway Sanatorium and the Holloway College are splendid evidences—his name should be revered with those of all other public benefactors. Success breeds imitation, and now the patent medicine vendors can be reckoned by the score, and, where Holloway spent hundreds, his followers spend thousands upon advertising their wares. But a pushing man in the days must adopt new methods, or he is quickly left behind in the race for popularity, and the newest plan of advertising a medicine seems to be the illustrated booklet. Such a publication lies before us, by which we mean that it rests before us in a reclining posture, for we have no reason whatever to doubt its strict veracity. It is a model of succinct statement and apposite illustration, and as the pictures are taken from photographs it would serve as an admirable guide for the compilation of a lantern lecture. We must not, of course, quote it by name, nor must we give the actual names of those who figure in the volume, for we might inadvertently trespass upon the law of libel or copyright; and, even if we did neither the one nor the other, we should certainly tread upon the susceptibility of our advertising manager. We can give, therefore, on a garbled account of this interesting publication—interesting to us and to our readers by reason of its indication of somewhat new application of photography. It has a picture on the cover and a title something like this: "The Marvellous Story of Mary Creegan." There is not a word about medicine, or any hint of the kind, until you get well on into the volume, when you read with solicitude that the heroine has something the matter with her internal anatomy. No one knows what is the nature of the strange disease. She is sent to the County Hospital (first slide, County Hospital exterior), and, although the doctors and nurses do all they can for her (second slide, heroine in bed surrounded by weeping staff), she gets no better. She is moved to another hospital (third, picture of other hospital), but her malady increases, and she is given up for lost (fourth, picture of cemetery). By a lucky accident her friend, Mrs. Smith, calls upon her, and asks her whether she has ever tried "Dr. Lucas's lilac lozenges for lopsided lunatics." She does try them, and after taking one box of the precious morsels she is restored to full health and dances about the hospital wards. Here follow pictures of the crutches she discarded, of the spinal board which she was about to convert into a motor-car, of the leather jacket in which she was for months encased, which will now form the nucleus of a fashionable corset, and of the many other melancholy memorials of her weary life in the two hospitals. There are other stories in the book quite as touching, with illustrations of the same nature. All the pictures are taken from photographs, and as a photograph is always, or nearly always, a correct representation of what it purports to illustrate, the booklet is a most convincing one. It will no doubt convince the large class for whom it is intended and will stimulate the popular idea that medicine can

urgery have much to learn from the compounder of the black nostrum.

THE WEATHER PLANT.

no busy worker, with the exception, perhaps, of the farmer and the umbrella manufacturer, are the vagaries of the weather more important than they are to the photographer. To the professional bad weather may mean a serious loss; to the amateur it brings sadness and disarrangement; while to the platemaker, as well as the alarmer in photographic material, a rainy season, such as experienced last year and the year before, means a terrible reduction in turn-over. The same may be said with regard to the drapery and other trades, which depend much upon seasonable changes of clothing and the caprices of fashion for the prosperity of their business. It is, indeed, a matter of enormous importance to us all that our knowledge of climatic changes—which is at present limited—should, if possible, be increased. Unfortunately, science holds out very little hope for us in this direction. We have various descriptions of barometers, but these, alas! give us no more than an indication of the weight of the atmosphere, as their name, indeed, implies, and we know how unreliable in its prognostications the home barometer is liable to be. By means of correlating observations from various points, as is now possible by the aid of the telegraph, barometrical readings furnish those forecasts which are published in the daily journals, and although these have been proved trustworthy to a certain extent, they are by no means infallible. What we want is a means of foretelling the state of the weather quite a month ahead, so that we could govern our respective arrangements accordingly; but at present there is no hope of such a boon being vouchsafed to us. Other nations have their regular rainy season, and can invest in watertight boots and clothing with a sure prospect that it will come. But our rainy season is always with us, and ready to pour out the vials of its wrath upon our unfortunate heads.

Among the many contrivances which have been made for guessing the kind of weather that is coming to us are many which do no more than inform us that the air is in a hygroscopic condition. There used to be sold a common form of weather toy, which represented a little house with two doorways, out of one of which came a man when the rain was at hand, and out of the other a woman when fine weather might be expected. This depended altogether upon the amount of moisture in the air, the motive power which swayed the see-saw upon which the figures stood being a piece of twisted catgut. The flag of sea-weather was another instance of a hygroscopic substance being used for weather prediction. In India there are a number of plants which get flaccid in moist air, and these are often used in the same way.

But there is one growth which, by its alleged virtues, has earned the name of "weather plant," and a good deal of correspondence in the "Times" has recently centred upon it. As usual in such cases, there are differences of opinion as to its merits, and we propose to review these, so that our readers may judge for themselves as to its efficacy or the reverse.

The plant is described as a tropical weed, and is technically known as *Abrus precatorius*. It has found a strong advocate in Professor Nowack, of Vienna, who, as long ago as the year 1888, published the outcome of his experiments with the plant, with the result that our authorities in Kew investigated the matter. The results of their experiments will be referred to presently. Professor Nowack

claims that during the Vienna Jubilee exhibition he was able to make forecasts, by means of this plant, from hour to hour, and two or three days in advance, for six months, and that their correctness caused general surprise. He had the same success in Bohemia, and Moravia, and the local authorities as well as the agricultural societies gave him testimonials to the efficacy of his method of forecasting. The Austrian Admiralty, after trying the system, gave the professor a testimonial in which occurs the following statement. "The results which you have obtained are undoubtedly such as to prove that by your system the weather can be prognosticated, not only with certainty but for a long time in advance. . . There can exist no doubt that this discovery, if used methodically, is of far-reaching importance to meteorology."

The weather plant and its behaviour again came up for consideration at a recent meeting of the Foreign Press Association at the rooms of the Society of Arts, and although the assembly had no connection with the Society beyond meeting in its theatre, such a number of inquiries about the plant have since been addressed to the Secretary, Sir H. Trueman Wood, that he has been moved to write to the "Times" to tell briefly what he knows about the matter.

He tells us in this communication that a very careful investigation into the powers of the weather plant was carried out at Kew. The plant, it seems, is very sensitive to changes of temperature and variations of light, and we presume that it shows this sensitiveness by a vigorous or a drooping appearance. For about a month careful observations were made, and Professor Nowack prepared, from the behaviour of the plant and the movement of its leaves, a series of forecasts, which were subsequently compared with reports of the actual weather experiment. Between these there appeared to be no correspondence, and the Kew authorities were convinced that any connection between the behaviour of the plants and the future weather, either local or distant was entirely imaginary. For further information readers of the "Times" are invited to refer to the "Kew Bulletin" No. 37, which is devoted entirely to the weather plant. From this it would appear that *Abrus precatorius*, which is so reliable abroad, is of little use in this country, a thing which does not excite our surprise, for we have long known that the English weather, and its ways are past finding out.

Professor Nowack, however, takes quite a different view of the matter, and very plainly indicates that his protégé did not have a fair trial at the Gardens of Kew. The investigations and tests, he says, were neither very exhaustive nor very careful. They only lasted for eight weeks, whereas at least a year should have been devoted to them. He complains that the primary conditions of the sensitiveness of the plants and the observations were not fulfilled. The right temperature was not kept up, and the plants "caught cold" in consequence, they became less sensitive—in fact, they died off. Another complaint he makes is that he was not permitted to continue the observations during the night, when the plant is not influenced by daylight, to which it is most susceptible. He also tells us that of 145 weather forecasts made under these unfavourable conditions, seventy were correct and twenty-five nearly correct. When physicians disagree, who shall decide?

The weather plant, according to Professor Nowack, is also capable of predicting seismic and other disturbances; and he claims that during these experiments at Kew he actually predicted, twenty days before it occurred, a disastrous fire-damp explosion, which took place at Longton, in Staffordshire. We regret that in his letter he is not a little more precise upon this point. If he means that he actually spotted the place of a coming disaster of the kind,

the weather plant should certainly be adopted in our country, and in every other country where coal is mined. But if it merely gives an indication that an accumulation of fire-damp may be looked for, the barometer will afford the same information, and it is not of much more significance than a prophecy in "Moore's Almanac."

So it remains an open question whether this plant is useful to us as a forecaster of meteorological phenomena or not. One thing, at least, we glean from the correspondence, and that is that the plant must be kept in a hot-house, so that the right temperature for it may always be maintained. This condition would certainly limit its usefulness, for comparatively few persons are furnished with such conveniences. In towns and cities hot-houses are almost unknown, except on the premises of florists, and they are not likely to add the work of the meteorologist to their ordinary business.

But even supposing that the weather plant will consent to do all that Professor Nowack claims for it, should we be much better off? Most of us do not care so much for forecasting the weather as we do for getting some kind of control over its vagaries. It may be a satisfaction to some persons to know that a small deluge may be expected within the next twenty-four hours; and if they have a plant or something which will ominously shake its head as a warning, they will feel supremely happy. For our part, we should not be content unless we had the power of shunting the deluge to a convenient time, say, the middle of the night. When science can give us a helping hand in this direction, we shall be truly grateful. We have all heard how, in some places abroad, rain has been brought down by the firing of cannon, and hailstorms have been rendered innocuous in wine-growing districts by the explosion of aerial bombs. But no one, as far as we can ascertain, has ever contrived a means for securing fine weather. Here is a fine field for the inventive mind. If some ingenious one will only see his way to hit upon an effectual method of securing this boon, the photographers will be among the first to give his scheme any support which it may require.

MESSRS. NEWTON AND Co., the opticians, of 3, Fleet Street, who have held appointments to the Royal Family continuously since 1844, have this week been honoured by a warrant of appointment as scientific instrument makers to H.R.H. the Prince of Wales.

PHOTOGRAPHERS in the Midlands will have an excellent opportunity of seeing the interesting exhibition of American work now being shown by Kodak, Ltd., at 43, Clerkenwell Road, London, E.C., at the forthcoming Convention, as arrangements have been made to include the pictures in the Trade Exhibition to be held in the Albert Hall during the Derby Meeting, July 11-16.

To ensure the proper compliments being paid to Princess Alexandra of Teck when passing the military guards in Aldershot Sir John French has given directions that a photograph of her Royal Highness be hung in the regimental libraries so that men going on guard can make themselves acquainted with her features.

THERE were some attractive exhibits of a partly geological, partly geographical, character shown at the recent conversation of the Royal Society. One of the most attractive of these consisted of two series of photographs shown by Mr. Francis Fox. The first series was illustrative of the operations at the Simplon Tunnel. There were some fine transparent stereoscopic views of the interior of the tunnel; there were also specimens of the cutter, of the Brandt Hydraulic Drill, by means of which unprecedented progress is made producing no dust, whereby miners' phthisis is avoided. The other series shown by the same exhibitor was illustrative of the Victoria Falls of the Zambesi, including some stereoscopic and other views of the Falls. There was also a photograph of the arched cantilever bridge, with a span of 500ft., now being constructed across the gorge. It will form the great gateway into the interior of Central South Africa. The lantern illustrations by Mr. Fox of these two vast enterprises formed one of the most attractive exhibits in the lecture rooms.

"SPIRIT PHOTOGRAPHY," WITH REMARKS ON FLUORESCENCE.

[Appended is the paper on "Spirit Photography," by the late Mr. J. Traill Taylor which reference is made in our "Ex Cathedra" Notes this week. The paper was originally read before the London and Provincial Photographic Association, March 1893.—Eds. B.J.P.]

THE presence of smoke may be considered as implying the existence of flame. Spirit photography, so called, has of late been asserting its existence in such a manner and to such an extent as to warrant competent men making an investigation conducted under stringent test conditions, into the circumstances under which such photographs are produced, and posing the fraud should it prove to be such, instead of poisoning it as insensate because we do not understand how it can be otherwise a position that scarcely commends itself as intelligent or philosophical. If in what follows I call "spirit photography" instead of psychic photography, it is only in deference to a nomenclature that extensively prevails and not as offering a surmise from any knowledge of my own as to what is matter and what spirit, or the distinction between mind, spirit, and matter, for, in truth, I don't know. I approach the subject merely as a photographer.

ORIGIN OF "SPIRIT" PHOTOGRAPHY.

Before I proceed, a few words on the origin of spirit photography may not be out of place. In March, 1861, W. H. Mumler, the principal engraver in the employ of Bigelow Brothers and Kennard, the leading jewellers of Boston, when while away an idle hour as an amateur photographer, had a form other than that of any one present developed on his collodion plate. He surmised that it arose from an image having been previous on the plate, and its having been imperfectly cleaned off. Subjected to a more thoroughly cleaning, the form again appeared more strongly marked than before, and he could offer no other explanation than the one given. It got noised abroad through the Press that a spirit had been photographed, and although Mumler strove to suppress the misrepresentation, as he regarded it, yet he eventually succumbed to popular demand, and took two hours a day from his regular work, devoting this to photography. This he had to extend to the whole of each day, entirely discarding his regular profession. Many men of eminence sat to him, most of whom he did not know at the time. He seems to have encouraged his sitters in the adoption of such test conditions as they deemed satisfactory. The figure that usually appeared on the plate with the sitters were, if rightly infer, those on whom the sitters' minds had been set. That eminent portrait photographer, Mr. Wm. Black, of Boston, so well known all over the world as the inventor of the acitrate bath, undertook to investigate the bona-fides of Mumler's methods. Through a friend, who had just previously sat at a sitting, Black offered fifty dollars if Mumler would operate in his presence and obtain a picture. Invited to call on the acute Black critically examined camera, plate, dippers and bath, and had his eye on the plate from the moment preparation began until it was sensitised and locked in the dark slide, removing it himself from the camera, and carrying it into the dark room, where, on development, a figure of a man was seen leaning on B.'s shoulder. Black was wonderfully stricken, and got away the negative, no charge whatever having been made. Mumler now claimed publicly to be a spirit portrait photographer, and as such he eventually opened a studio in New York, having previously satisfied Silver, Gurney, and other photographers as to the genuineness of his claims, never hesitating to operate in their galleries if required, and with their apparatus and chemicals. Mumler was arrested in New York; whether on the ground of witchcraft or of endeavouring to obtain money under false pretences, I am at present uncertain, but his trial was the sensation of the day, and numerous witnesses were examined. He was honourably acquitted.

SOME INVESTIGATORS OF THE SUBJECT.

In this country, several who are amateur photographers have

investigated this subject with more or less success. These include some F.R.S.'s, scientists, artists, and others. I question whether any have so persistently done so as the late Mr. John Beattie, of Clifton, and his friend, Dr. Thompson. Mr. Beattie was a skilled professional photographer of the highest eminence, who sometimes, prior to his death, had adopted the views of the spiritualistic school. The figures he obtained on his plates were much blurred in outline, some being misty in the extreme. I possess some two or three dozen of these taken in or in the presence of, Mr. Beattie, whose intelligence, honesty, and powers of observation no one would venture to doubt. Many such photographs are claimed to have been produced by Hudson, a professional photographer, formerly of the Holloway Road, and I submit for examination a work by the late Miss Houghton, containing fifty-four of Hudson's spirit photographs.

There are many ways by which, assuming the genuineness of any one of all spirit photographs hitherto produced, the curious article may be made even better than any alleged real ones I have yet seen. A plate secretly impressed previously to being placed in the camera, fulfils the condition; so does one at the back of which is placed a phosphorescent tablet in the dark slide. Pressure on the surface, such as by that of a Woodbury relief film, also causes a developable image; in short, trickery in a whole variety of forms may and has been impressed into the service.

PHOTOGRAPHING THE INVISIBLE.

The higher department of fluorescence may with success be employed. Here is something to which believers in the visibility of spirit forms to a camera are quite welcome. At the time, and apropos to the Mumler trial in New York, I wrote at a good many absurd things had been said pro and con on the subject; but a writer in the latter category, who asserted that anything that is visible to the eye of the camera, and thus capable of being depicted by photography, must therefore be necessarily be visible to the human eye, was surely ignorant of that important branch of physics popularly known as fluorescence. Many things are capable of being photographed which to the physical eye are utterly invisible. Why, for that matter, a room (visually dark) may be full of the ultra-violet rays of the spectrum, and a photograph may be taken in that dark light. Objects in a room so lighted would be plainly visible to the lens of the camera—at any rate, they could be produced on the sensitive plate, while at the same time not a atom of luminousness could be perceived in the room by any person possessing ordinary or normal vision. Hence the photographing of an invisible image, whether it be of a spirit or a lump of matter, is not scientifically impossible. If it reflect only the ultra-violet rays of the spectrum, it will be easily photographed, although quite invisible to the sharpest eye. Again, Cromwell F. Varley, F.R.S., well known as one of the most eminent of electricians, says ("Eclectic," June, 1871), when passing a current of electricity through a vacuum tube, the results of which were indicated by touches of light about the tubes: "In one instance, although the experiment was carried on in a dark room, this light was so feeble that it could not be seen, and the operators doubted if the current were passing, although photography was at work, and in thirty minutes a very good picture was produced of what had taken place. This," he says, "is a remarkable fact; indeed, it borders on the wonderful that a phenomenon invisible to the human eye should have been, so to speak, seen by the photographic lens, and a record thereof kept by chemical agency. It is highly suggestive, and we may anticipate that it will be turned to good account by practical philosophers."

FLUORESCENCE.

Some very striking phenomena in photographing the invisible may be produced by the agency of fluorescence. Figures depicted upon a background by one or other of certain substances

I shall presently name, although invisible to the eye, may become visible to the camera. Of these, the best known, although not the most effective, is disulphite of quinine. Such a solution, although to the eye it is colourless like water, is to the camera as black as ink. Fill three phials respectively with water, quinine, and common writing ink, and you have two whites and one black; but photograph them, and you have two blacks and one white. The camera has reduced the transparent quinine solution to the colour of the ink. Those of you who may care to experiment in this direction, please take notice that the quinine must be acidulated with sulphuric acid, and that hydrochloric acid, even a small trace, will destroy this property. Among other substances that are fluorescent, or that change the refrangibility of rays of light, are mineral uranite, certain salts of uranium, canary glass, alcoholic solution of chlorophyll, rescaline, tincture of stramonium seeds, and of turmeric. There are others known to be still better, but my experiments in this direction are yet too incomplete to warrant my even indicating them.

Let me for a moment enter the realm of speculation, and assume that there are really spirits invisible to the eye but visible to the camera and to certain persons called seers or clairvoyants only. Might we not suggest that there is some fluorescent compound in the eyes of such persons not present in those whose eyes are normal, and that it is to this they owe their seeing powers? Some of you may probably be aware that Dr. Bence Jones and other philosophers have actually established the fact of such fluorescent substances being found in some eyes. May this throw any light upon the recognised fact of certain animals being able to see in the dark?

When the subject of fluorescence is more thoroughly investigated (it is a discovery of Sir D. Brewster, who was followed by Herschel and Professor Stokes, and is as yet but of yesterday), we may hope for a vast accession to our knowledge of subjects as yet very slightly understood.

At the Bradford meeting of the British Association for the Advancement of Science, in 1873, Dr. Gladstone, F.R.S., demonstrated before the Mathematical and Physical Section what I have said respecting invisible drawings on white cards having produced bold and clear photographs when no eye could see the drawings themselves, and I brought away back to London these photographs, and, for aught I know, may have them still.

A LADY'S JOKE.

To prevent this disquisition from being too dry, I will here introduce a fanciful sketch I wrote apropos of Dr. Gladstone's demonstration at the time mentioned:—

A mischievous young lady of scientific proclivities who attended the meeting of the British Association, and who was addicted to practical joking, listened attentively to Dr. Gladstone's observations upon the properties of quinine referred to, and having carefully noted the discussion that followed, reasoned within herself thus: If solution of quinine can make invisible marks on paper which will come out black on a photograph, it ought to do the same when applied to the skin. So she procured some of this solution, and upon her fair brow she painted with it a death's head and cross bones. These, of course, were invisible to human vision. Thus prepared she went to a photographer to have her portrait taken. All went right until the operator went in to develop the plate, when she soon heard an altercation between the photographer and the attendant boy, in which it was evident that the latter was being charged with having coated an old or dirty plate.

A second negative was taken, with this result, that the operator, after bestowing a puzzled, affrighted look at the lady, rushed downstairs to the principal of the establishment. Both returned to the dark room, and a third negative was taken, when it became evident that intense excitement was being produced in the dark room. After an excuse to the lady about

there being electricity in the atmosphere which had affected the chemicals, she was requested to sit once more.

Scarcely had the plate been developed when both photographer and assistant rushed out from the dark room, pale and excited, and explained that on the brow of the sitter in each negative was emblazoned the insignia of the King of Terrors. The negatives were produced, leaving no doubt of the fact. What was to be done?

The sitter hinted something about not being disposed to be made a fool of by one who she was satisfied was a spirit photographer, and that she, for one, would not allow herself to become the victim of such absurdity. This upset the equanimity of the photographer, who expressed his earnest conviction that she was an emissary and personal friend of the common enemy of mankind.

"I shall look in again to-morrow," said the lady, in her sweetest tones, "if you promise not to play any of your silly ghost tricks upon me."

"Not for ten thousand worlds," said the artist, "shall you ever set foot within my studio again."

"Oh," she laughingly rejoined, "I shall drop in through the roof and visit you some day when you are disengaged"; and with that she departed.

"I knew it!" gasped the photographer. "I felt a sulphurous odour the moment I came near her. Send immediately for my friend, the Rev. —, and get him to offer prayer, and free the studio from the evil influences remaining after a visitation from one whose feet, although clad in boots, would, if examined, be found to be 'cloven.'"

SOME PERSONAL EXPERIMENTS.

For several years I have experienced a strong desire to ascertain by personal investigation the amount of truth in the ever-recurring allegation that figures other than those visually present in the room appeared on a sensitive plate. The difficulty was to get hold of a suitable person known as a sensitive or "medium." What a medium is, or how physically or mentally constituted to be different from other mortals, I am unable to say. He or she may not be a photographer, but must be present on each occasion of trial. Some may be mediums without their being aware of it. Like the chemical principle known as catalysis they merely act by their presence. Such a one is Mr. D., of Glasgow, in whose presence psychic photographs have long been alleged to be obtained. He was lately in London on a visit, and a mutual friend got him to consent to extend his stay in order that I might try to get a psychic photograph under test conditions. To this he willingly agreed. My conditions were exceedingly simple, were courteously expressed to the host, and entirely acquiesced in. They were, that I for the nonce would assume them all to be tricksters, and, to guard against fraud, should use my own camera and unopened packages of dry plates purchased from dealers of repute, and that I should be excused from allowing a plate to go out of my own hand till after development, unless I felt otherwise disposed; but that, as I was to treat them as under suspicion, so must they treat me, and that every act I performed must be in presence of two witnesses; nay, that I would set a watch upon my own camera in the guise of a duplicate one of the same focus—in other words, a would use a binocular stereoscope camera and dictate all the conditions of operation. All this I was told was what they strongly wished me to do, as they desired to know the truth, and that only. There were present, during one or other of the evenings when the trials were made, representatives of various schools of thought, including a clergyman of the Church of England; a practitioner of the healing art who is a Fellow of two learned societies; a gentleman who graduated in the Hall of Science in the days of the late Charles Bradlaugh; some two extremely hard-headed Glasgow merchants, gentlemen of commercial eminence and probity; our host, his wife the medium, and myself. Dr. G.

was the first sitter, and, for a reason known to myself, I used a monocular camera. I myself took the plate out of the packet just previously ripped up under the surveillance of two detectives. I placed the slide in my pocket, and exposed it by magnesium ribbon which I held in my own hand, keeping one eye, as it were, on the sitter and the other on the camera. There was no background. I myself took the plate from the dark slide, and, under the eyes of the two detectives, placed it in the developing dish. Between the camera and the sitter a female figure was developed, rather in a more pronounced form than that of the sitter. The lens was a portrait one of short focus, the figure being somewhat in front of the sitter was proportionately larger in dimensions. I submit this picture. It is, as you see, a lady. I do not recognise her or any of the other figures I obtained as like any one I know, and, from that point of view, that of a mere investigator and experimentalist, not caring whether the psychic subject were embodied or disembodied.

Many experiments of like nature followed; on some plates were abnormal appearances, on others none. All this time Mr. D., the medium, during the exposure of the plates, was quite inactive. After one trial, which had proved successful, I asked him how he felt and what he had been thinking of during the exposure. He replied that his thoughts had been mainly concentrated upon his chances of securing a corner seat in the smoking carriage that night from Euston to Glasgow.

HOW THE PSYCHIC FIGURES BEHAVED.

If the precautions I took during all of the several experiments, such as those recorded, are by any means what you thought to have been imperfect or incomplete, pray of you to point them out. In some of the experiments I relaxed my conditions to the extent of getting one of the plates to present to lift out from the dark slide the exposed plate and transfer it to the developing dish held by myself, or to let a plate from the manufacturer's package into the dark slide held in my own hand, this being done under my own eye, which was upon it all the time; but this did not seem to interfere with the average on-going of the experiments.

The psychic figures behaved badly. Some were in focus, others not so. Some were lighted from the right, while the sitter was so from the left; some were comely, as the dame shall show on the screen, others not so; some monopolised the major portion of the plate, quite obliterating the material of the sitters; others were as if an atrociously-badly vignetted portrait or one cut oval out of a photograph by a can-opener, or equally badly clipped out, were held up behind the sitter. But here the point: Not one of these figures which came out so strong in the negative was visible in any form or shape to me during the time of exposure in the camera, and I vouch in the strongest manner for the fact that no one whatever had an opportunity of tampering with any plate anterior to its being placed in the dark slide or immediately preceding development. Pictorially they are vile, but how came they there?

THE STEREOSCOPIC CAMERA IN USE.

Now, all this time, I imagine you are wondering how the stereoscopic camera was behaving itself as such. It is due to the psychic entities to say that whatever was produced on one half of the stereoscopic plates was reproduced on the other, alike good or bad in definition. But, on a careful examination of one which was rather better than the other, and which now about to be projected on the lantern screen for your examination, I deduce this fact, that the impressing of the spirit form was not contemporaneous with that of the sitter. This I consider an important discovery. I carefully examined one of the stereoscopes, and found that, while the two sitters were stereoscopic per se, the psychic figure was absolutely flat. I also found that the psychic figure was at least a millimetre higher up, in one than the other. Now, as both had been simultaneously exposed, it follows to demonstration that, although

both were correctly placed vertically in relation to the particular matter behind whom the figure appeared, and not so horizontally, this figure had not only not been impressed on the plate simultaneously with the two gentlemen forming the group, but had not been formed by the lens at all, and that, therefore, the psychic image might be produced without a camera. I think this is a fair deduction. But still the question obtrudes: How come these figures there? I again assert that the plates were not tampered with by either myself or any one present. Are they crystallisations of thought? Have lens and light really nothing to do with their formation? The whole subject was mysterious enough on the hypothesis of an invisible spirit whether a thought projection or an actual spirit being really here in the vicinity of the sitter, but it is now a thousand times more so. There are plenty of Tycho Brahes capable of applying details of observation, but who is to be the Kepler that will from such observations evolve a law by which they can be satisfactorily explained?

In the foregoing I have confined myself as closely as possible to narrating how I conducted a photographic experiment open to every one to make, avoiding stating any hypothesis or belief of my own on the subject generally, and it only now remains to exhibit the results, bad and fraudulent-looking as they are, on the screen.

J. TRAILL TAYLOR.

Exhibitions.

PLYMOUTH PHOTOGRAPHIC SOCIETY.

Our vigorous Society has been resting for a while, and now, after a period is past, has set to work in good heart and spirit. The present exhibition, opened by the Worshipful the Mayor of Plymouth (Mr. H. Hurrell), on Wednesday afternoon, May 11, with a ceremony and an excellent attendance, is one that does the Society credit in every possible way. The actual number of entries is greater, though, in sooth that is not always a gain, nor a sign of going forward, but, what is more to the point, the advance is so in quality, both in the contributions of the outsiders and of the members. The room at the Athenaeum, the building connected with the Plymouth Institution, and where the Society is fortunately well housed, is excellent for its purpose—of good shape, lofty, and well lighted, with a top light, day and night. With the experience of past years behind, the Committee has boldly tackled the question of background and arrangement, and the hanging and decorative effect are in advance of any exhibition that has been held in connection with the Society. The whole can be comfortably viewed, and there is no crowding in the hanging, nor is it necessary in the inspection of the prints themselves. The quiet style of the panelling that has been adopted, and the admirable division of the classes tend to great comfort in viewing the prints and making note of them.

The judges all are men of mark, admirably well qualified persons for their work, and, in every instance, by natural leaning and by training, very favourable to the pictorial side of photography. Their decisions, as among judges in all exhibitions, are not acquiesced in all round. Whenever did a set of judges please everybody? Their leaning to the pictorial will, of course, explain some decisions, which could no doubt have been otherwise had the triad been strangers on the technical side of photography. The gentlemen who acted were: Mr. G. H. Emerson, B.A., M.B., Cantab., R.P.S.; Mr. Baragwanath, whose reputation as a water-colour artist has been recognised by Royal circles; and Mr. F. Shelley, A.R.C.A., Head-Master of the Plymouth Corporation Technical School of Art, and an exhibitor at the Royal Academy.

Landscapes, seascapes, and river scenery compose Class A (Open), a very creditable entry of over thirty. Daniel M. Filshell has secured a silver medal with a print, entitled "Evening" (22), but the suggestion of the hour is carried too far, so that the whole is dark and heavy, with a sky lit up in part, and which is very nearly all that is clearly discernible. A bronze medal is secured by F. Warland Andrew, for "The Close of an Autumn Evening" (6), an atrociously flat, diffused, and "billowy" effect, that is not very enjoyable to look at. The sky is as flat as a wall, and has no atmosphere or

gradation. J. E. Latham, for "Eventide" (7), is given a bronze medal, and of the medalled prints, we should have been inclined to put this first, for it is more enjoyable than the others, with its old buildings and trees, though it, too, is of the cult of indistinctness. This exhibitor has also a certificate for his "A Deep Still Pool" (2), which, while strong, has the shadows too deep. More enjoyable in every way, to most people, is Arthur Marshall's "The Garden of Sleep" (25), for which he has secured a certificate. This delightful old corner in a churchyard, with its tangle of wild blossoms, and the dim, soft outline of the centuries' old church, make the rendering a very artistic and telling one, and such as might well have had fuller recognition. The same exhibitor has an equal distinction for another print of "Sunshine" (28), a mere study of a cobble pavement and a wall, across both of which the soft shadows fall in a very real way. This is clever work. A. Percival W. Grave's "Hailstorm Passing Over Bonaduz (Grisons)" (12) is a rather charming study of a winding street in a quaint Continental town, of which the hailstorm, indicated by a black sky, is but a passing incident, throwing up the tall houses in relief. C. J. King's "Evening Light" (8) is a very pretty gentle landscape. "Declining Day" (50), by H. B. Smith, a low shore scene, with a few boats "high and dry," and a very pictorial sky, is excellent work. E. Seymour is successful in giving sunshine sparkling effect off ferns and through the woodland in "Bracken" (31).

Portraiture, still life, fruit, flowers, and interior figure subjects form Class B (Open), of nearly forty entries, varied both in subject and in quality, but on the whole creditable. J. E. Latham's "The Last Furrow" (55) is a ploughing scene, in which are two oxen and two men, but all parts of the print are so utterly diffused as to be a far from enjoyable whole. And the somewhat violent perspective of the furrows, with a great space of foreground, unrelieved in any way, makes not for peace. Of course, in a class of such wide variety of subjects it is necessarily difficult to allocate merit, and a higher place might have been given for some of the flower work. E. Seymour has a bronze medal for "Roses" (54), which, from its splendid qualities of roundness, grace, and good technique, might well have had premier position, if it is not excelled, as we are inclined to think it is, slightly, by the same exhibitor's "Cherry Blossom" (53), a very beautiful example of flower photography. Ethel H. Petty has secured a bronze medal for "Portrait of a Child" (46), but we cannot quite follow the judges here, where there was so fine an example of portrait or figure work near by in Arthur Marshall's "My Little Dutch" (49), a very delightfully thought-out and excellent piece of work. James Dunlop's "Simplicity" (262) was also awarded a bronze medal. This is a very charming study of a child, full of softness, and good half-tone. A. W. Walburn's "My Geranium" (58) is a very interesting example of flower and foliage photography, and has won a certificate. Arthur Marshall may be complimented upon his "A Study" (38), a girl-figure bending over, towards the observer, with a flower in her hand. John Smith's "A Veteran" (59), a portrait-study of striking character, shows a fine eye for a subject; but the lighting, or, may be, some after cause, is too pronounced, having the effect of being reflected from a much more polished surface than the rugged face of the veteran is likely to have been. D. W. Kyle's "Chrysanthemums" (64) are very fine, both in arrangement and by reason of first-class photographic excellence.

Open-air figure subjects, animals, etc., form Class C (Open). This is also about thirty strong, and there are many excellent things in it, showing how wide the scope of the class is under such a definition. Easily first, with silver medal, is Arthur Marshall's "The Prie-Dieu" (81), coming under the definition of outdoor by reason of the composition, a girl at devotion at the foot of a shrine of Madonna and Child by the roadside; in the devotee a fine sense of the spirit of the title, with subdued surroundings, and the whole in a frame also quite in accord with the spirit of the theme. Our heartiest congratulations for so clever and so good a piece of work. It is curious to observe that as the judges awarded no bronze medals, they may be considered to have assumed there is a gap between first and second place. While this is so, in a sense, yet the next in merit, or one of them, might well have had a better distinction than a certificate. S. G. Kimber's "The Pegseller" (73), certificate, a nomad with clothes' pegs to sell, rendered without stiffness, has yet not so much pictorial quality as Graystone Bird's "Meadowsweet" (96), a lady plucking these blossoms in picturesque surroundings, a well thought out thing, and, photographically, of very good quality.

Alexander G. Gibson has some very fine bird studies—sea-birds in all sorts of combinations, mostly with some pictorial quality, and all good as studies for those interested in such subjects from the natural history point of view, or as painters. He is deservedly awarded a certificate for "Gulls Fighting in Mid-Air" (86), a very happy snap. Other of his contributions are "Pair of Black Back Gulls" (69), "Bird Study," gull (87), and "Razorbill" (93), and all of good quality. John Smith deserves praise for his good portraiture in "A Toilet of the Deep" (78), and for the happy and natural pose of two fishermen in "A Good Yarn" (85); the technical qualities of both pictures being high-class.

Architecture, pictorially treated, exterior and interior, is dealt with in Class D (Open). The class numbers about twenty, and while it has some good things in it, equal in the order to other things which have won a silver medal, no distinction superior to a bronze medal has been awarded, such a medal being secured by S. G. Kimber for his "The Monk's Entrance" (103), a very beautiful old doorway, through which, beyond, is seen the sunlight upon a distant part of the grounds. There is charming light and shade, and fine technical excellence in the rendering of the grain and character of the architecture, without undue sharpness and detail. The same worker has a certificate for "The House of Prayer" (105), an interior, rendered with great softness and delicacy. Arthur Marshall is represented by "The Arcade" (99), apparently a covered way in an old German town, and "The Chapel, Haddon" (100), the main factors of which are the font and the relieving column, near by, the work in which is of the highest excellence, and we think deserving of recognition. "There is a little gem, by Harold Burkinshaw, "The Castle Gateway" (104), in which there is technique of the best in the rendering of detail, shade, and sunlight. The selection, too, is admirably pictorial and good. Percival W. Crane's "Crypt de l'Aquilon, Mont St. Michel" (108), is worthy of praise, and for the admirable way in which the detail in the darks has been softly handled.

Lantern slides (open) have been brought together in Class E, and prove to be of excellent quality and variety. F. J. Mortimer has a number of his splendid wave studies, Graystone Bird is represented in variety, while Alfred Bedding is represented by good architectural studies. The awards are: Silver medals, F. J. Mortimer, two (251, 292); Graystone Bird (293); and Dr. Geo. H. Rodman, two (295, 296). Bronze medal, F. G. Tryhorn. Dr. Rodman's slides are some exquisite beautiful studies of the interior, and exterior, of shells by radiography.

A silver cup, given by Mr. J. Kinton Bond, Head-Master of Plymouth Corporation Grammar School, is secured by Arthur Marshall, for the best average work in not less than three classes.

Landscape, seascape, and river scenery are grouped in Class F (Members), and a very creditable display is brought together, about seventy frames. Silver medals are awarded to C. H. Dymond for "Early Morning, Polperro" (125), a study of old houses, some figures, the low-tide harbour, boats, and the etceteras that go to make up the pictorial elements of an old Cornish fishing place, with the distant high ground of the adjacent country, making together a very artistic combination and arrangement skilfully worked out, and "A Golden Evening, Polperro" (128), a totally different kind of theme—the harbour, with the tide in, the fishing boats at their moorings, and the glow of the evening light on the houses of the quaint old town. The work is good, but perhaps the rendering rather lacks softness and tenderness. A silver medal is also secured by Wm. Clayden for "A Gleam of Light" (132), for a very nice pictorially rendered view of a fleet of fishing boats, under an evening sky, with a soft, oily sea as foreground, upon which is reflected the gleam of light in the sky overhead perhaps just a trifle too strongly for the balance of the subject. The whole is, however, a highly creditable example of good selection and excellent technique. C. H. Dymond's "A Rainy Day on the Tavy" (135), the attempt of giving the effect of rain in the neighbourhood of a Dartmoor river, with its great grey boulders, and its rushing waters, is fairly successful, and has been awarded a bronze medal. J. Trouern Trend has secured a like distinction for his "Soft Silvery Mists Veil the Distance" (156), which is a rather clever rendering of the soft grey effect the title suggests, the look through the trees being admirably done. He contributes a number of good things in the class, and among them may be cited "Ever and Anon a Shadow Steals Swiftly By" (156), and "Amidst Sunshine and Shade" (142) two charming studies of Old Cockington, and "A Tit Bit on

the Tamar," a peep out and downward upon that river from the umbrageous woods that clothe its high banks. "Afon Arthog" (117), by D. Tudor Davies, a study of Welsh moorland or mountain country, is interesting, and has received a certificate. "The Rock of the Sea," by C. H. Dymond, has a certificate; it (119) is, of course, a "pictorial" title, for it has not yet become possible to photograph the roar of anything, but as a picture of a very fine, swirling, dashing, and tumbling sea, this is a very good bit of work. J. T. Johnson is the winner of a similar distinction for his "Watersmeet, Lyme Mouth" (120), a scene on the River Lyn, in North Devon, a very beautiful spot, and of interest to many for its place in the story of "Lorna Doone." This is an excellent bit of photography. Maton's "Home of the Moorhen, Summer" (118), is a very charming picture of river and of adjacent woodlands. A. W. Hicks' "Breakers, Trebarwith" (133), a scene on the wild coast of North Cornwall, is deserving of commendation. "Nature's Mirror" (149), A. B. Fellowes Prynn, is a very clever rendering of a reflection, in which a group of pines set picturesquely on high ground give so reflections in the pool below. "A Welsh Landscape" (162), Fredk. Johnson, gives a good idea of expanse and distance, though somewhat grey and sad in tone. A. W. Hicks' "An Apple Orchard" (171) is a very good attempt at rendering a difficult subject.

Portraiture, still life, fruit, flowers, and interior figure subjects form the details of Class G (Members). It is of moderate dimensions but of good average quality. The silver medal goes to Albert K. Coleman, for "The Dinner Hour—a Yarn" (195), a study of three figures at a table, an interior, apparently a mill, or workshop, of some sort, somewhat dimly lit, rendered with a soft and agreeable texture and quality. The figures seem just a trifle posed, but this may be accounted for possibly in the fact that the exposure could not have been instantaneous. The arrangement is good, and the result creditable. Bronze medals go to Wm. Clayden for "A Portrait Study" (184), of moderate quality, and to C. H. Dymond for "Portrait of a Lady" (195), of good technique. Certificates are awarded to A. E. Coleman for "In Olden Times, Dressing Millstones" (188), not unworthy second to his silver medalled picture, and interesting too, as showing something that will, ere many years, obtain no longer; and "Drawing the Harvest Cider" (194), by W. C. Johnson, a good bit of work, considering that the light in the dim cider store must have been poor. F. C. Bowlett's "Cutting Spokes" (198) depicts an old workman engaged in the prosaic work of making spokes for cart and other wheels, and the idea of the photographer has been very creditably carried out.

Open-air figure subjects, animals, etc., form Class H (Members) of nearly thirty entries. A silver medal is awarded to C. H. Dymond (who also takes a silver plaque, presented by Mr. J. T. Johnson, vice-president, for the best work in not less than three classes) for "An Anxious Moment" (216), a very clever bit of genre work. A group of boys are watching one who is about to make a "shot" in a game of marbles. They are very capably arranged, and the composition is excellent; all the boys look natural and interested in the game, and the result is good in every way. The surroundings help, and there is nothing but praise for the photographer's work. Certificates have been secured by A. S. Adams for "The Reapers" (220), a harvest scene, in which a reaping machine, horses, and men play qualifying parts; "A Gamp for Two" (222), two lads under one umbrella, by the same worker; and Wm. Clayden, "Repairing the Sail" (230), an incident associated with a fishing vessel, the details of which is the scene, but the many details necessarily included in the subject—because the eye of the camera saw them—were somewhat distracting. "On the Road to the Fair" (231), by F. C. Bowlett, a flock of sheep being driven towards the onlooker, is rather good. Wm. Clayden's "Moorland Ponies" (204) has much pictorial quality, and his "Oh, What Fun" (205), children swinging on a gate, deserves a word of praise.

Architecture, pictorially treated, exterior and interior, make up Class I (Members), which is a small class. Certificates were awarded to E. G. Turney for "Crypt, Hereford Cathedral" (233), a well selected subject, of good technique; and J. T. Johnson's "The Old House at Home" (234), a country thatched cottage, of no particular or striking character, but somewhat picturesque. Fredk. Johnson's "Haddon Hall" is soft and agreeable. J. T. Trend's "A Bit of Tintern Abbey" (257) is praiseworthy. "Old Boringdon" (238), an ancient manor house in South Devon, by A. B. Fellowes Prynn,

ht well have had official recognition, as it is good photography, and excellent technique, as well as being pictorially acceptable; the same maker's "Old Gateway, Tewkesbury" (243), has excellence and good dity.

lantern slides are included in Class J (Members), and form a ditable display. Silver medals are awarded to C. H. Dymond a varied collection (304), and to Fredk. Johnson, also for sub- s in variety (313). A bronze medal is secured by Wm. Clayden a very nice set, several of which are duplicates of his pictures the walls (306). Certificates went to F. C. Bowtell (308), F. nson (314), and J. T. Johnson, two (315 and 316).

fr. Baragwanath King, of Plymouth, offered a special medal for best rendering of an after-glow; this formed Class L (Members). frames were under a score, but they were all more or less "sun- y." The medal was awarded to "After-Glow, Isle of Wight" 4), by Fredk. Johnson, in which he had secured, as far as was sible in photography, the rendering of the after-glow, and the ecess of the whole had been greatly helped by printing on a suit- y tinted paper. Other creditable examples were by C. H. Dymond J. T. Johnson.

FORTHCOMING EXHIBITIONS.

May 24-28.—Devonport Camera Club. Hon. Secretary, A. J. ford, 78, Charlotte Street, Devonport.

June 12-24.—First International Salon in The Hague. Sekretariat ng, Conrad Kade 63, The Hague, Netherlands.

June-October.—Glasgow Photographic Exhibition. Secretary, Art lery and Museum, Kelvingrove, Glasgow.

July 14 to September 30.—Vienna Photographic Society. Secretary, Burger, Karmelitergasse 7, Vienna 11.

August 1.—Andover and District Horticultural Society. Photo- phic Section. Hon. Secretary, W. L. Gradidge, Jubilee House, Dover.

October 1-30.—Berlin International Photographic Exposition. M. anz Goercke, Berlin W. 62, Maassen-Strasse 32, Germany.

November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Sec., nes Dunlop, Myrtlebank, Motherwell.

November 21-26.—Sheffield Photographic Society. Joint Secretaries, W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.

November 23-26.—Hove Camera Club. Hon. Secretary, A. R. egeant, 55, The Drive, Hove.

November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., W. Simmers, Aberdeen House, Ramsgate.

December 2-8.—Southsea Photographic Society. Hon. Secretary, J. Lawton, 20, Clarence Square, Gosport.

December 5-17.—First American Photographic Salon at New York. retary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104, st 101st Street, New York.

December 8, 9, 10.—Muirkirk Amateur Photographic Association. retary, W. Barrowman, Ayr View, Muirkirk.

December 13-20.—Southampton Camera Club. Hon. Secretary, S. G. umber, Oakdene, Highfield, Southampton.

June, 1905.—Northern Photographic Exhibition. Secretary, F. G. ott, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

May 31.—Ensign-Vidil. £100 in prizes for negatives on Ensign- d films. Houghtons, Limited, 88-89, High Holborn, London, W.C.

June 30.—"Photographic News" Quarterly. Money prizes, silver d bronze medals for prints. Any subject. "Photographic News," Cecil Court, Charing Cross Road, London, W.C.

June 30.—Kodak. £1,000 in cash prizes for pictures taken on dak films and plates, etc. Kodak, Limited, 41-43, Clerkenwell ad, London, E.C.

October 1.—Thornton-Pickard. £100 cash prizes for pictures taken th Thornton-Pickard cameras and shutters. Thornton-Pickard nufacturing Co., Altrincham.

October 10.—Luna paper. £240 cash prizes for prints on Luna paper. cien Allegre and Co., 59a, New Oxford Street, London, W.C.

October 15.—Belgian Association Lantern Slide Stereogram Com- ition. Secretary, M. Vanderkindere, 97, Avenue Brugmann, ussels.

October 31.—Coxin. 68 prizes for users of Coxin. Judging twelve pictures. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.

December 31.—Barnet. Nineteen classes. Prizes valued at £500 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

March 15, 1905.—Ilford. £750 in prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

Studio Gossip.

A BIT of Human Nature.—No business requires a deeper study of human nature than that of the professional photographer, and human nature is much the same the world over. He must bear in mind that a large proportion of his work is of ladies and children. There are few cases in history where the lady does not sit, in the best gown she owns, whether rich or poor, and likewise her child or baby. She wants the gown reproduced, and, often in the case of the society and professional woman, she sits more for the gown and the fit and hang of it than for any particular expression or lighting of her face. If there is a particular weave or texture of lace or fabric which conveys the idea of expere, she desires it to show for what it is. Detail cannot then be overlooked, and a printing process that secures every detail and half-tone of the negative is important. In this particular carbon and Aristo platino excel over platinum and all other processes. All there is in the negative you find in the print.

ADVICE to Members of the P.P.A.—Members are reminded that their obligations to the association, says the "Handbook of the P.P.A.," do not consist simply in paying their subscriptions and electing a committee to carry on the work on their behalf. They should take an active part in strengthening the position of the association by inducing as many as possible of their brethren in the profession to join, and particularly by endeavouring to promote a friendly feeling amongst those who are engaged in business in their own localities. Photographers should not war against one another, but should devote their belligerent energies to warring against their common enemies. That their community is subject to such successful attacks from those outside is due, mainly, to their want of unity. It is impossible to do away with competition—indeed, competition on legitimate lines is beneficial rather than otherwise; but competition carried on on the petty lines of price cutting and taking mean advantages of one's fellows injures all alike, and most of all those who resort to such practices.

THE Austin-Edwards Monthly Film Negative Competition.—The prize camera for the current month has been awarded to Miss D. Dillon, 15, Westbourne Gardens, Folkestone, for her negative, "Basket of Apples."

MESSRS. CASSELL AND CO., LTD., announce the publication of a new work on photography, in monthly parts, price 7d. net, entitled "The Book of Photography: Practical, Theoretic, and Applied." It will be edited by Mr. Paul N. Hasluck, and Part I. will be ready on May 27.

THE Health Resorts Development Association have sent us a copy of the Southport Corporation Guide. It forms one of an excellent series of well illustrated guides to various popular health resorts. It is very complete, and full of information concerning the district, and should prove of use to the visitor who is also a photographer. A copy will be forwarded free by sending a postcard request to the Town Clerk.

WE have received a copy of the Great Eastern Railway Company's freshly illustrated "Tourist Guide to the Continent," published at the price of sixpence. Among its new features are particulars of new tours in the Tyrol, in North Germany, and in Norway, Denmark, and Sweden, via the Royal mail Harwich, Hook of Holland, route; of tours in the Luther Country, and Thuringian and Hartz Mountains; with a series of Continental maps, and a chapter, "Dull, Useful Information," giving particulars of the cost of Continental travel.

Patent News.

The following applications for patents were made between May 2 and May 7, 1904:—

Packing Films or Plates.—No. 10,097. "New and improved method of packing sensitive cut films or plates, and the manner of exposing same in the camera." George Wishart.

Cameras.—No. 10,340. "Improvements in and relating to photographic cameras." Nicholas Wladimiroff.

Shutters.—No. 10,566. "Improvements in, or relating to photographic shutters." Alfred Bult Allen.

Enlarging Apparatus.—No. 10,568. "Improvements in and relating to photographic enlarging apparatus." Complete specification. William Charles Hughes.

DEATH OF M. MAREY

THE Paris correspondent of the "Times" announces the death, at the age of 74, of Professor Etienne Jules Marey, the master of that method of experimental physiology by which, together with Claude Bernard, he enriched this science with numerous discoveries. He was, if not the virtual inventor, at all events the perfecter of the system of graphics for the measurements of physiological phenomena; the deviser of the sphygmograph for the notation of the pulse and heart beats and respiratory movements; the analyst by means of instantaneous photographs of movements of human and animal locomotion, the flight of birds, the galloping of horses, etc., becoming thus an initiator of the cinematograph. But these inventions are only the more striking devices with which he ingeniously opened up surer methods of research in physiology. The mechanical appliances which he conceived figure to-day in every physiological laboratory in the world. One of the most amiable of men, few deaths will be more keenly felt in the scientific world in France. He was a Burgundian from Beaune, but since 1869 had been a Parisian and a familiar figure in the precincts of the Collège de France.

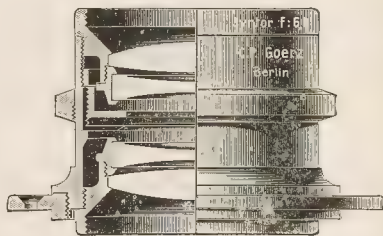
A TIBETAN Stamp.—Mr. D. Field writes from 4 and 5, Royal Arcade, Old Bond Street, on May 10. "I have pleasure in enclosing a photograph of a Tibetan stamp which was recently presented to me by Mr. G. Lindsay Johnson. Such is the secrecy of the Tibetans with regard to all their affairs that the fact that they have a postal system with properly authorised Government stamps has only just leaked out. As will be seen, the stamp is a most primitive affair, being merely a native character impressed in red sealing wax. According to a missionary friend of Mr. Johnson's, who sent him the stamp, when it is required to post a letter in Tibet the sender takes it to the nearest official post office and pays the amount due for the postage. After this formality the letter is impressed with this seal, and it is then considered properly posted, and is forwarded to its destination; but letters not bearing the seal do not receive this polite attention."

THE members of the Hull Society turned up again in great force last Saturday, the destination being West Ella. It is interesting to note that they arrived by train, cycle, trap, motor, and last, but not least, by foot. A storm came on at starting time, but nevertheless, this did not prevent the enthusiasts finishing their journey, who were certainly well repaid for their struggle, because it cleared off later on, and proved an ideal and agreeable time. The subjects were varied, and should prove profitable if carefully treated. Several lady friends were very much in demand as studies, and placed in various positions with a view to securing pictures of more than ordinary merit. Some exercised their patience upon sheep and lamb studies, trying all they knew to find pleasing and effective grouping. It is intended to provide sunbaskets, etc., at several of the forthcoming outings, and thus supply the members with further material for landscape with figure study subjects. This means much interest, and an additional attraction, likely to be highly appreciated. The Society next visit Howden, May 28, leaving Cannon Street station, Hull and Barnsley Railway, at 1.25 p.m., when further special features and arrangements are to be made.

New Apparatus, &c.

The "Syntor" Double Anastigmat. Series 1D., made by C. P. Goerz 1-6, Holborn Circus, London, E.C.

This lens being particularly intended for use on hand cameras, only obtainable in foci varying from $4\frac{1}{2}$ in. to $8\frac{1}{2}$ in. The Syntor F appears to be well corrected for chromatic and spherical aberration and for astigmatism. The angle covered at F6.8 is 64° , but by use of smaller stops this angle can be increased to 70° . A plate having a base line equal to the focal length of the Syntor used excellently covered, and definition is good to the edges of the circle given. Where a considerable displacement of the lens from the centre



is desired, the next longer focus is recommended. The Syntor Double Anastigmat F6.8 can also be used with advantage as the positive in telephoto lens system, and its back combination when used with small stop, becomes a serviceable single lens of about double the focus of the complete lens. The Goerz Syntor F6.8 will be seen, therefore, to have all the properties expected in a modern anastigmat although less in price than some of the old type of rapid rectilinear lenses.

Warwick "Special Rapid" and "Double Instantaneous" Dry Plate. Made by the Warwick Dry Plate Company, Warwick.

The speed of these well-known brands of plates has now been greatly increased, and while still retaining their characteristics of freedom from fog, density, fineness of grain, and latitude in exposure there can be no doubt that the marked increase of speed in the latest batches will be much appreciated, especially for indoor work and snapshot out-door exposures under bad and medium light conditions. The plates we have tried appear to be thickly coated with emulsion rich in silver, in an extremely fine state of division. Test exposure on a sunlit street scene, using a focal plane shutter working at 1-800 sec. and lens stopped down to $f/11$, gave, with quick development, negatives full of shadow detail, and of excellent printing quality. The plates also appear to be able to stand a considerable amount of forcing in development without fogging or frilling, and speed has apparently not been secured at the sacrifice of the many other essentials to good negative. Formulæ for use with the plates are enclosed with each box. The prices of the plates remain the same.

New Productions of Cadett and Neall, Limited, Ashted, Surrey.

Dagas Paper.—This is a gaslight printing paper, and is made in three grades of surface, matte, medium matte, and glossy. It is paper for contact printing by artificial light, and can be manipulated developed, and fixed in ordinary gaslight or subdued daylight, according to the directions enclosed in the packets. Great brilliancy and excellent gradation quality are their special characteristics. The speed has been very carefully graded for the greatest convenience of users, and a special feature will be found to be the superiority of the colour of the images on Dagas paper, the unpleasant greenish colour so often produced by other makes being absent.

Dagas Postcards.—These have similar qualities, but are made with one surface only, smooth matte.

Bromide Postcards.—For rapid artificial light printing and development in the dark room these postcards will be found to be very brilliant and clean. A fine sepia tone can be obtained by the use of one of the formulæ enclosed in the packets.

Self-Toning Postcards.—The simplicity of the manipulation, together with the excellent surface of prints upon these self-toning postcards will, we think ensure much popularity for the brand. A great variety of pleasing tones may be obtained, and no effort appears to have been spared to make the product of first-class quality.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Day.	Name of Society.	Subject.
28	Kodak Exhibition.....	The Drill Hall, Wolverhampton.
.....	Nelson Photographic Society	Print Evening.
.....	North Middlesex Photo. Soc.	<i>Intensification and Reduction.</i> Mr. H. W. Bennett.
.....	Cricklewood Photo. Society.....	<i>Technical Control for Pictorial Results.</i>
.....	London and Prov. Photo. Asso.	<i>Factorial Development.</i> Mr. W. T. Wilkinson.

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

MEMBERS' meeting was held at the Royal Photographic Society, Russell-square, on Friday, the 13th inst., at 8 p.m., Mr. Alfred Ellis, President, in the chair.

The Committee's report of the progress of the Association since the last meeting was presented, and adopted.

The President intimated to the members that the Committee had been considering the abandonment of the annual dinner as a regular feature. Their first annual dinner had an attendance of about 100. The second fifty-two, while this year the number had decreased to forty-nine. Of course, if it was desired to hold such a meeting the request of a good number of the members, the Committee could be pleased to arrange accordingly. With regard to the annual general meeting, it was found that the holding of it in October, immediately after the holidays, was an inconvenient time of the year, as practically no meeting had been held between June and October. Therefore, if the dinner fixture in March was abandoned, it was thought it would be better to hold the annual general meeting in that month, and to bring under notice what has happened during the busy part of the season.

The matter would, however, be settled when considering the alteration of rules at the next general committee meeting.

The President, in introducing the subject for discussion that evening, viz., "Professional Photographers' Price Lists and the Avoidance of Inconsistencies in Them," said that on two occasions recently the Association had been asked to assess the value of photographs, and examining the price lists of the photographers concerned and those of other photographers who were in one case in the same town, at difficulty had arisen in arriving at the proper proportionate valuation of the different photographs and the cost of the taking of these photographs. On examination of the price lists of several different firms the conclusion arrived at was that most of them had been compiled without proper consideration of the relative value of the different kinds of photographs, and without reference to the value of the taking and of the additional copies supplied at certain prices.

Mr. Mackie brought forward several examples of the inconsistencies of price lists. He said one noticeable point was that there was not a general understanding as to the particular size of picture referred by a particular name; for instance, he had found the term "studio" portrait, which he believed was usually intended to denote a picture taken on a whole plate and trimmed to about 8 by 5, and in one or two cases to so describe a picture taken on a larger plate, the price list gave the size as 11 by 8. He noticed too a tendency to employ ambiguous terms for the printing process, such as "silvertype," which would mean anything looking through a number of price lists he found many cases in which, if one went to work artfully, photographs could be obtained cheaper than it was intended they should be supplied. For instance, one case he found cabinets quoted at 18s. 6d. per dozen, six for 6d., extra copies twelve for 12s., six for 7s. 6d., so that if twelve were ordered first and then six extra copies afterwards, 25s. would be paid.

The President said that in bringing this subject under notice that evening he had in view two recent and various other cases which have been brought to the notice of the Association, and also happened up in his own business and that of others. He thought great care should be given to the basis upon which prices were quoted. For instance, you have a sitter who, unfortunately, does not pay you at the time of sitting, and subsequently a dispute

arises. It may be a schoolboy is photographed, and on the proofs being submitted the parents are not satisfied. Meantime, the boy has returned to school and cannot be re-taken. You suggest that he sit again when he returns from school, but the parents object, on the plea that the boy will be older, and make other excuses. They therefore ask you to charge for what has been done and for the proofs, and allow for the copies not had. Now, the price charged by some people for extra copies, deducted from the price charged per dozen, would not be sufficient to pay a photographer for the sitting, developing, retouching, etc. He was of opinion that a price should be fixed for the taking of a negative and for the proofs submitted, and then so much for the additional copies, so that it tallies with the extra copies rate. He thought that if worked out on that basis trouble would be obviated.

Mr. Mackie instanced a recent case of claim against a railway company for broken negatives, in which the photographer claimed for the whole amount of his order. He could, of course, not charge for the prints he had not produced, and it was a question what was the value of the negative. By Mr. Ellis's system no difficulty would arise.

Mr. Fry brought forward a suggestion to promote some branch or association in which assistants could join. Mr. Ellis thought some expression of a requirement of this kind should emanate from the assistants themselves in the first place, and in view of the amount of work on hand it would be advisable to complete it before touching fresh ventures. In any case, it would be well to consider the matter in committee.

Previous to the members' meeting a general committee meeting was held, at which the following were present:—Messrs. H. A. Chapman, J.P. (Swansea), Alfred Ellis, A. Mackie, F. A. Bridge, Wm. Grove, S. H. Fry, E. Scamell, Lang Sims, and H. C. Spink (Brighton). Mr. Alfred Ellis, President, in the chair.

Letters of apology for non-attendance were read from Messrs. Martin Jaconette and W. Gill (Colchester).

Letters to and from Mr. Louis Langfier, in reference to his resignation from the Committee, were read. It was thereupon decided to accept Mr. Langfier's resignation, with an expression of regret at the loss of his valuable services.

The draft of the report for the members' meeting was read and passed.

The names of those gentlemen who had expressed their intention of exhibiting at Derby were read. It was decided that they should be published.

The Committee then considered certain alterations in the rules, which it is proposed shall be presented to the annual general meeting in October.

REPORT OF THE COMMITTEE.

Since the last members' meeting in February the members have had an opportunity of gathering together at the annual dinner, which was held, according to the rules, on Friday, March 11. Forty-nine members and guests were present, and the opportunity of the occasion was taken to present the President, Mr. Alfred Ellis, and the two past Presidents, Messrs. Thomas Bedding and William Grove, with a gold token or souvenir of his year of office, subscribed for by the members of the Committee.

An invitation has been issued to each member to send specimens of his work to the exhibition of professional photography, to be held under the auspices of the Association and of the Photographic Convention of the United Kingdom to be held at Derby in June and July. The privilege has not been accepted by a large number of members, but as far as can be ascertained up to the present the number of exhibitors will be about twenty-four, and the list includes the names of many of the best and most representative photographers in the country. Messrs. W. Crooke and Fred Hollyer have consented to contribute their pictures in an exhibition at the rooms of the Royal Photographic Society.

The Committee have been devoting a great deal of time to the consideration of the granting of certificates to Associates, and the task of providing means of overcoming the obstacles to the successful working of a system which will be satisfactory from an employer's point of view is a long and difficult one. Considerable progress, however, has been made, and it is hoped shortly to issue a prospectus of that part of the scheme which provides for the granting of certificates without examination to assistants who can prove competency by the testimony of past and present employers.

The Committee regret that they are losing the services of Mr. Louis Langfier, who has resigned his seat on account of inability to spare the time for the duties.

The Committee are pleased to notice that the local branches at Edinburgh, Hull, and Liverpool are holding regular meetings. Their discussions are duly published from time to time in the *BRITISH JOURNAL OF PHOTOGRAPHY*.

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.— LIVERPOOL BRANCH.

APRIL 29, 1904.—Present: Messrs. G. Watmough-Webster (chairman), W. T. Smith, H. Dowden, O. Looser, R. Waile, E. Vanderbilt, A. Priestly, A. F. Mowll, W. Warrington (Hon. Sec.).

The Chairman said with regard to suggestions for preventing sitters making unfair use of proofs, he had received a letter from a photographer, not a member of the Branch, giving particulars of his way of treating proofs, which had proved successful.

A proof so treated was kindly sent with the letter, and was passed round among the members, who voted it an excellent idea.

The question of cutting prices was brought before the meeting by a member who thought some effort ought to be made against it, particularly in such cases as might exist among members of the P.P.A. He thought there were such cases. The discussion that followed was long and interesting. Several members had suffered, directly or indirectly, from the proximity of the "Cheap Jack," and the various experiences that were related showed the difficulty of dealing with the question. To give publicity to the methods of the offenders, to point out the often irresponsible—even unscrupulous—characters of very many of them was felt to be desirable and a step in the right direction. Two cases out of many, of members' own personal experiences, were typical of the class of man who cuts prices to a ridiculous point to attract business. One, of a man who opened "opposite" a member in a building consisting of offices, etc., and offered three cabinets and a 12 in. by 10 in. enlargement for 2s. 6d. He flourished for a time; then one day, having business in an office in said building, the member in question went across and found the staircase crowded with people looking for the photographer, who had flown. He left behind a notice to say he was returning shortly, a large number of paid-up but unfulfilled orders, and much strong feeling. Another case brought forward showed even more unscrupulous principles. A studio opened, prices almost impossibly low, a roaring business for two weeks, then a missing photographer (save the mark!). He left word he had gone to South Africa—which was about all he did leave—for an examination of the premises indicated that he had not thought it necessary to expose any plates or do any work, except take the money.

The question of the dealer's share of the responsibility in the matter was talked over at considerable length, but the members were not unanimous in their opinions of the extent to which good terms from dealers enabled cheap men to carry on.

The subject was adjourned to the next meeting.

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

MAY 12th.—Mr. A. J. Brown in the chair. Mr. Brigginslaw, one of the founders of the association, was welcomed, and congratulated the association upon its continued vitality; its records in the *BRITISH JOURNAL OF PHOTOGRAPHY* were always enjoyed.

Mr. Drage asked the opinion of the members upon the system of the Dry Adhesive Company, whose method was shown at the previous meeting.

Mr. Furley Lewis was quite pleased with the system, as a time saver and for convenience.

Mr. Rapson pointed out the many branches that could be worked, plate marks to suit the picture, tints to suit and fit the prints, freedom from the distortion met with in prints mounted wet, prints could be mounted upon any substance, thin or thick.

CAMERA CLUB.

If Theodore Hook, or any other of that merry band of a bygone generation, whose delight it was to play practical jokes, could have peeped into the Camera Club on the evening of the 9th inst., he would have been sorely tempted to seek the aid of the police in order to play a prank upon the members. And if the police had been so

summoned they would have witnessed an unwonted sight, and which would have gone far to support the notion that the King's peace was being seriously threatened. Two men stripped to their shirts and engaged in hot conflict with the deadliest looking rapiers. They were both well-skilled in the use of their weapons even at a glance, for they thrust and parried with suchadroitness that it was impossible to analyse the movements—it was a series of flashes of clashing steel. Whilst these two were thus intent upon their deadly work, the members of the club stood and watched the conflict with the greatest interest, and seemed to hang upon the result as if it had been a matter of personal concern. But it was not in reality a deadly fight, although it looked like one. The truth was that Mr. Egerton Castle was giving a lecture upon "The Romance of Swordsmanship," and he had brought with him his fencing master, and this was one of the many illustrations showing how certain kinds of weapons were used. The discourse had nothing to do with photography, that it may be regarded as one of those extra subjects with which the Camera Club occasionally seeks relaxation from "the usual round, the common task."

FRANKLIN INSTITUTE (PHILADELPHIA).—SECTION OF PHOTOGRAPHY AND MICROSCOPY.

APRIL 7.—Dr. Henry Leffmann in the chair. The chairman called attention to several exhibits which were of more than usual interest. The first of these consisted of several specimens of the "Parall. Stereograms" of Mr. Fred. E. Ives. This optical device was originally exhibited several years ago at one of this section's meetings, but has since been improved, and is now being commercially exploited. The second exhibit consisted of specimens of photographs in natural colour of natural objects and of paintings made by a photographic process devised by Messrs. M. Miley and Sons, of Lexington, Va. The resulting photographic prints exhibited surprisingly close approximation to the colouring of the originals and were much admired. The regular communication of the evening, "Microscopic Studies with the Moving Picture Camera," was a highly interesting demonstration, showing many minute living organisms, etc., that had been magnified many times by the microscope and then photographed by the method used in making moving pictures. Among a number of subjects thus exhibited the circulation of blood in the web of the frog's foot, and the circulation of cell fluid in living waterweed, are specially worthy of notice. The exhibits were explained and commented on by the chairman, and, at the close of the meeting, the thanks of the meeting were tendered to Mr. S. Lubin, of Philadelphia, who supplied the material and moving-picture camera for making the demonstration.

CROYDON CAMERA CLUB.

MAY 11th.—The capabilities and merits of Venus paper were demonstrated by Mr. W. H. Rogers before his fellow members. It is claimed for the paper that it possesses certain advantages over gelatine mat papers. It does not blister or frill, always remains flat, warm water may be used for washing, and heat for drying, toning is easy and uniform, and the final results are unlike the "ordinary photograph," which may inferentially seem to be rather an unkind reflection on the "ordinary photograph." Rough, smooth, and canvas grained paper can be obtained and sensitised materials. Mr. Rogers, although his acquaintance with the paper and its working was of the slightest, found no difficulty in its manipulation, and some pleasing prints were toned and fixed and passed round for inspection. A statement by the makers, as to the advantage to be gained by printing weak negatives in a dull light, led to a general discussion on the Bunsen Roscoe Law and whether it held true for printing processes in general. Mr. E. A. Salt said he always thought it broke down with P.O.P., but an inspection of a set of prints sent him by Mr. Alfred Watkins printed in the sun and shade showed no apparent difference. He had been informed the law had been found true for albuminised paper. Mr. Hugh Allen said it certainly did not apply to the gum bichromate process, the question of the intensity of the light apart from the "time" factor was then of the greatest importance, and as regarded P.O.P. in a home-made print meter, constructed out of numbered layers of tissue paper, when the light became feeble the piece of P.O.P. continued darkening in the lower numbers without any perceptible alteration in the higher. Mr. Sellors thought the law also did not apply to carbon, with its thick film of pigment.

During the evening the Watkins new print meter was passed round and inspected with interest. A portion of a sensitive disc of paper seen through a small circular aperture, which it partly fills; by applying pressure to the front and back of the case, the paper is made revolve in front of a series of standard tints, approximately in geometrical progression. The range 1 to 32 is wide. By rotating the disk a fresh surface of paper is exposed. It was generally thought that the meter was of ingenious construction, and would prove useful to carbon workers. The president, Mr. S. H. Wratten, in proposing a vote of thanks to Mr. Rogers, said the Venus papers undoubtedly held a place, and had stood the test of time, and alluding to the discussion which had arisen, suggested that members might make some comparative experiments and report results.

CENTRAL PHOTOGRAPHIC SOCIETY.

Saturday, the 7th inst., the above society opened their summer programme with an excursion to Roehampton and Wimbledon Common. In spite of the threatening weather, a muster of eleven was obtained, and a start was made from Waterloo Station by 2.35. Under the leadership of Mr. T. Holland the party made their way to Roehampton, and after a little skirmishing quickly settled down to work. A visit was made to the windmill, after which the party adjourned, at the invitation of the leader, to his house to tea, and there spent the evening. The outing was voted a great success by all participating in it. The next excursion of the society will be on May 28th, when Mr. F. R. Rose will conduct a party to Mill Hill and Stanmore. Mr. W. Hobday, the secretary of the Central Photographic Society, at Peter Hall, Strand, W.C., will be pleased to answer any inquiries and to forward programme for 1904 on hearing from those interested.

New Zealand Tourist Photographic Department.—The "New Zealand Times" states that 11,000 photographs illustrative of New Zealand scenery and life were sent to various parts of the world last year by the Tourist Department.

The first of the Royal Society's two annual conversazioni was held in the Society's rooms in Burlington House on Friday last. The president, Sir William Huggins, received the members and guests. The exhibits were, as usual, numerous and varied, illustrating the results of the most recent research in certain departments of science. Museum exhibits were conspicuously absent, except in one instance, where they are being reserved for the ladies' soiree next month. Apart from these there were many exhibits calculated in the main to appeal only to the specialist, though a few could without doubt be appreciated by the mere intelligent onlooker. Sir William Abney showed a beautiful arrangement by which colour photographs are shown by the substitution of spectrum colours of the glasses, with the result that the colours on the screen are much truer and purer. Some of the results were quite striking. Another interesting arrangement was that of Mr. Sanger Shepherd, who exhibited examples showing the application of natural colour photography to the production of lantern slides of characteristic spectra for lecture and educational purposes. Professor Carl Pearson's exhibit was of especial interest, being a photographic study of the English skull, 1600-1850, showing some of the results of the biometric work at University College during the past five years. It is a selection from a series of photographs of English skulls, illustrating normal and abnormal types. There are two series, numbering upwards of 100 altogether, from old pits or graveyards in the City. Professor Herdman had an interesting exhibit illustrative of his recent visit to Ceylon for the purpose of inspecting the pearl oyster fisheries. His exhibit included samples of Ceylon pearl oysters at various stages of growth, specimens showing the structure of the pearl oyster, microscopic preparations showing the structure of the pearls, photographs and diagrams of the methods employed at the fisheries, and other details of the industry, while other results of Professor Herdman's visit were illustrated by a fine series of lantern slides shown in the lecture room. Dr. Alan B. Green showed some curious photographs illustrative of the radio-activity of bacteria exposed to pure radium emanation. Some of the results were very striking, and the method may lead to important results as to the real nature of the bacteria experimented with.

Commercial & Legal Intelligence

At a London Police Court on Monday last George Browning, an auxiliary postman at 12s. a week, who said he was formerly a photographer, but had lost his trade through the rise of amateur photographers, was sent to four months' imprisonment for letter stealing.

At the Central Criminal Court, on Tuesday last, William Friese-Green, forty-eight, described as an inventor and patentee, pleaded "Guilty" to counts in an indictment charging him with offences against the Debtors Act by obtaining credit without disclosing the fact that he was an undischarged bankrupt. Mr. Arthur Gill prosecuted; and Mr. Slater appeared for the defendant. In mitigation of sentence Mr. Slater said that the defendant owed his present misfortune to taking upon himself the debts of a company in which he was interested. His bankruptcy took place twelve years ago, and the defendant, in assuming the responsibility for the debts, was under the impression that in these circumstances he was not obliged to disclose the fact that he was an undischarged bankrupt. The Common Serjeant sentenced the defendant to two months' imprisonment in the second division.

At the Clerkenwell Sessions last week George Esser, 31, sailor, and John Smith, 33, coster, pleaded guilty to having committed a burglary at the premises of Sinclair and Co., Ltd., opticians and jewellers, Haymarket. The prisoners smashed a plate glass window on the early morning of the 30th of April, and stole a velvet-covered tray and charms, worth £50. Police-constable Fairclough, attracted by the noise, chased and captured Esser, and a night flusher named King pluckily detained Smith with the stolen property. Both men had been many times convicted. Esser had been in a reformatory and now had a considerable remnant to serve on a sentence of seven years' penal servitude. Smith had twice been in penal servitude. Detective-sergeant West said window smashing in the West End was greatly on the increase and of almost nightly occurrence. Esser was ordered twelve months' and Smith eighteen months' hard labour.

A COPYRIGHT ACTION FAILS.—At Swansea County Court, on Monday, before his Honour Judge Gwilym Williams, Messrs. A. and G. Taylor, photographers, of Swansea, brought an action against William Newcombe, Joseph Rosser, and Griffith Davies, trustees of the Swansea district of the Independent Order of Rechabites. Plaintiffs alleged that in February, 1903, defendants or their agents ordered of the plaintiffs' photographs of the town and district for the purposes of a book defendants contemplated publishing, and plaintiffs agreed to supply the same upon a condition that photographs and views should be used only in the book mentioned, and it was alleged that without the consent of the plaintiffs the views were published in another book issued by the defendants, and plaintiffs now claimed an injunction restraining defendants from further copying or publishing the photographs. Mr. Villiers Meager (instructed by Messrs. Pictou, Evans, and Jones) was for plaintiffs, and Dr. Williams (instructed by Mr. J. E. Rowlands) was for defendants. For plaintiffs Mr. Lambert (their Swansea manager) said he was asked to take views of Swansea for reproduction in the souvenir issued in connection with the visit of the Rechabites to Swansea last year. This order was subsequently ratified by two other members of the order named Tasker and Stevens. He took a number of photographs on the condition that after being used in the souvenir the copyright was to remain with his firm. In addition to being used in the souvenir, he found the pictures had, without his sanction, been used in a booklet issued by the Rechabites. In cross-examination he said he had no written agreement that the copyright was to remain with him. He admitted that the photographs had not been copyrighted till after they had been used in the way complained of. Frederick Samuel Price, a member of the Conference Executive of the Rechabites, said he went to see plaintiffs' manager, and asked prices for photographs for the souvenir. He said the understanding was that the photos were for the souvenir only, and no other book was at that time contemplated. In cross-examination he admitted that when he first saw plaintiffs' manager he had no authority, but before the completion of the agreement he was authorised to act.—Dr. Williams: Perhaps that is what is meant in your biography in the souvenir where it says you are "perhaps a wee bit too active?"—Yes.

Witness went on to say he did not give the order. John Joslin was called to prove distribution of the booklet in question. He said he did it at the direction of the secretary of his tent.—Dr. Williams: Who was that?—Witness: Mr. Price, the last witness. (Laughter.) The Judge: He engaged him to distribute things which he said he considered it very wrong to publish. Dr. Williams was opening the case for the defence when the judge interposed with the observation that it appeared to him Mr. Meager was complaining of an infringement of copyright not in existence at the time of the alleged infringement. Mr. Meager said 26 out of the 30 were taken previously, and the plaintiffs possessed the copyright, but it was necessary to have the copyright registered before the action could be brought. Dr. Williams read authorities in opposition to this contention, and then, at the suggestion of his Honour, called witnesses to speak as to the agreement with the plaintiffs. Messrs. R. Watkins, Tasker, and Stevens said they gave the order to plaintiffs, but denied there was any stipulation that the photos were only to be used in a particular publication. Eventually his Honour said that in view of the witnesses for the defence having declared that there was no restriction in the agreement, and Price having denied that he gave the order, judgment would be entered for the defendants with costs.

News and Notes.

We have received from Mr. Robert Banks, photographer, of 12, Market Street, Manchester, a copy of a recently published book of views of Manchester and the Ship Canal. The hundred photographs herein reproduced are full of interest to admirers of the great and progressive Lancashire city. Bound in leatherette, the book sells at 1s., and should be largely bought by Mancunians and others.

A complimentary dinner was given on Monday evening at the Café Royal to Major-General E. R. Festing, C.B., F.R.S., upon his retirement from the post of Director of the Science Division of the Victoria and Albert Museum. Among those present were Sir William Abney, F.R.S., Sir George Bartley, M.P., Sir Arthur Rücker, F.R.S., Sir Archibald Geikie, F.R.S., Major-General C. E. Webber, C.B., Mr. Thorpe, C.B., F.R.S., Professor Judd, C.B., F.R.S., Mr. Alan Cole, C.B., Sir Purdon Clarke, C.I.E., Mr. F. G. Ogilvie, Professor E. Lantéri, Mr. J. H. Teale, F.R.S., Professor Perry, F.R.S., Professor Farmer, F.R.S., Professor Tilden, F.R.S., Mr. J. C. G. Sykes, Captain Shaw, Professor Moira, and Mr. J. A. Grant.

The Prime Minister was the principal guest at a dinner party given at the House of Commons on Thursday last by Sir Benjamin Stone, M.P. Among the guests invited to meet Mr. Balfour were Sir Alfred Seale Haslam, M.P., Professor Dewar, F.R.S., Sir Archibald Geikie, F.R.S., his Highness the Aga Khan, Sir Robert Ball, F.R.S., Sir Edward Maunde Thompson, Sir John Batty Tuke, F.R.S., Dr. D. M'Kenzie, Mr. C. F. Hill, Mr. George Renwick, M.P., Professor Boyd-Dawkins, F.R.S., Mr. Henniker Heaton, M.P., Sir Norman Lockyer, Sir Robert Roper, M.P., Sir William Crookes, F.R.S., Sir John Evans, F.R.S., Sir Maxwell Lyte, Colonel Sadler, M.P., Mr. Dods Shaw, Sir Edwin Durning-Lawrence, M.P., and the Dean of Westminster. Sir Benjamin Stone exhibited to his guests a large collection of photographs taken by him in Algeria.

ARE we receiving less heat from the sun? Returns have lately been made to the Paris Academy of Sciences by M. Dufour and M. Ladislas Gorczynski which seem to show that such is the case. M. Dufour dates a marked diminution, beginning in December, 1902, and M. Gorczynski reports that it began at Warsaw in May of that year. Some observers are inclined to ascribe the decrease of solar radiation to the dust ejected from Mount Pelé, others to the increase of sun-spots. It is improbable that solar radiation varies sensibly from year to year; but the quantity of moisture in the air differs from day to day. 1879 was cold in England, not because solar radiation was less, but because the sky was nearly always cloudy. We observe solar heat and light at the bottom of an ocean of air, the changes in which must have far more to do with our records than alterations on the sun's surface, stupendous as these are. 1879 was a hot year in several countries, though a wet and cold one with us.

SIR NORMAN LOCKYER showed some interesting photographs and diagrams illustrating solar and meteorological changes, and a striking series of photographs to determine the relative temperature of the stars at the Royal Society's conversation last Friday. One photograph of especial interest illustrated the close connection between change of barometric pressure and rainfall, significant of the progress which is being made in this department. A very attractive exhibit under this head was that of Mr. J. Frankland Adams, consisting of transparencies and prints in illustration of a photographic atlas of the heavens, photographed at the Royal Observatory, Cape Town, 1903-4. The objects of Mr. Frankland Adams's expedition to the Cape were of great interest, including the elucidation of some problems of the Milky Way structure, especially as to possible extension beyond its limits generally accepted. Another was to secure records to allow counting stars and plotting areas of light for the Southern Milky Way, as has already been done for the Northern Milky Way. Mr. Frankland Adams proposes to publish a special photographic atlas for the use of investigators in this particular line, and it is to be hoped that the most useful enterprise will receive encouragement. The Royal Astronomical Society showed ten transparencies illustrative of sun-spot phenomena, from negatives taken with the Rumford Spectro-Heliograph of the Yerkes Observatory.

At a largely attended meeting of the South London Photographic Society on Monday, May 16, at Collyer Hall, High Street, Peckham, an interesting episode took place prior to a lecture by Mr. J. M. Sterry, hon. treasurer of the Royal Photographic Society, who explained his new process of controlling gradation in bromide prints and lantern slides. Mr. Sterry, before commencing his lecture, said it was a great pleasure to him to come down there that night, as he had lived twenty years on Peckham Rye, and he had not been there for twenty years, and he found the place very much altered since that time. He had been asked to perform what was to him a very pleasant thing to be able to do that evening, and that was on behalf of the Society to present a testimonial to their late president, Mr. Maurice Howell, who was one of the founders of the Society, and had been interested in it ever since in every way. If there had not been a Society when he lived at Peckham (for he was doing a little photographic work in 1860 and 1865 he gave it up then until 1888 he would have gladly joined it. He did not happen to know Mr. Howell, but he had great pleasure in asking him to accept the gifts in recognition of his services to the Society. Mr. Howell, amidst loud applause, was then presented with a very handsome silver cigarette case, bearing the following inscription: "Presented to Maurice Howell, Esquire, by members of the South London Photographic Society, as a small token of their esteem, May 16, 1904." He was also given a gold-mounted umbrella for Mrs. Howell.

EARLY MINIATURES.—At the Society of Arts last week an illustrated lecture on "Early Painting in Miniature" was given by Mr. R. I. Holmes, C.V.O., Windsor Librarian. Sir William Abney, F.R.S., presided, and there was a large attendance. The lecturer briefly characterised the chief miniature painters working in England from the time of Holbein to that of Cosway; but the chief feature of the evening was the remarkable series of lime-light illustrations, from "three-colour" photographs made from the original miniatures in the Royal Library, and enlarged to life-size. They were taken by the Sanger-Shepherd method, and though a few examples had failed and were not therefore shown by Mr. Holmes, the rest were little short of marvellous. Not only every line and shadow of the miniature has been caught and reproduced, but every tint and shade of colour so that the perfect miniatures came out perfect and those that were flawed or faded appeared as such. The famous "Mary Queen of Scots," by François Clouet; the full length "Sir Philip Sidney," by Isaac Oliver; the same painter's "thumb-nail" portrait of himself and the "Monmouth" and "Monk" of Samuel Cooper, the greatest of all miniaturists, were especially successful, and their appearance on the screen was warmly cheered. The triumph of the new process was demonstrated; henceforth it ought to be possible, by proceeding with care equal to that exercised by Mr. Holmes and the photographers, to make absolutely exact fac-similes, enlargements, or reductions of any painting, large or small. Incidentally, too, Mr. Holmes proved the truth of a saying of Horace Walpole, who wrote, "If glass could expand Cooper's miniatures to the size of Vandyke's, they would appear to have been painted to that proportion." Thrown in colour on the screen, they fairly rivalled Vandyke's pictures.

A gas balloon exploded on Thursday, May 12, in the Rue Edouard Robert, Paris, with the result that a number of people were seriously burnt and otherwise injured, whilst all the windows of houses in the locality were broken, and one house was set on fire. The event was an extraordinary one in many ways, says the Paris correspondent of the "Standard." During the morning, the Rev. Mr. n, the well-known photographic aeronaut, and a friend had made balloon ascent. As they were drifting over Paris, a sudden storm arose, and it seemed wise to make a hasty descent. Knowing the difficulties of a descent in the crowded streets, the aeronauts tried to rise in the air until they reached the more rural district of Vincennes; but, on reaching the lower regions, they were caught by a strong current which threatened to carry them back over the centre of the city. A rapid descent was consequently made, and the balloon, striking the housetops, landed in the Rue Edouard Robert, a narrow street on the eastern side of the city. Numbers of people rushed up to offer assistance, and to help the aeronauts. Unluckily a man was careless enough to go on smoking a cigar; and, the escaping gas coming into contact with it, a formidable explosion took place, the result of which was that the balloon, on at the same time catching fire. The shock of the explosion is described as terrible. Windows were blown to atoms, whilst people had crowded round the balloon were thrown violently to the ground. Only two persons are reported to be seriously injured, but sixteen others were more or less burnt or bruised. The explosion set fire to the first floor of 17, Rue Edouard Robert; but, help being at hand, the flames were quickly overcome. According to another account of the explosion, the balloon, in its descent, completely shattered the windows of the house, upon which one of the occupants succeeded in lighting a lamp, and it was this that set fire to the escaping gas. This, indeed, is the explanation given by the aeronauts; but other people who saw the accident state that the balloon caught fire beneath. Of the injured persons, eight have been detained at St. Antoine Hospital.

The World's Fair at St. Louis Great Britain makes a satisfactory contribution in regard to the leading scientific department—that of chemistry. The British Sub-Committee, which is composed of experts, states: "The recent achievements of Germany in the field of organic carbon chemistry, of which so brilliant an example is furnished in the great colour industry of that country, have perhaps, not generally, led to a widespread popular belief that, as regards chemical industry generally, Germany now occupies the predominant position. The general public, however, has scarcely been in a position to judge of the commercial importance of the chemistry and carbon products in relation to that of the industry as a whole, or to the extent of participation of other nations in those branches which lie outside the domain of organic chemistry. A study of this catalogue of British exhibits cannot fail to create astonishment at the wide-spread character of the exhibits, and when the value and output of various products are considered the reader can only arrive at the conclusion that synthetic organic chemistry constitutes but a small fraction of the whole. This being conceded, it becomes manifest that Great Britain still holds her own in the chemical industries of the world." The committee also furnish a list of British chemists and chemical processes discovered or worked out in Great and Greater Britain. Among the pioneers in chemical science are mentioned "Boyle, Cavendish, Dalton, Wollaston, Priestley, Davy, Faraday, Angus, Graham, Newlands, Percy, Abel, Muspratt, Frankland, Armstrong, Crookes, Dewar, Odling, O'Sullivan, Perkin, Ramsay, Roscoe, Thorne. Of these the last nine are happily still with us." Then, in the processes, they recite as British the Bessemer steel, the Deacon process, and Weldon's bleach processes, the preparation of coal-tar products, the Gilchrist-Thomas basic steel, the Solvay-Mond ammonia process, the Mond nickel and Mond power-gas, the McArthur-Forrest side gold extraction, the Messel-Squire sulphuric acid, and the Claus sulphur recovery processes. They append this moral: "We are to arrive at even an approximate estimate of the net financial results in terms of millions sterling that have accrued to the community from the work above referred to, it would constitute an impenetrable argument in favour of the encouragement by the nation of original research in chemistry, and of the education of students in the higher aspects of technology." To which may be added, as an official comment, that chemistry is the science which the British Government has neglected and taxed—in alcohol, for example—more than any other.

Correspondence.

- * * * Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.
- * * * We do not undertake responsibility for the opinions expressed by our correspondents.

THE "B. J." JUBILEE. To the Editors.

Gentlemen,—I am looking forward with great pleasure to your jubilee number (doubtless it will have an enormous sale), as I am one of those old-time photographers who have read it pretty regularly for something like forty-five years. I have very much enjoyed what I may call the "looking-back" articles that have appeared lately. I often smile at the new inventions. Why, sir, the roller slide was invented by the man to whom I served my apprenticeship nearly fifty years ago, Mr. A. J. Melhuish. He brought it out for the wax paper process, but the wet collodion coming in soon after, it got thrown aside; although I recollect his taking a series of views of Oxford with it 20 x 18 at the time of the Russian War. Of course you don't want an old man like me to bother you, or I could tell of dry plates (Hill-Norriess's), a large number of which I used before I was twenty-one. I am now sixty-five. Then there are snapshot photos. They are only a development of Scaife's "pistolographs," of which I have some family portraits taken when I was sixteen or seventeen. Now you press a button, then you pulled a trigger like a pistol. I see there has been a talk of book illustration with stereoscopic views. Why, I printed, as a lad, hundreds for, I believe, your publishers in Henrietta Street. I recollect views at Tenerife by Piazzini Smith among others. It was a monthly the first number, having a folding stereoscope. Then, again, as to metal cameras, why, McLean, Melhuish, and Hayes established a factory for making them in Lisle Street, Leicester Square, over forty years ago; but I must stop or I shall tire you. I could write all night of leading men of those times—the Prince Consort, Glashier, etc., etc.—but have gone quite from my object in writing.—Yours truly,
J. P. S.

May 14, 1904.

To the Editors.

Gentlemen,—Fifty years ago, when the original of the BRITISH JOURNAL was founded, I was a toddling youngster of four, but I suppose I was born with an old head for young in life I got mixed up with journalism and science. I have a vivid recollection of the late Henry Greenwood and his peculiar characteristics and wonderful business acumen. Having had the advantage of the association with the late Samuel Highley (at one time on the Editorial staff of this journal) and getting a fair insight into optical matters while he was in business as an optician, I had opportunities of taking part in demonstrations and experiments that I should not have had with one whose sole object in business was money-making. This being so, and catching the fever of "ink-spilling," as it is inelegantly termed, I soon took to writing, for I gained confidence from the knowledge that great men with whom I had come in contact did not know some simple matters of a technical character.

The golden rule, as endorsed by our present genial Editor, in writing for the Press, and especially practical journals, is "to express yourself as if the reader was unacquainted with the subject and the tuition was for a novice." Those who are perfectly conversant with the subject need not read if their time is limited, but often the most experienced workers gain from the results of others. It is this principle of mutual help that has made the BRITISH JOURNAL OF PHOTOGRAPHY always a successful and popular journal. During a period of thirty years I have had the pleasure of writing occasionally, one might almost say consistently, to the Journal articles on Optics, Light, and Lantern matters, and for some years, on the introduction of the monthly supplement of the "Lantern Record," wrote regularly my "Lantern Mems," but business exigencies have prevented my writing much for publication for the past three years.

As, however, I have had the gratification of knowing as personal friends J. Traill Taylor, W. B. Bolton, and our present Editor, and writing for the Journal under each of their Editorship, I feel I must resume my pen and offer my congratulations to the proprietors, and

the reading photographic public on the completion of the fifty years of publication of the "B. J."

That it has served a useful part in the past goes without saying, and the magnificent progress can be noted in the size and style of the journal, and its paper and printing. When one thinks of the appearance and fall of many other journals devoted to photography and allied subjects, the cause for congratulation is intensified. The Almanac is a standing monument to the success of the "B. J.," and its remarkable advance in popularity and usefulness is exemplified by the gradual growth of the volumes that all good photographers regularly keep and add to their library. The row on my book-shelf is an object lesson to doubters, and an incentive to work and industry. I wish the BRITISH JOURNAL OF PHOTOGRAPHY continued success and a patriarchal life.—Yours truly,

G. R. BAKER.

6c, Sisters Avenue, Clapham Common, S.W.,
May 14, 1904.

SOME SPECTROSCOPIC EXPERIMENTS WITH TRI-COLOUR FILTERS.

To the Editors.

Gentlemen,—I notice that a few typographic errors occur in the above paper, printed last week, and should be glad if you would insert the following corrections:—

Page 391. The two sentences, starting on line 14 of the article, should read as follows:—"The yellow and blue-green regions will be narrow." "The colour filters and plates should be so adjusted to each other that the red negatives should record the red and yellow regions, the green negative should record the yellow, green, and blue-green, and the blue negative, the blue-green and blue-violet regions."

Then on page 393, first column, line 28:—"The region absorbed by the filter," should read, "The region absorbed by the dye."—Yours faithfully,

A. J. BULL.

London County Council School of
Photo-Engraving and Lithography,
6, Bolt Court, Fleet Street, E.C.
May 16, 1904.

MONOBROMO FLUORESCINE.

To the Editors.

Gentlemen,—With regard to the above-named dye, which was recommended by Dr. Eder as an excellent green sensitiser for collodion work, and which I stated could not be obtained commercially, Dr. Eder now states in the "Photographische Correspondenz," May, p. 216, that its manufacture has been undertaken by Meister Lucius and Brüning, of Höchst, a/M., and that they supply it in a pure state at 2 marks for 10 grammes.—Yours faithfully,

Foots Cray, May 14, 1904.

E. J. WALL.

PSYCHIC PHOTOGRAPHY.

To the Editors.

Gentlemen,—As regards "Psychic Photographs" I would like an answer to what has always puzzled me. Who is the tailor that makes the shrouds or the dresses for them? I always thought that souls or spirits when leaving the body were dressed the same way as when born, and if I can admit that they leave the coffin (however they should leave the body before it is planted in some cemetery), how can they manage to leave the coffin all dressed as they appear on photographs? If souls can materialise to the extent of showing body, how about materialisation of cotton and wool, and maybe leather for the shoes? I want to believe, but I want a little explanation also. Who is the tailor and dressmaker for ladies departed?—Yours very truly,

A. LEVY.

Asnières (Seine), May 14, 1904.

MOTHERWELL EXHIBITION.

To the Editors.

Gentlemen,—I should be greatly obliged if you would kindly mention in the BRITISH JOURNAL OF PHOTOGRAPHY that the Motherwell Young Men's Institute Camera Club has decided to hold a third annual exhibition on November 3, 4, and 5, 1904, with five open classes and four members' classes. Silver and bronze plaques will be awarded. Messrs. William Crooke, Edinburgh, and William Goodwin, Glasgow, have consented to judge the exhibits.—Thanking you in anticipation, I am, yours faithfully,

JAMES DUNLOP, Hon. Secretary.

CHINESE PATENTS AND TRADEMARKS.

To the Editors.

Gentlemen,—In the Treaty which has just been ratified by the United States and China, there is the following clause through the most favoured nation clause of the Treaty of Tientsin is equally applicable to Great Britain, the words "Great Britain" being substituted for the United States in the clause.

The United States Government allows subjects of China to file their inventions in the United States and protects them in title and ownership of such patents. The Government of China agrees that it will establish a Patent Office. After this office has established and especial laws with regard to inventions have adopted it will thereupon, after payment of the prescribed issue certificates of protection, valid for a fixed term of years to citizens of the United States on all their patents issued by the United States in respect of articles the sale of which is lawful in China, which do not infringe on previous inventions of Chinese subjects in the same manner as patents are to be issued to subjects of China.

An inquiry has been made by His Majesty's Minister at Peking whether the Chinese Government have taken any steps to establish a Patent Office as provided in Article 10 of the American Treaty, the reply has not yet been obtained.

Hitherto China has been dead against patents of all kinds, and the history of China and Japan are remarkable instances of the absence of a patent law. In China and in Japan until a patent system was established, invention stopped at the point where it was no longer profitable to an individual to invent, as he could not keep his secret. In matters of manufacture, the Chinese and Japanese recipes for compositions had nearly reached perfection, but any invention which could not be worked without the public being able to make a copy, was not invented. Japan passed a very liberal patent law about twenty years ago, and its progress since then has been phenomenal; while China, equally civilised, has stagnated. The present Chinese Government, however, are now convinced that they must go in for modern improvements; hence this patent law.

In the British Treaty with China, signed at Shanghai, September 1902, is the following article in regard to trade-marks:—

"Inasmuch as the British Government afford protection to Chinese trade-marks against infringement, imitation, or colourable imitation by British subjects, the Chinese Government undertake to afford protection to British trade-marks against infringement, imitation, or colourable imitation by Chinese subjects."

"The Chinese Government further undertake that the Superintendent of Northern and of Southern trade shall establish within their respective jurisdictions under control of the Imperial Maritime Customs where foreign trade-marks may be registered, a system of payment of a reasonable fee."

Substantially this article has been reproduced in the United States Treaty. Through the kindness of the Marquess of Lansdowne we have received the following information: A working scheme for patent and trade-mark protection is now being evolved, and in the meantime a provisional registration office for trade-marks has been established at the Custom House at Shanghai, where we have a consular agent and the Chinese courts will presumably afford, as they have done in the past, substantial protection against counterfeit trade-marks on the part of Chinese subjects. The French, German, and English representatives have mutually arranged for the punishment in the Consular Courts of France, Germany, and England of subjects of these countries who infringe registered trade-marks, and in all probability the remaining Western nations will shortly do likewise.—Yours truly,

W. P. THOMPSON & Co.,
Chartered Patent Agents,
Liverpool and London.

British and Foreign Patent Office,
6, Lord Street, Liverpool,
May 16, 1904.

THE NORTHERN EXHIBITION.

To the Editors.

Gentlemen,—May I ask you to kindly afford me an opportunity of replying to Mr. Inston's communication, which appears in this week's issue of your journal, by trespassing further upon your valuable space? Mr. Inston has supplemented my letter with facts, facts, facts, and facts, and what bearing have Mr. Inston's facts upon the subject of my letter? Practically none; and the facts certainly not in line with any of the ordinary methods of business.

Mr. Inston's facts explain why I received no invitation to the opening ceremony, which, according to the Press, was such an enormous success? Or—may I ask?—were only a few selected for a special distinction, and, if so, why? The Royal extends its invitation, even though the whole of your work is rejected. Mr. Inston will excuse my saying it, but he has, in my opinion, entirely begged the question.

Mr. Inston's first "fact" relates to fees and catalogue. I maintain that every exhibitor was entitled to an acknowledgment for the amount of his remittance, whether that amount was two shillings or twenty. In my own case, I sent in a number of frames, and the amount of my fees was considerably more than the minimum, but have received no receipt. At Rotherham there are no hanging fees, but a catalogue is sent to each exhibitor.

With regard to the second fact, Mr. Inston says: "The charge for admission at the 'Northern' was 6d., and pass-out cheques were given." Is this a reason for not sending season tickets to exhibitors? What says your contemporary, the "Amateur Photographer"? May 6:—"A reasonable ground of complaint. The facility of a personal season ticket to every exhibitor is generally recognised as almost obligatory in the case of a well-managed exhibition."

Facts third and fourth. I am quite aware that the Walker Art Gallery and Cloak Rooms are the property of the Liverpool Corporation, and are managed under its direction; but does this condone the want of courtesy I experienced at the hands of its officials?

And now I come to Mr. Inston's last fact—No. 5. Excuse me, gentlemen, but really I must smile. He says: "No person outside the Liverpool Society spent a sovereign on the success of the Northern. . . . The gentleman who, not being a member of the Liverpool Society, paid the largest sum in entrance fees was not 'A Distressed Exhibitor.'" Is this, to quote Shakespeare, "the retort courteous or the quip modest"? Mr. Inston knows perfectly well that an exhibitor the mere hanging fees are a trifling detail compared with the preparation of special work, the cost of packing, the cost of transit to and from, and the general depreciation of one's frames. Should not these items be considered? They have to be paid. Is the hanging fees or the pictures that make an exhibition. If I were to total up my entire out-of-pocket expenses in connection with the Northern, including, of course, my visit to the exhibition, they could amount to probably double the sum named. But I have not complained of these matters at all; the whole tenor of my complaint on the beginning to the ending of the great "Northern" exhibition and which Mr. Inston has entirely ignored) is summed up in seven words, viz:—"the lack of a little common courtesy."

I beg in anticipation to thank you, and to state that I shall not trouble you further with correspondence on this subject, and I again have the honour to subscribe myself—Yours faithfully,
A DISTRESSED EXHIBITOR.

THE MONMOUTHSHIRE IRON AND STEEL TRADE.

To the Editors.

Gentlemen,—There is nothing in common with photography in the accompanying pamphlet, which, as you will see, refers principally to the "iron and steel trade." Still, you may perhaps find something interesting in the description given of the early methods of working and the changes and improvements which have from time to time taken place, and therefore in consideration of our old association of ideas in relation to photography, I have thought I would send you the pamphlet for perusal. The reproduction of the works is from a 10 x 8 negative taken by myself by the old wet collodion process about the year 1864, and the portrait is from a photo taken about the same time, but not by me. The work was taken with a 10 x 8 Ross triplet, and I think you will consider both photos fairly good.—Yours faithfully,
THOS. MITCHELL.

Flynnan, Harrow Road, Newport, Mon.

May, 1904.

[We have to thank our old correspondent, Colonel Mitchell, for the copy of his interesting brochure, which, besides giving the history of the great iron and steel works, contains some instructive reminiscences of labour and wages sixty years ago, the Chartist riots, etc. The frontispiece, a view of Abersychan Iron Works, is so good that it might have been taken yesterday with a highly corrected Anastigmat on a modern fine grain gelatine plate.—Eds. B.J.P.]

Answers to Correspondents.

* * All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.

* * Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.

* * Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.

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PHOTOGRAPHS REGISTERED:—

W. G. Honey 109, Patrick Street, Cork. Photograph of a Combination of Two Photographic Prints of Portrait of the King.

A. Holborn, 25, Stokes Croft, Bristol. Two Photographs of the Old Drawbridge, Bristol.

G. S. Bragge. "Sandercock" Midway, near Bardon-on-Trent. Photograph of Underground Workings in Granville Colliery, Saddlebrook.

J. S. Hazard, 27, Trafalgar Road, Greenwich. Photograph of Two Chimneys at Electric Generating Station, Greenwich.

W. H. Fischer, 19, Egerton Crescent, Withington, Manchester. Photograph of the Right Rev. Dr. Carswell.

G. A. Dean, 14, High Street, Rugby. Photograph of the Chemical School, Rugby School Grounds, Rugby.

"POISON."—Not necessary.

"A. L. C."—No doubt you may obtain it of Messrs. Mawson and Swan, Soho Square, London, W.

"T. P. C." (Tooting).—The prints you send are fair specimens of average studio work. You do not mention what your present salary is, but we should say that as a general operator your work would entitle you to about £2 to £2 10s. per week.

STUDIO QUERY.—CHANCELLOR AND SON say: "Can you oblige us with any information respecting high side-light studios? Is the system a success?" In reply: The system is certainly good, and many photographers follow it. Very many studios are in use lighted by this system. We do not reply to queries by post.

"A READER FOR 45 YEARS" (High Wycombe).—We should advise you to get your friend a pocket folding camera of the roll film type, which can be used for plates and flat cut films also. The latter will probably be found easier to manipulate, but for portability and convenience when travelling the daylight loading film spool has much to commend it.

COLORING PHOTOGRAPHS.—S. E. JONES says: "I have two photo colour sets (Judson's and Levetihan), and the book on same, 'Photo Miniatures.' The book is too advanced for me to do anything with it. Kindly name me a simple yet good book on same." In reply: We know of no simpler treatise than that you have. If you cannot understand that, we should advise you to get a few practical lessons from a good colourist.

VALUE OF LENS.—E. H. DEBENHAM asks: "Can you give me an idea of the value of a portrait lens about 5 in. to 6 in. focus, quick-acting covers, half-plate, bearing Stereoscopic Co.'s name?" In reply: We do not value second-hand apparatus. We may, however, tell you that it has but little market value. If it is of the focus you state, and a quick-acting one, we doubt very much if it will cover the half-plate size.

LENS QUERIES.—"PHOTO PHYSICS" asks: "(1) What will be the equivalent focus of the combinations when two lenses of principal foci 14 in. and 9 in. are combined together with a separation of 2.84 in. between the lenses? (2) What focus supplementary lens should be added to a 5 in. Anastigmat or Orthostigmat (any maker) to convert it into an 8 in. focus lens?" In reply: (1) Approximately 64 in. (2) A negative lens of approximately 13 in. focus.

ENAMELLING AND COLOURING.—"G. A." says: "(1) Kindly let me know, if possible, how to enamel with celluloid small photos such as are put into cheap miniatures? (2) Also best medium to use on glossy paper for use with water colours transparent?" In reply: (1) Soak the print in methylated spirit and then roll

with a hot roller, in contact with the celluloid. Suitable rollers are supplied by Fallowfield. (2) No medium is required if you use the coal-tar colours as supplied for the purpose by most of the larger dealers.

LENS QUERY.—E. A. BARTLETT says: "I have a R.R. Lens, $\frac{1}{4}$ -plate. No name on. Iris diaphragms. Will this be all right for portraits with a supplementary lens added? What is the effect of thus adding a supplementary lens? Also, what effect would two such supplementary lenses added have, and how should the two be fixed?" In reply: The lens as it is may, of course, be used for portraits. The object of supplementary lenses is either to increase or shorten the focus of the original. They may be had for either purpose. They are fixed in the front of the combination, and are mounted for that purpose.

AIR BUBBLES IN LENS.—"INQUIRER" writes: "I have just bought a Ross-Zeiss planar lens of fairly large size, and the glass has a number of bubbles in it. This, they tell me, is owing to the quality of the glass and does not affect it optically, or its commercial value. I would be much obliged if you will let me know if you consider that is the case, or whether the flaws in the glass would render it of less value if I wished to dispose of it?" In reply: In some of the new glasses used in modern lenses it is impossible to avoid air bubbles. They, however, in no way interfere with the working quality of the instrument, or its commercial value.

LENS QUERY.—"F. N." says: "(1) I have an offer of a Ross No. 3 portrait lens; it measures $4\frac{1}{2}$ in. across. Can you inform me if it is a suitable lens for taking groups of children? (2) Can you advise me what lens I should get for taking small heads for miniature? Some of these have to be very small, about the size of a shilling." In reply: (1) We think you are mistaken with regard to the size number of the lens. If it is $4\frac{1}{2}$ in. in diameter it is a No. 4. However, if it be either a No. 3 or a No. 4, it is a good lens for groups of children. But if the figures are posed in different planes the lens, like all others, will require stopping down in order to get them all in focus. (2) Any ordinary carte de visite lens will be suitable for the work.

RED TONES ON P.O.P.—"G. H. A." says: "Some time ago I saw in the BRITISH JOURNAL OF PHOTOGRAPHY a formula how to tone P.O.P. a scarlet colour. I should be glad if you would inform me in which number it can be found, or, if out of print, will you kindly repeat?" In reply: The information you require appeared in No. 2,145. Vol. 48, June 14, 1901. The formula was suggested by M. Helain, and is: Ammonium sulphocyanide, 5 grammes; potassium iodide, 1.50 grammes; water to 1,000 c.c., and add with constant stirring, dissolved in a little water chloride of gold, 0.25 gramme. This should be prepared as wanted. The prints should not be printed deeper than usual, and well washed prior to toning. When the desired tone has been attained, they should be again well washed, and fixed for at least fifteen minutes in a fifteen or twenty per cent. fresh solution of hypo. Toning takes about 35 to 40 minutes.

FAULTY LIGHTING.—"S. M." says: "I am an operator at a studio here; the lighting of same I cannot understand. There is top light and both side lights; the whole I can cover in with blue curtains. My trouble is this: However I arrange the blinds, I cannot avoid the light in the eyes of sitter. I enclose a print showing the large white spot which appears in all eyes, and which I cannot avoid. Of course this has to be spotted out on the print, but does not look well. Can you help me?" In reply: The specimen sent shows very faulty lighting generally. In a studio fitted with blinds such as you describe you should, if you understand your work, be able to get any kind of lighting on the sitter. In the example enclosed there is evidently too much direct front light. As you are an operator we should advise you to get your employer to instruct you in the lighting of the sitter.

STUDIO.—H. Tims writes: "Having noticed in the JOURNAL that you reply to photographers on matters photographic, I venture to ask your advice on the following matter:—I am building a studio on the H. P. Robinson plan (I enclose you a rough idea), but I was only intending to glaze the north side for a length of, say, 12 ft., beginning 3 ft. from back-yard end, at a height of 4 ft. 6 in. from floor, right

to ridge, which would leave 17 ft. blank wall. What I wish to know is, would the above amount of glass—12 ft. in length—be sufficient? I see H. P. Robinson advises the glazing of the whole of the U side, from end to end. The only advantage, so doing that I can see is that either end of the studio is thus available." In reply: Twelve feet of glass, as proposed, will be ample, if only one end of the studio be used. But by glazing the full length you have the opportunity of using either end, which is a very great convenience. In a studio of the dimensions shown in sketch plan, 4 ft., or 4 ft. 6 in., at either end may be opaque instead of three.

STUDIO QUERY.—S. W. VINES says: "I have a room 15 x 12 feet which has an east light. The source of light is two windows 6 ft. x $3\frac{1}{2}$ ft. Height from floor level to window-sill about 3 ft. I desire to use this room to take an occasional portrait. Can it be done satisfactorily as it stands by the judicious use of reflectors? If not, can you suggest any means of making it satisfactory? My work primarily is of a photo-mechanical character, the portraits being very occasional, so a studio is somewhat of a luxury. If you do not consider this thing possible, can you suggest any means of artificial lighting in conjunction with daylight or alone? I enclose a rough print of the class of portraiture which I practise and to which I have a leaning, and for the working of same do not think a 'studio' of the conventional type a sine qua non." In reply: There will be some difficulty in working the studio for full length portraits, like that you enclose, because it is so short. We should advise that, if you cannot increase its length, you work it diagonally. Place the sitter in one corner farthest from the light and the camera at the opposite one nearest the source of light. In future, write on one side of the paper only, if you please.

CARBON PRINTING.—"FAILURE" says: "I shall be very glad if you can give me a little information regarding the failures in the enclosed single transfer carbon prints. You will see the one on Whatman paper has small shiny specks in the dark shadows, and the one on canvas paper has the specks, and also in patches it is not in contact with the paper. Those patches come away in stripping the backing paper from the tissue in hot water. I may say that the ordinary single transfer prints are all right, of which I do a good many. It is only occasionally that I have these rough ones to do. I soak the rough paper in warm water about 70 or 80 degrees, for half an hour before mounting the exposed tissue, which I soak in water about 60 degrees, squeeze well, and place between blotting paper, with good pressure, for half an hour, and then start developing in water about 10 degrees or over. Do you think it makes any difference whether the rough paper is new or old? This I am using we have had in the house two or three years." In reply: There is always a little more difficulty in working with rough papers than smooth. Instead of soaking the transfer paper in water at so high temperature as 80 degrees we should advise you to soak for longer period in cooler water—say two or three hours at 65 degrees. Make the tissue softer before squeezing on transfer paper than is necessary with smooth paper, and allow longer time before developing. Do not be in a hurry to strip the tissue for the development. Transfer papers have a tendency to get harder by steeping. After two or three years it would be harder than when first issued by the makers.

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THE BRITISH JOURNAL OF PHOTOGRAPHY" JUBILEE NUMBER (1854-1904).

To celebrate the completion of the fiftieth year of the BRITISH JOURNAL OF PHOTOGRAPHY we shall issue on June 10 next a Special Jubilee Number of the publication, which is universally recognised as the oldest and most influential of its kind in the world.

The ordinary issue of the Journal of June 10 will be more than doubled in size in the text portion, and amongst other features will include, by way of supplement, an illustrated history of THE BRITISH JOURNAL OF PHOTOGRAPHY, with portraits and Biographies of the Eminent Men of Science, Journalists, and Photographers who have been identified with the conduct of the paper during the last fifty years.

As a souvenir of a unique celebration in photographic journalism the "B.J." Jubilee Number will undoubtedly be in enormous request, as it is not too much to say that the history of the paper during the half-century of its existence is most intimately bound up with the history of photography itself.

Of this Special Issue of THE BRITISH JOURNAL OF PHOTOGRAPHY many thousand extra copies will be printed, as the normal demand for the paper will be very largely augmented. Moreover, it is intended to give the Jubilee Number a specially organised world-wide distribution, so that the greatest possible publicity will be secured for the paper on the completion of its fiftieth year of existence,

EX CATHEDRA.

Radiation Notes.

While savants are deeply engaged in the endeavour to discover and explain the theory of the action of radium and cognate radiations, records of facts in connection with it continue to accumulate. A writer to the "English Mechanic" has sent copies of photographic negatives he has obtained through the agency of the thorium contained in the débris of incandescent mantles that had been in use for twelve months. A dry-plate was placed in the bottom of an "ordinary plate box," a piece of note-paper put over it, and on this were placed coins, pieces of metal, etc., covered with the crushed mantles. The whole was left undisturbed for eleven days. The result, which is reproduced by a process block in the pages of that journal for April 15, shows clearly the forms of the curious articles employed—coins, a key, a pen-nib, pieces of carbon, zinc, perforated zinc, copper, and tin-plate. In the issue for May 20 appears another illustration from the same contributor. It consists of silhouettes of various bodies produced by the thorium radiation acting through a sheet of aluminium 0.04in. thick. The writer, who signs himself "A. F. B.," states that he found no difference between the effects of light passing through green or red glows, thus showing the radiations to be of a different nature from that characterising the usual solar radiations.

* * *

Radium at Large.

We referred some little time ago to the disappointment of the inhabitants of Bath at the failure of their anticipations of a fortune to be realised by the extraction of radium from the famed waters of that city, which, though having been proved to exist, was shown not to be present in paying quantity. According to the "Peterborough Advertiser," the inhabitants of a certain portion of Huntingdonshire are likely to be in a similar state of pleasurable anticipation, radium having been discovered in the beds of Oxford clay, near Fletton, in that county. A long descriptive article, containing, however, no particulars, appears in that paper, but it is suggested that the discovery will make "brickfields better than goldmines." We would suggest to the writer the advisability of avoiding a repetition of the Bath fiasco, in counting chickens before they are hatched, and to take into consideration the facts marshalled in a paper by Professor J. J. Thomson, read before the Cambridge Philosophical Society, and, in brief, printed in these columns a little while ago. The paper described how radium had been found in a variety of places, but not in paying quantities—in the Cambridge gault, gravel from a pit, garden soil, sand from the seashore at Whitby, powdered glass, flour, precipitated silica. There is, of course, some sense for such roseate anticipations as those referred to, the price of radium being absolutely fabulous, and still

increasing, through the embargo laid upon the export from Austria of the substance it is extracted from—pitchblende. The requirements for therapeutical purposes has stimulated the demand which is almost daily increasing. Those who were fortunate enough to have made purchases when radium was first put upon the market are almost as lucky as the owners of shares once were in Devon Great Consols!

Radio-Active Bacteria.

The latest radiation curiosities were shown at the recent conversazione at the Royal Society. Photographs were produced from the radiations from masses of bacterial growth, which had been subjected to the action of radium emanations. These were placed between two sheets of non-radio-active glass placed in contact with a dry plate, and upon development in the ordinary way a dark area corresponding to the shape of the mass was shown. The bacterial radiation was sufficiently powerful to affect a plate through a double thickness of lead foil.

Atmospheric Transparency.

This subject, naturally possessing especial interest to photographers, seems to have attracted very general attention in 1902, and many observers in several parts of the world have recorded their observations upon it. There appears to be a general consensus of opinion that during the year 1902 there was a distinct, and even measurable, diminution in the transparency of the air to the sun's rays, and, further, that a return to what might be termed the normal took place some time in the succeeding year. The phenomenon was observed at Washington, and might, perhaps, have been the effect of some local cause, but for the fact that observers in other parts of the world had noted the same thing. It was shown that excess of moisture in the air could not have been the acting agent. The matter is considered so important, and, possibly, the basis of an explanation of other meteorological phenomena, that Professor Cleveland Abbe, United States Department of Agriculture (Weather Bureau), Washington, D.C., asks observers to send him any records that will assist in defining the dates of beginning and ending, and the extent of this change in transparency. Such records may consist of photometric or photographic observations of the brightness of stars, changes in the solar or stellar spectra, unusual prevalence of halos, large Bishop's rings or haze, observations of heat received from the sun as made with actinometers or pyrheliometers, observations of the polarisation of the blue sky light, and of the scintillations of the stars. It is proposed eventually to incorporate the results of these enquiries in a general article on the subject of atmospheric transparency. When it is remembered how strongly the whole surrounding atmosphere of the world was affected by the great Krakatau eruption, it appears to us highly probable that the effects we are referring to will prove to be traceable to the great volcanic catastrophe of Mont Pelée and the other West Indian irruptions. What gives the matter a particularly photographic interest is the fact that it was in what is usually looked upon as the photographic part of the spectrum—the violet and ultra-violet—that the effects were especially noticeable. It is unfortunate that at present we possess no absolute standard of actinism that the observations could be referred to, and if the discussion of the data received should lead to such standard being devised, a great gain to photographic technology would accrue.

London Landmarks.

"Going, Going, Gone," is the cry of many buildings in our Metropolis just now, for the Spirit of Destruction is abroad, and he does not stay his hand. It seems but the other day that the last

of London's galleried inns, "The Old Bell," in Holborn was demolished, and now its near neighbour, "The Black Bull," is in process of being pulled down. There was a little crowd on the opposite pavement on Wednesday week watching the operation of lowering the black bull which gave title to the place, from his proud perch on the second floor front, to the ground beneath. They were swathing the limbs of the black bull in canvas, and taking as much care of him as if he had been a human being. And we wondered if there was a camera bearer within the crowd who was able to take a photographic note of this interesting ceremony. If the shade of Charles Dickens still haunts the neighbourhood, which he knew so well, he would have been interested in the proceedings. For he lived in these old inns, and has drawn many a word-picture from them with more than photographic accuracy. And he generally made special mention of their signs—with his caustic remark about the celebrated "White Horse" which still stands in the High Street, at Ipswich. He would not say that this terrible animal "was supposed to have a distant resemblance to an insane cart horse"! He is not aware that he criticised the appearance of the Holborn "Black Bull," but he certainly alludes to the inn, as reference to "Martin Chuzzlewit" will show. We trust that the bull itself will not be destroyed, and care that was taken by the builders in wrapping it up previous to its descent to the ground warrants the belief that it is intended to be preserved. It is not only a memorial of our popular novelist, but it is a fair representative of those signs which used to distinguish all houses in business in the Metropolis, but are now found only on licensed premises and but seldom on those. It is curious within the bounds of possibility that the black bull has been purchased by some American admirer of Charles Dickens, for such things are prized on the other side of the Atlantic far more than they are here. The sign "The Wooden Midshipman," for example, would fetch a weight in gold any day from our American cousins. The proprietor in the Minorities care to part with it. Otherwise, the bull may find a resting place, together with other things of a like nature, in the Guildhall Museum. We never may be its ultimate fate, it, and relics like it, ought to be photographed, and the pictures should find a place in the national collection. Our streets may be too crowded with traffic to allow of such things as signs, and the London County Council set their face against anything of the kind, but there is every reason why memorials of the city, as it was known to our forefathers, should be carefully preserved, so that future generations may have tangible evidence of customs which are now dead and gone.

Trichromatic Lantern Slides.

When Sir William Abney is advertised to take the chair at a meeting or lecture, we may be quite sure that something of importance to photography is to be the subject of discussion. It was so at the Society of Arts the other night when Mr. Holmes, who, we understand, is the custodian of the various objects of art belonging to the Royal Collection at Windsor, lectured on "Early Painting in Miniature." The photographic interest was found in the beautiful manner in which the lecture was illustrated by trichromatic slides in colour, and those who practise that fascinating phase of photography would do well to ponder upon Sir William's words of warning concerning it, which persons of observation will admit were very much needed. He spoke very highly of the pictures shown, and gave a generous testimonial to the excellent work achieved by Mr. Sanger Shepherd, to whose process the slides were due. The lecturer had explained that in consequence of unforeseen difficulties attending the work, certain pictures

which did not quite satisfy him had been withheld. This brought words of commendation from the Chairman, who expressed the opinion that if only other people who produced three-colour work would be equally fastidious, and not allow such abominations to appear as were occasionally shown as the production of tri-chromatic photography, the process would not have acquired the bad name it has at the present time. No one who has followed the process of three-colour work will complain that this trenchant criticism is undeserved, and of course it applies more to attempts on paper than to lantern slides which show the process at its best, for the tones are not cut up into a network of dots, as they are bound to be when half-tone blocks are employed. There has been more than one attempt to start a journal with coloured illustrations printed by the three-colour method, but the work has been so poor that even a public which is by no means critical in the matter of art would not respond to the efforts made in their behalf by the too sanguine publishers. That the newspaper in colours will come in time we have no doubt, but it must be very much better than its predecessors if it comes to stay. Apart from this little incidental matter, the lecture was interesting to photographers because it opens up a variety of suggestions as to kindred subjects which can be effectively illustrated in a similar way. The lecturer prefaced his remarks by an apt quotation from Walpole's "Anecdotes of Painting," which was to the effect that if a glass could expand Cooper's pictures to the size of Vandyck's they would appear to have been painted to that proportion, so perfect were they in excellence of detail. The lecturer had longed to try the experiment, not only with Cooper's works but with similar paintings by other miniaturists, but that was impossible until the tri-chromatic method of producing lantern slides removed all difficulties. Mr. Holmes said nothing about the use of the opaque lantern by which small objects can be projected upon a screen, but no doubt he considered that expedient as being not worthy of mention by reason of the risk from heat to delicate painting, and the impossibility of removing objects from museums and private collections for exhibition in a lecture-room.

LOCAL TREATMENT IN CARBON PRINTING.

Many who are not really familiar with the carbon process do not seem to realise to the full the scope there is for modifying effects and introducing individuality in their pictures. Some appear to imagine that such effects are only to be obtained with gum-bichromate, or with platinum-type with glycerine developer applied locally. But the carbon process lends itself to local treatment as well as does either of those just mentioned. If this particular property of the carbon process were more fully realised by those who desire to show individuality in their pictures, they think that many, in practice, would prefer it to gum, mainly for the reason that the material may be purchased ready for use, and thus the worker would be saved the trouble of preparing his own pigmented paper, and often having to spend hours over the development of his pictures and sometimes having to resort to two or three pigmentings and printings in order to obtain sufficient depth in the shadows.

It is pointed out in all treatises on carbon printing the wide scope there is for correcting errors in the exposure in the development of the image. If over exposed it may be corrected by the employment of hotter water and allowing longer time for the development; conversely if the prints happen to be under-exposed the error can be corrected by using the water at a low temperature. Also

it is usually pointed out that in working, certain portions of the pictures can be brightened up by applying, locally, a stream of hotter water than that employed for the picture generally. All this is pretty well understood by the majority of carbon workers, but something more than that is desired by those who are desirous of introducing their individuality in their work, and it may be done in the way of "faking." We may, perhaps, be excused for using this term, but it has become a very generally accepted one when pictures have been "dodged" or the ordinary manipulations have been modified in their production. The term now has become pretty well understood, though it is somewhat uneuphonious, still its meaning is well understood in photography. Having said this much we shall now give a few practical hints as to the way of obtaining the same advantages with carbon, as regards control in local treatment, as with gum or platinum-type.

In the first place, it may be well to make a silver print from the negative, and determine from that what is desired in the finished picture. The carbon tissue employed should be in a fairly soluble condition and not at all stale. If it be decided from the silver print that much local treatment has to be done, the tissue should be but very lightly printed, so lightly, indeed, that it would, under the ordinary conditions of working, be considered much under-exposed. If the print is at all over-exposed it is fatal to any great extent of local treatment. The beginner will do well to employ, at first, the single transfer method, as with that any grade, or tint, of paper may be employed. Furthermore, the image on the single transfer paper will permit of much rougher treatment than when it is on a temporary support, whatever that may be. After a little experience has been gained in extreme faking, the double transfer method may be used without any great difficulty.

We shall not here go into the working details of the carbon process, but at once assume that they are already well understood; therefore, we shall proceed with the manipulatory part of the work which, by the way, should be commenced soon after the tissue has been exposed, so that no "continuing action" takes place. The tissue, which has received but the minimum of exposure, is mounted on the transfer paper—rough or smooth—in the ordinary way, and after resting the usual time the print is put into water at a temperature of 95° or 100° F., and the backing paper stripped off as usual. Then the print is at once transferred to cooler water—say, 80° F. This will almost arrest development. Now, having decided, from the silver print, the effect desired, we, with a camel's hair brush dipped in warmer water, proceed to clear away the unaltered pigmented gelatine from the lights it is intended to emphasise, leaving the other portions to take care of themselves for the time being. After resting a little, while the picture is very slowly developing, the effect obtained will be seen, and other portions can then be locally dealt with. At this stage the picture will be very much under-developed.

When it is judged that the effect desired is approximately obtained, the picture should be put into warmer water—say, 90°—and allowed to develop by itself for a time. Then the general effect will the better be judged of. If further treatment is desirable the picture should be replaced in the cooler water and the brush treatment with hotter water repeated. Should the shadows seem to be getting lighter than is desirable, the development of them may be checked by the application of quite cold water applied either from a jug or a brush. At this stage the picture should still be considerably darker than it is to be when finished. When all the effects that are desired at this dark stage are satisfactory the print is once more transferred to water at the temperature of—say, 100° to

105° F., and the development completed in the usual way. The great thing in local treatment, when much has to be done in carbon printing, is to commence the principal part of the work at a very early stage, and complete it before the print has become fully developed. When this is done the finished result, if the work is carefully done, will bear no evidence of having received any local treatment at all.

Supposing when the picture is fully developed it seems capable of further improvement—say, by way of example, by having some heavy shadows made lighter—it may be done in the following way: Let the print be closely drained. Then a camel's hair brush dipped in diluted ammonia—say, 1-10—may be applied to the portions desired to be lightened, this treatment renders the gelatine where it is applied very soluble even in tolerably cool water. If, then, the print be put into water about 85° to 90° F. the pigment gelatine will be dissolved away leaving the other parts quite unaffected.

In this article we have not attempted to deal with all the "faking" that may be accomplished in the carbon process, but we have said sufficient to indicate to those who are not aware of the fact that as much, or more, in that direction may be done as with any other process, and perhaps with less trouble to the worker.

ON THINGS IN GENERAL.

A LAW case of fresh interest to photographers was tried the other day, and, strange to say, has met with very little comment among those so much interested as the professional portraitist.

Briefly, the suit, which was tried in the final Court of Appeal in this country, of course, will now stand as an important precedent, was over the infringement of rights of light. Hitherto, a man whose lights had been diminished by the erection of a building or other obstacle has been considered to have a perfect case for obtaining legal redress. This appeal, now over, has settled that, though an occupier's access of light may be reduced, he has no remedy if it can be proved that the residual light is sufficient for the purposes of his business. It seems hard from one aspect, common sense from another. It, however, ignores the fact that the amount of illumination which would suffice for one kind of business might not be enough for another, and so the premises whose light was interfered with would be reduced in order inasmuch as their lettable possibilities would be circumscribed. Possibly it will be held that photographers are not interested, as the slightest infringement of their lights would militate against the conduct of their profession at all times in all kinds of light. Unfortunately, let that be granted, there would still remain the fact that another was added to the list of the law's uncertainties, and the doubt as to how a jury would treat the matter would cause many to pause who, before this decision, would have felt they had a "good case." A case in point may be quoted.

Not very long ago a portrait photographer in the provinces had his studio lights interfered with by the erection of a large building overlooking his premises, the building being persisted in in spite of protests. Eventually, on the eve of a trial at assize, a compromise involving the receipt as solatium of about a thousand pounds was arrived at. It is evident that if this recent appeal case had then existed as a precedent the infringers would have been so armed as to permit them to take a stiffer attitude in the negotiations, if, indeed, it did not induce them to stand the risk of a trial. There is one point about rights of light not generally understood that may be here attended to. It requires that twenty years of uninterrupted enjoyment of

a light before a legal right to possess it accrues; but the failure to make any use of such light, or the permitting its obstruction, for a couple of years, extinguishes the right altogether. Another point useful in practice may be referred to. A tenant or owner puts a window in a hitherto blank wall, separated or not by a passage from a neighbouring tenement; it is commonly thought that the neighbour thus newly overlooked can compel the window to be removed as "he has no right to it." But this is all wrong. His only remedy is to put up an obstacle to prevent light arriving at the new window, and such obstacle must not, in any part, obstruct the light that arrives at any other window beyond the offending one. When a passage intervenes this obstruction-building may be both difficult and costly. And even when no passage intervenes and the properties adjoin one another, the obstruction to be erected must not be attached by nails, etc., to the offender's wall. So that if it be elected to board up the window the boards must have their support from outside sources.

In the May 13 number of this journal is a letter from "A Provincial Photographer," which is so very one-sided that it needs a corrective. The burden of the writer is that among the hosts of applicants for the post of operator there are so few competent men, and that the cause of this is the taking of artied pupils with premiums by firms of wide repute and the turning out of assistants not knowing their business. Now, as a matter of fact, it would be interesting to know how many of these incompetents have been premiumed pupils. I am sure the proportion would be found to be infinitesimal. Even if this were not so does anyone imagine for one moment that the taking of a fee includes a guarantee of efficiency at the end of the term? The thing is absurd on the face of it. Does the articling a solicitor's pupil or the paying of a medical student's fees guarantee a successful début to the pupil at the end of the period? Of course not. How many wasted lives could trace their downfall to a misspent attempt at a professional career. It is the man and not the means that tells, and fortunate it is that should be the case in all professions, as, otherwise, all would be crowded to death through the absence of misfits, and it would add still more to the professional portraitist's troubles if ready-made operators could be produced thus abundantly. As to the other side of the question whether there is any use at all in spending money in having a youth taught business like photography which is so easily picked up I can only quote the opinion of an old professional who said he had a son well up in his work, yet he would gladly give a hundred or two pounds for him to have an opportunity of picking up what he could at a first-class studio for a year or two! When a man has learnt how to make a good negative he is only just beginning to learn professional photography. The country teems with failures of good men, possessed of capital too, to make a business through want of familiarity with the everyday work of a studio. It must ever be borne in mind that by going to an established studio to learn a business the learner has all the advantage of the experience of those who have succeeded when others have gone to the wall, who have learnt by losses and failures, and have arrived at success by the elimination of similar sources of loss, and at ability by years of practice. I should like to think that we have heard the last of the turpitude of premium-taking photographers; but I fear we have not.

The recrudescence of interest in spook photography is not, on this occasion, the concomitant of the big gooseberry season, though it will by many be allied to it. For one thing, it is a little early. Yet, after all, we do not know that big gooseberries have been produced, and photo-

graphs with representations of a spook or its substitute have been seen. The marvel is so great that no one (or hardly ever) one will believe in the genuineness of any such representation in the production of which he has not had a hand as watcher or otherwise. For example, I have handled a photograph of a house, in front of which and unmistakably three full-length standing figures; yet I am sacredly assured that only two figures were present in the body when the view was taken, though the original of one of the two figures had recently lost a relative to whom this third figure bore a striking resemblance. Yet I am not convinced. Though neither negative nor print has been faked, I am certain that the presence of a spook is not the only explanation of there being a third figure present!

A copyright action that failed the other day is, nevertheless, of interest on special grounds. It is usually thought that to obtain an injunction against infringement of even damages resort must be had to a High Court with its costly fees. But at Swansea, a week or two ago, an action was brought in the County Court against trustees of the Independent Order of Rechabites for infringing the copyright of photographs of the district by a local photographer. The action failed, not because the Court was not entitled to adjudicate on such actions, but simply on that might be termed a technical point—the plaintiff failed to prove the special arrangement under which he admitted the photographs had been taken entitling him to the copyright.

The recent discussion on photographers' prices at the P.A. was well-timed. A general agreement on principles would be very advantageous, especially if it tended to the fixing of a price for a simple picture only. The general public have been so spoiled by "spec" pictures that it so often happens that they feel indignant when asked to pay for a photograph they "do not like," though they admit the picture is excellently taken, and the failure to lease is owing to no fault of the photographer. Yet, lamentable as it may sound, it is nevertheless true that they will not hesitate to take such rejected picture and have it copied—possibly by a man in a garret with a capital, all told, of a few sovereigns!

FREE LANCE.

LADY CONAN DOYLE and Mrs. Thomas Hardy have consented to adjudicate on the new "Tatler" prize competition for photographs of the three most beautiful children in the British Isles.

"PHOTOGRAPHY is a strange profession," muses the young man. "Because it develops negatives?" asks the young woman, with a knowing look. "Not that, exactly. But, as an example, the other day I had my picture taken in my riding togs—not on a horse, you know, but just standing in my riding outfit, with my crop held in my hand. And to-day the photographer writes me: that the pictures are ready for me, and that they are all mounted."—"Judge."

It seems, according to the "Bulletin de la Société Astronomique de France," that M. Lucien Rudaux, of Donville, in the Department of Manche, narrowly missed being the first discoverer of comet α , 1904. Having taken a photograph of part of the constellation Hercules on the evening of the 16th ult., he noticed, on developing the plate, a slight nebulosity between the star 52 Herculis and the cluster M 92. Before he could compare its place with the stars again the sky had become cloudy, and was so again on the following evenings. If we allow for the difference of longitude, the time of the photograph (about 10h. 30m., Paris time) was about four hours before that of the actual discovery by Mr. Brooks at Geneva, N.Y. The "Astronomer-Royal" communicates to the "Astronomische Nachrichten" three accurate places of the comet obtained from photographs taken with the astrographic equatorial and the 50 in. reflector of the Thompson equatorial at the Royal Observatory, Greenwich, on the nights of the 17th, 18th, and 19th ult. The comet is now only about half as bright as it was when discovered.

PHOTOGRAPHY AS A PROFESSION AND AS A RECREATION.

[The "Blanc" Prize Essay: A paper read before the Edinburgh Photographic Society.]

THE labours and recreations of men form an ever-interesting study. Looking out upon the world we see a vast army of workers, engaged in many different forms of employment, yet all having their place in the great economy of labour. In accordance with the law of supply and demand, the varied and numerous wants of men have created many fields of labour which are open to the aspiring worker. Different minds and tastes select different forms of activity, and thus we find that labour, which is, practically speaking, common to all men, takes forms innumerable. Then, if we look at the recreations of men, we see that these, too, are many and varied. Some demand physical energy and endurance in no small degree, while in others the intellectual or imaginative faculties are alone brought into play. The place which photography occupies among the professions and recreations of men, and the attractions which it offers in both connections, must be of interest to us, as members of a Photographic Society which exists for the promotion and culture of art. It is hardly necessary, I think, in this the twentieth century, to claim that photography, whether we take it as a profession or as a hobby, has a real and indispensable place. It cannot be denied that photography has become a necessity of modern life.

AS A PROFESSION.

Let us look for a little at photography as a profession, and at the inducements which it offers to those who enter it. As a general rule, the considerations which influence one about to enter any business or profession are twofold. Firstly, is the work likely to be congenial, and to employ and develop any special talent which he may have? And, secondly, would it pay? In considering these two questions in relation to photography, it would be well first to notice the general nature of modern professional work, and some of the qualifications which are necessary to success in it. During the last twenty or thirty years a great change has taken place in the work of professional photographers. Up till that time the development of photography had almost entirely taken place on its technical and scientific side. The names of Niépce, Daguerre, Fox Talbot, and others are associated with discoveries which have given them high places of honour as contributors to the development of an important branch of human knowledge. But for many years after these had finished their labours, the artistic possibilities of photography were still undreamt of; and we see, from the examples which are still preserved to us of the work of the earlier professional photographers, that technical excellence alone was their highest aim. And it must be admitted that in many cases their work, as regards technique, reached a high standard, and for enduring quality compares well with much of the work produced to-day. From an artistic point of view, however, the results, especially in portraiture, were generally very crude. The portraits were almost all full-length ones, and the position, background, accessories, and style of lighting were the same for all classes of subjects. All that was expected and desired was a purely mechanical reproduction of face and figure. As has been said, within the last twenty or thirty years this conception of photographic portraiture has been entirely changed. This change is due to several causes. Undoubtedly the spread of education and culture has had a considerable effect in diffusing a knowledge and love of the beautiful and artistic among the great masses of the people, and has led them to demand a higher standard of excellence in photographic portraiture, as in other things. One of the most important causes, however, has been the introduction of the dry plate and the perfection to which it has attained. Owing to the greatly increased convenience in working, this resulted in photography being used by many who did not adopt it as

a profession, but who employed it solely as a means of artistic expression. While the efforts of such workers have been mainly confined to landscape and seascape photography, they have undoubtedly helped to quicken the development of professional and studio work. Again, the introduction of the platinotype, and the greater use of the carbon process, gave to the photographer more suitable mediums for the expression of his artistic conceptions.

THE ARTISTIC INSTINCT.

But perhaps the most important cause has been the entrance into the ranks of professional workers of men of artistic instinct and high technical ability; men who had more than a commercial interest in their business, and who have worked hard and conscientiously to raise the photographic art to the high place to which it has attained to-day. It is flattering to our national pride to know that Scottish workers have been in the van of this progressive movement, and that the reputations of many who are still with us are amongst the highest in the photographic world. To ensure success, then, in professional photography to-day, a man must possess the artistic instinct. It is not a case of placing the sitter in front of the camera, turning a handle or working a screw, putting in a plate, and leaving the rest to Providence. Position, background, and style of lighting must all be carefully considered, so that full justice may be done to the subject. More than a mere mechanical likeness should be aimed at. There should be an endeavour to convey, in the photograph, some idea of the personality of the subject, to show something of the character and temperament; and the nearer the photographer comes to achieving this, the closer he comes to the ideal. Here the art of portraiture finds its highest development, and, while it takes years of study and experience to attain proficiency in this direction, the young worker, by ever keeping these ideals before him, will make steady progress towards it. Then, to secure any but temporary success, the photographer, whether professional or amateur, must be a careful and patient worker. There are few businesses or professions where more constant care is required. The good work done in one department may be entirely destroyed by a little carelessness in another. The necessary carefulness, however, is generally taught by sad experience—the most efficient of all teachers. Although there are many good professional photographers who are by no means so patient as they might be, still the possession of this quality is very helpful, especially in the photographing of children. The angelic-like qualities so universally attributed to children are sometimes most conspicuous by their absence in the studio, and only by tact and patience can a good result then be obtained. Infants who can only blink and scream are brought to be photographed, on whom waving and flapping and the most seductive noises which horns and rattles can produce have absolutely no effect. These and many other things try the patience and skill of the professional photographer. And yet, with all its worries (and no business or profession is without these), the work is of a most interesting kind. While I have mainly referred to studio work, which perhaps would possess the greatest attraction for the student of human nature, every branch of photography has its own peculiar interest. Photography in recent years has taken a much higher place as a profession than it had previously done. Photography has been recognised as a distinct and important branch of art, and the exhibitions of the work of our leading professionals have been favourably commented on by the Press and the public. Professional photographers, too, have recognised the necessity of union and combined action. The Professional Photographers' Association and the Copyright Union have already done excellent work, and only need to be well supported to have a powerful influence.

THE COMMERCIAL SIDE.

On its commercial side, photography cannot be said to have made the same progress as it has on the artistic and technical

side. One reason for this is that men who are admitted to the artistic side of the profession are often possessed of little or no business ability, and so they suffer in competition of modern life. Like most other businesses, it has suffered in the general demand for cheapness. It also suffered from the want of combined action among photographers in regard to such matters as the training of apprentices, the regulation of prices for published photographs, also in other ways. As has been said, however, the societies mentioned are tackling some of these questions, doubtless some improvement will result. As to the remuneration which a man may expect under an employer, it is difficult to state any standard or fixed sum. With the absence of union, a man has been able to command as much as he worth. If a man has ability and some artistic feeling, there should be no difficulty in his getting a post where the remuneration would compare very favourably with that of most businesses or professions. Although, as has been said, professional photography has suffered somewhat on its commercial side, its position as a remunerative business is still fairly satisfactory. New fields of action are constantly being opened and the enterprising professional need not confine his energies to studio and portrait work. A recent example of this has been the extraordinary development of picture postcard work, which would have been more taken advantage of by professional photographers than it has been. There is no doubt that a firm turn out first-class work, whether in studio portraiture or in any other department, that work will be their advertisement, and they will be certain to receive a satisfactory share of public patronage.

AS A RECREATION.

While the number who to-day practise photography as a work and profession is by no means inconsiderable, it is nothing compared with the number who practise it as a hobby or recreation. In the days of wet-plates, as can be well understood, the number of amateur photographers was very limited, though some enthusiastic spirits braved the discomforts and difficulties which then attended the practice of photography in order to pursue their favourite hobby. But, with the advent of the dry-plate and the improvements which have taken place in apparatus, the number of the unpaid devotees of the hobby has greatly increased. The introduction and great development of the hand camera, too, brought another, and perhaps rather different, class into the ranks of amateur photographers. There are, generally speaking, two classes of amateur workers. One class, among whom are numbered the more serious workers, have a direct interest in the technical or scientific side of photography, or use photography as a means of expressing their more or less defined artistic feeling. The other class have little or no interest in, or knowledge of, photography, but use the camera as a means of obtaining permanent impressions of the places which they visit or of the people whom they wish to remember. The great majority of the latter class use the hand camera for its greater convenience and portability, many of them may be seen at any popular watering-place or holiday resort during the season. Very often their photographic operations are confined to pressing the button or squeezing the ball, the city photographer or photographic dealer relieving them of the rest of the work. They are, however, by no means to be despised because of that. Many people have no natural liking for photography, while some have not the leisure to gain a fair knowledge of its technique; and yet they may find pleasure in obtaining photographs of scenes which they visit, or of friends whom they may meet, and if they care to obtain them in the easiest way possible, no one has any right to condemn them. But while that is so, it must be said that the rest of such work contain a large percentage of failures. The dealer or professional photographer who may get the plates and films to develop finds, as a rule, that many of them are use-

om fog, double-exposure, movement, or errors in exposure. Successful hand-camera work cannot be done without at least fair knowledge of the technique, as well as of the limitations and possibilities of photography. But by far the larger class of amateur workers proceed on lines very different from those above indicated. They enter upon the pursuit of the photographic art because of the attractions which it offers in itself, and it cannot be denied, as has been already suggested, that the artistic development of photography has been due, in great measure, to the efforts of amateur workers. This is especially true of landscape and seascape work, which, naturally perhaps, have never received the same attention from professional photographers.

PORTRAITURE BY AMATEURS.

Portraiture, however, has seldom been successfully attempted by the ordinary amateur worker. The lenses with which he is usually supplied are unsuitable for artistic portraiture, and the difficulty of controlling the lighting to suit the subject either in a room or outdoors is very great. Certainly many amateur workers have produced fine portrait studies, but, generally speaking, the energies of the amateur photographer are more successfully directed towards landscape and seascape work; and surely in these there is ample scope for his energies and for the development of his artistic instinct. The beauties of hill and valley, the winding rivers and the branching trees, the stretches of moorland, or the picturesque cottage, and the ever-changing panorama of sea and sky are worthy subjects for his camera, and provide him with abundant opportunity for showing whether or not he possesses any powers of artistic expression. When the amateur photographer has got over the preliminary difficulties of technique, in most cases he or she finds a great pleasure in the pursuit of the hobby. Many are discouraged by the non-success at first, and give up the attempt altogether. It certainly has a depressing effect on one, when, after spending a warm summer day in carrying a half-plate outfit over many a weary mile, and exposing plates on scenes which look beautiful and charming, to find, after coming home, and after having with much painful preparation and effort succeeded in developing them, that they are all spoiled, either because of technical faults or because the scene which looked so beautiful to the eye photographs poorly and disappointingly. These are trials which every photographer experiences at first, and which patience and perseverance overcome in time. And once a good working knowledge of the camera is acquired, more pleasure can be taken in its use as an artistic medium. If a man has had no definite art training, his first artistic efforts in photography will be pretty much groping in the dark. If he seeks inspiration and help by studying the walls of our photographic exhibitions, and the pictures which have been singled out by the judges, he may be still further confused. The fact that Art cannot be contained in any creed or set forth in any code of rules, and while a knowledge of the general laws of pictorial composition will be helpful, they need not be slavishly adhered to. The beginner is better not to follow the example of any extreme school until he is sure of his own conception of Art.

LANDSCAPE PHOTOGRAPHY.

Early landscape photography was faulty because it showed unwelcome details as prominently as the principal objects in the picture. "Sharpness all over" was then the motto. This has been changed, but like most reforms in their first sweep, the change has gone too far in the other direction. Even now there is a reaction against the extreme lengths to which the "fussy type" school has gone. A blurred mass which might be anything is not necessarily artistic. As has been said, the beginner should feel his way first, and then should seek to put as much individuality into his work as possible. Do not let him copy the style of any one else, however good it may be, but let him strike out a new line for himself. If he is a

lover of Nature in all her moods, he will see beauties in her which possibly have not been observed by other men. Let him try in his pictures to express the feelings which Nature inspires in him, and the better he does this the truer the artist he will be. The poetic descriptions of the external beauties of Nature which thrill us and which are assured of immortality are not those which merely describe her charms. It is those which go deeper, and which tell us of the feelings and emotions which these beauties have inspired in the poet's heart. So it has been, too, with the men whose names have adorned the world of Art in all ages. Their work has been so characteristic and full of individual feeling as to be easily distinguished from all others. While perhaps not to such an extent as the poet or the painter, the photographer has nevertheless in his camera an excellent medium for the artistic expression of imaginative thought. He, too, as well as the poet or the painter, may show that—

"There is a pleasure in the pathless woods,
There is a rapture on the lonely shore,
There is a society where none intrudes,
By the deep sea, and the music in its roar."

It is in the use of the camera towards this end that the serious amateur worker will find the greatest pleasure in his hobby; and it is gratifying to know that there are many who have done and who are still doing work which is not only creditable to themselves and a pleasure to others, but which is also an honour to the art which they practise. Photography will perhaps never become a popular hobby, in the ordinary sense of the word. One drawback to its general use is the expense. Materials and apparatus have in recent years, however, become much cheaper, and doubtless in time the practice of the photographic art will be within the reach of all. That the amateur will greatly encroach upon the field of the professional worker is hardly to be feared. Many good amateur photographers are among the best patrons professionals have. In many ways a knowledge of photography enables a man to appreciate better a good example of professional work when he sees it. Here, as in everything else, of course a little knowledge is a dangerous thing, and it is generally the man who knows little about photography who troubles the professional photographer with gratuitous criticism of his work. There is ample room for both classes of workers, and one of the best features of such societies as "The Edinburgh Photographic Society" is the intercourse which takes place between professional and amateur members. It is well for every worker, however humble be his achievements, to realise that he may do something to enrich men's knowledge of the beautiful and artistic through the medium of photography, whether it be to him a life-work or only the occupation of his leisure hours.

J. DRUMMOND SHIELDS.

THE engagement is announced of Mr. Reginald K. Morcom, eldest son of Mr. Alfred Morcom, of Birmingham, and Miss Isobel Swan, third daughter of Dr. J. Wilson Swan, F.R.S.

THE Royal Photographic Society of Great Britain, 66, Russell Square, W.C. Technical meeting, Tuesday, May 31, 1904, at 8 p.m. "The Practical Performance of Tricolour Filters: Being some Experiments to Determine the Best Form of Spectrum Record for Three-Colour Filters," by A. J. Newton and A. J. Bull. "Photography in Relief," by Carlo Baese.

M. CHEVALIER, the eminent French explorer, has recently returned from prolonged travel in Central Africa. He has secured a valuable collection of interesting documents and photographs of the country and its people. Furthermore, he carried on his travels a phonograph, upon which he has secured records of the languages of the various natives in the region which he explored, made by the natives themselves. These records will be reproduced by M. Chevalier in the course of his lectures describing his travels, experiences, and discoveries.

THE COMPOSITION OF COLOUR-FILTERS FOR THE PRODUCTION OF PORTRAITS IN NATURAL COLOURS.

[Translated by Harry Dietrich, and reprinted from the "Photo-Times Bulletin."]

So many formulas for making dry and liquid filters for the three-colour process have already been given that a further publication in this direction seems to be almost useless. If, nevertheless, I make known my experiences in this direction, it is done with consideration of the fact that good work of this kind is pretty scarce yet, and that the selection of the filters has not met with the proper estimation. It is pretty difficult to produce correct filters for the three-colour print, but considerably greater is the difficulty to reduce the time of exposure to a minimum.

The opinion has been general among photographers that hand-retouching of the negatives is unavoidable in the three-colour printing process, and that this hand-retouching constitutes an essential part of the work. This erroneous opinion has its origin in the reproduction establishments which produce autotypic three-colour clichés; but Vogel has already shown that with a clever selection of the filters a good and complete reproduction of the colours of the original can be obtained by lichtdruck without any retouching, and the latest works produced by Fritsch, after my process by lichtdruck, prove that the absolutely natural, correct reproduction of the original, to the smallest detail of colour by way of the subtractive colour synthesis, is not only possible in lichtdruck but can be obtained even lastingly and with fullest safety. The ruling points in the production of colour filters for portraiture have their source essentially in the desire to reduce the time of exposure as much as possible. This, above all, can be obtained with the red filter, but only with certain means, whose careful selection essentially determines the time of exposure. I may be permitted here to call attention to some points which determine the selected filter colour media and their composition. The theory of the subtractive colour synthesis, as is known, how managed by the gum print, the three-colour pigment process, the lichtdruck, etc., requires such a gradation of the filters that at each single exposure of those colours of the spectrum are excluded which are reflected by the print-colour. Therefore, the filter for the blue print is essentially red, for the red print essentially green, and for the yellow print essentially blue transparent. If an ideal dry plate of panchromatic action would be at our disposal this would determine everything necessary. Nothing else would be required but to graduate the absorption spectrum of the filter in such a way that it would complete with the absorption spectrum of the print colour at striking light to a full spectrum with correct distribution of brightness in all its details. Hereby the subtractive filters, if used for every printing process, place themselves in direct opposition to the so-called additive filters, which are not applicable for printing processes, or at least very limited, and must be in such a state that their mutual absorption spectrum, joined together, results again in a normal spectrum with correct distribution of brightness. If the nature of the filters with print and with the additive synthesis prescribed by theory is determined the matter is essentially different at the execution of the process with consideration of the applied plate, and from this the numerous mistakes are explained, which prevail upon this field, and have even been published lately to a considerable extent. If we take up the nature of the three-colour print in the form as given by its inventor, we can pronounce it only as that printing method for the reproduction of colours by which exposure filter and print colour possess supplementary colours, whereby we will understand by supplementary colours such colour aggregates, which complete themselves to a completely continuous spectrum of normal distribution of brightness. This correct definition of the three-colour spirit is, therefore, not to be changed with the perception of possibility to produce all complementary colours

with the aid of the three-colour, an idea which was represented already by Newton and executed by his contemporaries.

If a set of such subtractive filters, which in an ideal manner supply the absorption spectrum of the print colour, shall rest now in negatives, which in the later joint print enable an absolutely colour correct reproduction of the original, the following is still to be mentioned as an essential condition:—

1. The applied plate has to be of uniform sensitiveness in whole visible spectrum.

2. The produced negatives have to be completely uniform character, that is in such a state that grey, respectively white is reproduced uniformly upon all three and appears uniformly covered in all its gradations.

I will take up first requirement (a), because the same is comparatively easier to fulfil. It can be realised best that three exposures, as already mentioned repeatedly, are made upon the same kind of plate, respectively upon the same plate, and that the time of exposure is determined by previous trial and is observed exactly in every light, and that finally the three exposures are simultaneously developed and finished. The importance of this method cannot be debilitated by any arguments. The experience that the same mother emulsion assumes quite a different character by sensitising in different colour matters, and the further experience that this is impossible to develop absolutely uniform three negatives in succession, condition the necessity to go in this direction, if the results obtained are not to remain accidental results. It shall not be denied here that such operators, who make colour exposures all the year around, and work under the same conditions of the same electric lamps, are so familiar with the management of a process developing herefrom that they succeed with a passable average work another way. But only a few gain such practice and experience and the irregular work of most of the reproduction establishments upon this field, above all the not uniform retouching, owing to these circumstances. Not only in my own laboratory but also in one of the most prominent reproduction establishments, I have obtained sufficient proof that, by strictly keeping within the rules, as given by me, the three-colour print will not depend any more upon mere accident, and furnish uniformly good results. The doubts about the application of the same plates for all three filters will not stand the test but one. The one doubt has its origin alone from the non-existence of a sufficiently useful panchromatic plate. But this doubt appears to me to be removed completely by the joint work of Dr. Traut and myself. We possess now, in fact, an actually useful, really ideal yet, but in the above-mentioned direction completely satisfactory panchromatic plate, the ethyl-red plate (perchlor plate). If a bromide of silver gelatine plate is coloured with ethylred, a sensitising band is obtained, which extends from red over the whole visible spectrum with remarkable uniformity so that the plate is equally suitable for the red filter exposures as also for green and blue filter.

Much has been talked about, that also the application of one plate does not assure the possibility of uniform negatives. It has been pointed to the fact, that at different times of development the light impressions behind the red filter change in the covering proportion against those behind the blue filter. These observations are correct, which has not been determined yet, the mistakes originating here are yet so small that practically they have never been felt, at least, I have never been able yet to prove it. Whether with certain colour sensitive plates, sensitised with colour matters from the group of eosins such a mistake appears distinctly, respectively whether the assertion that the action of the yellow rays develops slower as the action of the blue rays with those plates is made with a certain reason, I will leave here undecided. It is a fact that by application of the same panchromatic plate to all three filters, the probability to obtain uniform negative

much greater, as by application of two or three different kinds of plates.

I come now to the influence which the sensitising curve of the plate used must have upon the selection of the filter colours. Upon this field nothing reliable is known yet, and from the observance of certain filters and certain plates such conclusions have been drawn frequently that it is hardly worth while to pay any attention to this matter. It is beyond doubt that the false conclusions and wrong observations, which even have discovered the wonderful expression, that additive and subtractive filters are identical, or at least have no systematic differences, have essentially taken their origin from this source. In fact, the form of the sensitising curve of the applied plate can influence subtractive as well as additive filters in such a way that their correct selection does not appear any more to be subject to any sensible law. An example may explain the aforesaid. I suppose that the subtractive red filter is to be graduated, that it is suitable for a Tetra-Iodide-Eosineplate, as now and then recommended for red filter exposures. The theory demands that by application of a green-shaded three-colour print-blue the filter must be in such a condition that it admits the complete passage of the red and yellow light, while the green light, with reduced intensity towards the blue end of the spectrum, is left to pass through. This ideal blue-print filter would represent with the Tetra-Iodide-Eosineplate rather a green filter than a red filter. The sensitising curve of the Tetra-Iodide-Eosineplate has its maximum, as is known, in the green-yellow, and diminishes from these towards the red end, so that at long exposures it covers still the orange-coloured part of the spectrum, but at short ones it will not reach it. The application of such an ideal subtractive red filter would therefore let its great green sensitiveness come to complete expression upon this plate, while the weak red sensitiveness would remain almost without any action. The negative, which would be produced behind this filter, should result, therefore, in yellow-green completely covered, deep red glass clear, orange-red here and there covered and blue-green and pure green glass clear, because the sensitising curve of the mentioned plate will fall off just as steep towards the red as towards the green. The negative obtained would, therefore, resemble more a defective red-print negative than a correct blue-print negative. Not much different, as with the mentioned plate the equal subtractive red filter would act with the usual red-sensitive plates bought in market. These plates, mostly with cyanin in carefully selected quantity, have a comparatively broad sensitising band, extending from yellow-green to orange, and whose maximum is situated in the yellow part of the spectrum. By application of this plate, the filter mentioned would also result in too large a covering in green. This reflection shows that the subtractive red filter should let so much less green pass through, and should be so much more removed from the theoretically required and by the print colour determined colour-selection, the more unfavourable the sensitising proportion is between red and green upon the applied plate. The most complete panchromatic plate so far produced, the ethyl-red plate, would also, by using an ideal red filter of subtractive kind, produce a false result. The sensitising curves of these here also, beginning in the red end of the spectrum, then pass to yellow, but remains there, if small waves are not taken into consideration, until to blue in equal light. The consequence is that, by using a theoretically correct subtractive red filter, the yellow and green action in opposition to the reduction would come out too strong, and that specially deep red tones in the negative would obtain too weak a covering, because, with consideration to shades containing essentially yellow and green, their time of exposure would be too short. If a subtractive red filter should be correct in action for such a plate, its absorption must be from red towards the refractive end of the spectrum must always fall off yet proportionally pretty steep. At correct representa-

tion the filter approaches, therefore, such a one, which admits the passage of all red to about the middle between C and D, falls off pretty steep to D, and leaves a weak light action to beyond D.

Now we come to the print colour. It is clear, that the selection of the three print colours has to be in a certain relation to the filters, and that, therefore, the filters have to undergo changes, if the shade of the print-colour changes. This is a requirement, as print-colour and filter have to be supplementary, that is: that the light reflected, respectively passed light, has to make up to a complete spectrum. For instance, if the print-blue is taken very pure and proportionately of a violet shade, the red filter has to possess a weaker absorption in green, as when the print-colour is of a greener shade. It is the same with the other filters. Further, the correctness of the reproduction of the colours and the brilliancy of tones will also depend upon the purity of the print-colour, and the observations of Hübl, that in the joint-print colours can never appear which are outside of the complementary colour-circle of the three print-colours, is very true. Still, the consideration of print-colours seems rather subordinate; my view of the matter is that it is more correct to discover such print-colours to a ready set of part-pictures, from which the best results will be had, than to find out to a given set of print-colours the best filters. The difficulty of the latter way is apparent, although the theoretical possibility to do so cannot be denied, and this way, at first look, might appear to be the most rational and sensible. But I believe that, in spite of this, one will not succeed to graduate the filter after the print-colours without leaving a wide space to chance, because in the print (full print) of the three print-colours the accidental saturation of the print plays an unproportionally great part in the result. Therefore, it appears to me conformable to the purpose to cut the filters only in so far in accordance with the print-colour, as this comes in question with the general selection, and according to the absorption of the same; but the highest completeness of the print to vary by small variations, particularly in the composition of the blue-print colour. Thus, as the blue-print colour is the most impure of the three-print colours, the strongest technical effect can evidently be reached by graduation into more violet or green. I have repeatedly heard the question asked whether this kind of print process exercises some influence upon the modes of working respectively, whether it is perhaps necessary to vary the filters, according to whether lichtdruck, chromegum-print, combined carbon-print, etc., is selected as positive process, but must say that I cannot see any reason for such a rule in the nature of things, and that according to my idea it is quite indifferent, at least for the selection of the filters, whether the part-pictures which originated are afterwards to be reproduced by Selle's process, or by way of the gum-print, ozotypy, lichtdruck, or in the pigment process. From the foregoing so much can be seen with certainty that it is an impossibility to give definite formulas and prescriptions for the three filters of a three-colour print, and that every information of certain mixture proportions of colour-matters and their concentrations can have only reference to certain single cases, to cases where the exposure-plate is considered as established and settled, and whereby is supposed that the sensitising curve of the same is always exactly the same. Even under these circumstances the filters may require a small modification if the absorption of the light within the applied objective is not considered as disappearingly small, and if the same strikes certain colours, as it is actually almost always the case. I have already communicated before that the proportions of exposure-time of equal filters by use of the same plates, or by application of different objectives, can be completely different, showing that the construction of the objective cannot be without influence upon the filter-colour. This

influence, of course, may be disappearingly small in comparison with other filters.

In the following I will speak now about the production of the filters, specially with consideration of obtaining transparent layers, whereby care must also be had that the time of exposure-proportions do not become too unfavourable ones—that is, that the exposure-times do not deviate too much from each other. About the technical part of the production of the filters generally I have published already some details. The manufacture of filters is by no means an easy work, and for those who do not care about making a speciality of it, it is advisable to purchase them from the dealer.

The dry filters want to be used as close as possible in front of the plates, because, even carefully produced, optically plano parallel ground plates give during coating with coloured gelatine solutions tension-appearances, which would deteriorate the optical pictures when two of such plates cemented together should find application in front of the objective. But ordinary plate-glass furnishes a good material for filters in front of the plate whose changing with the usual multiplying holder can be effected with the greatest facility. For the production of the filter serve from 8 to 10 per cent. solutions of gelatine as clear as possible, suitably coloured, in measured quantities, and spread upon the plate after the same has previously been thoroughly cleaned and levelled. A great number of colours have the property to influence the drying of the gelatine coating in a peculiar manner. Very frequently it is found that the film, after drying, has become scarred and rough, that the colour matter secretes in stripy formations, or crystallises on the edges of the plate. It is also found that some blue colour-matters make the gelatine so brittle that the film will crack off from the glass after drying. It is very conformable to the purpose to compose the filters, at least the red and green filters, in such a way that two colour-matter solutions are used, which, pressed upon two glass plates, are cemented together afterwards. If the colour-matter solutions are selected in such a way that the absorption-spectrum of one colour-matter is as much as possible towards the blue end, the absorption-spectrum of the other towards the red end, one obtains, at least with the green filter, whose production, of course, makes the greatest difficulties, a very estimable possibility of the graduation of the filter-colours, which an exact cutting-off of the light band allowed to pass through.

1. THE RED FILTER.

The red filter, which furnishes the blue-print plate, is in so far difficult to produce, as the time of exposure depends essentially upon the selection of the red colour-matter. The numerous colour-matters which are at disposal are reduced to a small actually useful number, which admit the passage of sufficient quantities of red light, and permit, in spite of sufficient strength of the red filter, comparatively very short exposures. The—according to their absorptions—very well applicable azo-colour-matters come less into consideration for portrait views. The most suitable bodies are found in the class of the eosines, and amongst them is the rose bengale, by far the most suitable. Rose bengale shows in the given part of the spectrum in somewhat concentrated solution, very broad, sharp absorption stripes, which, according to thickness of the colour-coating, permit towards red any boundary position within certain end values. If a filter is flowed with rose bengale, it has to be combined with a filter which absorbs blue and blue-green, that a red filter of correct character will originate. The colour-coating of the rose bengale filter is thereby to be selected, so that the filter in dry condition will let light through to wave-length 500. In wet condition the absorption-spectrum of the filter gives no support, as during drying the absorption stripes will be displaced to such a degree as the refraction and diffusion index of the gelatine film rises with the evaporation of the water. As a medium quantity for the production of

a red filter, about 1.5 ccm. of a two per cent. solution of rose bengale in water to 18 to 20 ccm. gelatine solution, are to be considered, and of this mixture about 9 to 10 ccm. belong to plate surface of 80 sq. cm. If a plate so produced is combined with a sufficiently thick covering-plate, coloured with a yellow colour-matter, which plate can be produced by colouring a gelatine solution yellow with a 4 per cent. tartrazin solution, an extremely quick-working, well-closing red filter is obtained, which for the ethyl-red plate shows about the desirable position in the absorption.

2. THE GREEN FILTER.

The greatest difficulties and the greatest insecurity in result offers the green filter, which serves for the production of the red print. From the exact fitting of the same to the exposure plate depends in first line the result of the work of the three-colour print, and an incorrectly-graduated green filter may cause just as great defects in the colour-reproduction as the most defective exposures. The ruling points in the production of the green filter refer essentially to the passage of light towards the violet end of the spectrum, while small deviations in the transparency towards yellow are apparently without influence to the result. When the green filter absorbs the blue-green too strong, red will print into all dark-green shades, and the consequence is naturally a contamination of the dark and thereby still pure and illuminating green tones. When, however, the stop towards the blue end of the spectrum is too uncertain, respectively the zone admitting the passage is too long towards this side, it may happen that the finished print picture turns out to be too green-shaded, and that special depths possess an extremely disturbing, troublesome tone of green-blue colour, preventing the forming of a correct black. At all events, the latter defect is more scarce than the former and it may well be said that most of the retouches in the three-colour print are effected by too strong a green filter. For the graduation of the green filter, the difference of sensitiveness between green and blue respectively, the sensitising curve of the plate plays of course the greatest part. Almost all green sensitive plates were distinguished by showing in the blue-green part of the spectrum a minimum of action, and therefore, here, therefore, let us miss the necessary covering, which was just the source of the defectiveness of the red-print plate.

The ethyl-red plate behaves in this regard much better. It possesses in the blue-green part of the spectrum no minimum, as its sensitiveness curve runs pretty straight in this direction, and the sensitiveness band, which originated through sensitising, joins directly to the sensitising band of the mother emulsion. Suitable green filters can be made particularly by application of brilliant acid green, to which are added more or less large quantities of a yellow colour-matter—for instance tartrazin—according to that in the blue part of the spectrum desired stop. If this green filter is selected corresponding light, to secure the necessary transparency in blue-green, most of the green colour-matters show a tendency of light passage of the green filter for the extremest red. This is apt to frighten beginners, and make them believe that this passage of red had to disturb the action of the green filter considerably, and would explain the observed deficient action of the same. There is a number of green-colour matters which do not possess this tendency to red light passage to such a degree as the brilliant acid green. But there is no advantage connected with this application, because the sensitiveness of dry plates reaches never by any means with the short green filter exposure to the infract zone, which is not cut off by the green filter. For this reason it is therefore pretty indifferent if brilliant acid green or one of those colour-matters is selected which close better red. I recommend the former colour-matter, because it furnishes smoothly-drying and regular layers, and does not make the gelatine too brittle. The shade of the brilliant acid green is of little influence. Shade VI. B. corresponds, perhaps, be-

the ethyl-red plate, and it is recommendable, to take brilliant acid green solution so strong, that for 6 cm. square solution for 80 sq.cm. plate surface, 1.6 cm. brilliant green solution 1:100 are selected. To this solution are added 4 to 8 drops of a tartrazin solution, 1:25, and a stop is thereby obtained in the violet and sufficient reduction of the blue.

3. THE BLUE FILTER.

The production of the blue filter is less important. All that is required of the same is that at least with strong blue-green sensitive plates a sharp boundary towards the green part of the spectrum is present. The light is to pass through at most wave-length 480; on the other hand, it is desired for the reproduction of the deep red tones in the original that the blue filter permits the passage of the red of the spectrum, still within the field of action of the plate in question pretty unimpaired. The application of a violet colour-matter is therefore advisable whose concentration towards these points of view has simply to be chosen. For portraits the correct reproduction of very deep red tones is not of so much importance. But a red passage of the blue filter will even here do no harm. To 13 cm. gelatine solution for a plate-size of 80 sq.cm. is recommended an addition of 2 cm. new Victoria blue and 2 cm. of methyl-violet solution 1:250. But this proportionately very light colour-matter disc has the inconvenience for portrait-views that the time of exposure for the same is extraordinarily short. It may, therefore, be recommended to reduce the strong action of this filter by reducing the blue part of the spectrum correspondingly in combination with a yellow disc. For this the blue filter is covered with an extremely thin tartrazin disc, which is so adjusted by tests that the blue filter gives a convenient time of exposure. For ethyl-red plates a very thin covering disc is sufficient to obtain equal exposures for red and blue. This is for portrait views, the most agreeable to avoid small mistakes in the time of exposure, which are also very disturbing with the blue filter plate, and that for blue and red equal exposures are reached, while green will come to an essentially shorter exposure. A reducing of the green filter to likewise equal exposure is very difficult to execute without considerably disturbing the curve of passage. The covering disc, which is required for the blue filter, should contain about 5 to 6 drops of tartrazin solution, 1:25 to about 120 cm. gelatine.

About the technical construction of the afore-described filter have repeatedly made some publications. Faultless filters of this kind to produce is not so easy. Even by the application of the here-described colour-matters, if the work is not done in localities free from dust, and one does not possess experience, mistakes will occur. By irregular drying of the film a zone formation in the filter will frequently take place, and well-dried filters are oftentimes ruined during cementing with Canada balsam. The utmost care and use of suitable cementing material, as well as careful observation of the cement temperature and careful after-heating of the cemented plate, secure, however, to the skilful operator a good result.

During heating of the filter before connecting, as well as during connecting, every deviation of temperature should be avoided as much as possible, and the durability depends essentially upon the height of the applied temperature and the duration of after-drying by artificial heat. General prescriptions or directions cannot be given here, because the work will change according to the balsam used, and hard balsams, high temperature and short heating, soft balsams, low temperature and prolonged heating, require. The cemented filter should not be too thin, and possess sufficiently hardened balsam layers, so that ordinary room temperature they just can be moved a little. After the edges are thoroughly dry they are mounted with strips of gummed paper. Some express fear of the bleaching of the filters. This will not happen providing they are not exposed to the sun for hours. I possess a red filter which has done service for two years, and the same has not changed yet in the least way.

PROFESSOR DR. A. MIETHE.

FOREIGN NOTES AND NEWS.

REVERSAL.—It is somewhat generally accepted that reversal of the image with gelatino-bromide plates is accompanied by a tanning effect upon the gelatine; in fact, it is assumed by some writers that this tanning action is so great that it prevents the developer from penetrating the film. Dr. Lüppler-Cramer recently stated that he found that a dry plate exposed for twenty-four hours to sunlight was as readily fixed as an unexposed plate, which would not be the case if the tanning effect was produced. Now Dr. Büchner, of Darmstadt, has confirmed this statement and records the fact that plates exposed from six hours to three days showed no difference in the rate of fixing to an unexposed plate. Another statement which has also been connected with this subject is that the reversed parts showed a strong relief, but this also Dr. Büchner has been unable to detect.

ALBUMEN SOLUTION FOR BLOCK WORK.—Herr Franz Novak has suggested the following method for preparing a solution of albumen for photo-mechanical work, and states that it will keep for a month and give excellent results:—140 g. of dried albumen are mixed in a mortar with 980 c.c. of water, and 2 g. of crystallised carbolic acid added; the whole is well stirred, and left for two or three hours to soften, and it should then be rubbed up with a pestle till complete solution is effected and then filtered through cotton wool in a loosely (?) stoppered bottle.

DURABLE CARBON TISSUE.—Professor Kessler has been testing the suggestion of Dr. Namias and Mr. Bennett, that the addition of ammonium citrate to the sensitising bath for carbon work not only increases the sensitiveness but the keeping properties also, and has found the tissue sensitised with this addition to the bichromate bath gives perfect prints, even after the lapse of five weeks, and that prints, kept for two weeks after exposure have also given perfect results, and without the slightest sign of the film becoming entirely insoluble. Namias suggested also the addition of the acetates, oxalates, succinates, lactates, and tartrates for the same purpose.

ANOTHER THREE-COLOUR PORTRAIT.—In the current number of the "Photographische Correspondenz" there appears a half-tone supplement, a portrait study from negatives taken in the studio on a cloudy day in January, with a Unar lens, working at F.7, the exposures being one second for the blue, three seconds for the green, and two seconds for the red, on a plate colour-sensitised by bathing with pinachrome, one of the new isocyanines prepared by Meister, Lucius, and Brünini, with the screens suggested by Dr. König of the same firm. In connection with the use of these new cyanines it is interesting to note that, up to the present, their full effect is only obtainable by bathing prepared plates, and that, as pointed out by Dr. Eder, modifications of the emulsion must be made, though in what direction is not stated, ere satisfactory results can be obtained, by adding the dye to the emulsion. It has also been proved that only some commercial plates can be successfully colour-sensitised by these dyes, a fact which obviously also depends upon the constitution of the emulsion. In respect to this it may be noted that a large proportion of iodide or the presence of free bromide usually has a prejudicial effect upon the action of various dyes.

WASHING DIPPED ORTHOCHROMATIC PLATES BEFORE DRYING.—Dr. J. M. Eder writes in the "Photographische Correspondenz" under this heading, that it has been recently recommended to revise the surface before drying orthochromatic plates, which

have been prepared by immersion in a solution of ethyl red, orthochrom T, pinachrom, etc. By this superficial washing the plates are cleared of superfluous dye, which would be retained if they were immediately set up to dry. The tenacity with which gelatino-bromide of silver retained the dye used as a sensitiser, ensures sufficient being kept in the film. Apart from the greater purity and clearness of such plates, the typical behaviour of dipped plates towards the spectrum is not changed by the operation of washing. It is not without interest that this washing process was mentioned twenty-two years ago by Attout, known as Tailfer and Clayton. They recommended in their French patent specification of December 13, 1882, Patent No. 152,615, not only the staining of the gelatino-bromide of silver in the bulk, for the preparation of eosine plates, but likewise the dipping of the dry plate in a solution of eosine, and prescribed washing the plate with water when it was taken from the sensitising solution. Bothamley, in 1888, also recommended the dipping of the plate in an aqueous solution of erythrosine and the removal of the superfluous dye, by washing, before drying the plate. He knew the Attout-Tailfer and Clayton process and studied it, but he afterwards relinquished the rinsing of the stained plate as a simplification, and then it was generally abandoned. Subsequently Ives, Debenham, and Hinterberger tried with success pouring upon the plate an alcoholic solution of cyanine. The plates were then immersed in water, and exposed wet. We have now, with the new isocyanines, returned to the original procedure, and rinse the stained plates with water, subsequently drying them. This procedure has been recommended by Professor Miethe and Dr. König, and it is always used at the Vienna Technical School for the preparation of pinachrom dipped plates.

PLATINUM TONING.—Recently Professor Namias suggested for platinum toning matt printing-out papers, that a bath composed of oxalic and hydrochloric acid in conjunction with the chloroplatinite was superior to all others as less likely to cause the yellow stains too often met with, and that it gave better whites. Namias' actual formula was:—Potassium chloroplatinite, 1 g.; pure hydrochloric acid, 5 c.c.; oxalic acid, 10 g.; distilled water, 1,000 c.c. Recent comparative experiments with this against the well-known phosphoric bath, made at the K.K. Lehr- und Versuchsanstalt at Vienna, have proved that the latter tones quicker, and the bath can be more exhausted, thus saving platinum, than Namias' bath. The phosphoric bath is:—Potassium chloroplatinite, 1.6 g.; phosphoric acid, sp. gr. 1.12, 25 c.c.; distilled water, 1,000 c.c. Both baths give the same tones.

TELEGRAPHING Pictures and Handwriting.—In an address recently delivered at the Berlin Urania, Prof. Cerebotani presented a telegraphic apparatus for transmitting any kind of handwriting, drawing, tracings of photographs, etc. The fundamental principle is identical with the principle employed, for instance, by Elisha Gray, the novel feature being a highly sensitive system of electro-magnets. In the case of the drawing pencil of the transmitter being moved upward in an oblique direction, the line obtained in the receiving apparatus of previously-invented systems is a broken one. In Cerebotani's system, the electro-magnets are so sensitive as to produce nearly straight lines, even in the case of their being excited by extremely small currents. The telegraphic transmission of pictures and handwriting, as obtained by means of his apparatus, is therefore much clearer and truer than in the case of any previous apparatus. Some samples produced by Cerebotani were transmitted on the telegraph lines from Munich to Augsburg, from Milan to Turin, and finally from Berlin to Munich. A picture transmitted some weeks ago from Berlin to Munich over a distance of 403 miles is said to be the finest specimen of telegraphic transmission ever obtained in this direction.

THE DETECTION OF CHLORIDES IN THE PRESENCE OF BROMIDES.

THE only difficulty concerning halogen salts in general qualitative analysis is the detection of a small quantity of a chloride in the presence of a bromide. The methods suggested consist, as a rule (write Chapman Jones in "The Chemical News"), either in eliminating bromine and then testing for the chlorine, or in precipitating silver salts and dissolving out the silver chloride. In the first the separation is rarely if ever sharp, either a little bromine is behind or a little chlorine is lost, and it is therefore impossible to say whether or not a little chlorine is present. In the other method there is no loss, and this is a very considerable advantage, but in both presence and the absence of a little chlorine a positive result is generally obtained, and it remains to discover whether a slight turbidity, produced on re-precipitation from the extract, is due to silver chloride or bromide. With sufficient practice and care this is not impossible when using the reagents that have already been proposed, but a distinct difference between the two salts is very desirable. During the last year or two I have used ammonium bicarbonate for this purpose with much satisfaction. A saturated aqueous solution of this has the advantage that it is more definite than a dilute solution of ammonia or a solution of any other carbonate of ammonia, and that it shows a greater difference in its behaviour to the two silver salts. Mr. R. H. Beckett, B.Sc., of this college, has carefully confirmed the following statements, using the precipitated silver salts in as many cases as possible the condition in which they generally occur. If a saturated solution of ammonium bicarbonate is poured over a silver chloride on a filter paper, the extract will give a distinct turbidity on acidification with nitric acid. Silver bromide similarly treated gives no turbidity. By allowing the silver salts to remain in contact with the reagent for a few minutes with occasional agitation, the chloride will give a greater turbidity on acidification, while the turbidity of the bromide may be continued sometimes even for half an hour before it begins to give a positive result. If a turbidity is obtained on acidification of the extract, and it is doubtful whether it is due to silver chloride or bromide, its identity may be established in the following way:—The turbid liquid is divided into two parts; to one is added a slight excess of the bicarbonate solution and to the other an equal quantity of water. If the turbidity is due to silver chloride, the ammonium salt will re-dissolve it in a few seconds. If it is due to silver bromide it will remain unaffected for several minutes, if not an hour or more. The part diluted with water is for comparison with the other, as it is difficult to bear in mind the appearance of a turbid liquid, and to duly allow for its dilution. It is desirable that the ammonium bicarbonate solution be not old, or it will probably have lost some carbonic acid. A boiling solution of sesquicarbonate of ammonia has been used before for dissolving out silver chloride from the bromide, but in this case some of the bromide is always dissolved.

URANIUM is one of the rare metals for which there is a limited demand. The present world's consumption amounts annually to about 300 tons of uranium ore, yielding from 3 to 13 per cent. of the metal. For several years Colorado has supplied the United States output, nearly all of which goes to Europe. France, England and Germany are the principal markets. Uranium is a hard, very heavy (9.184), moderately malleable metal; it resembles nickel in colour, and has the colour of nickel. At ordinary temperatures it is not affected by air or water; at red-heat, however, the surface oxidises. The chief ore of uranium is the oxide, called pitchblende or uraninite. It occurs also as the phosphate and arsenate. The ores are found in Gilpin and other counties of Colorado; in Cornwall, England; and in Saxony, Germany. Buyers of the ore generally pay from 15 dols. to 20 dols. per unit, according to the percentage of uranium contained. Until recently, uranium salts were used chiefly as a pigment in painting on porcelain, in photography, and as a colouring ingredient in glass manufacture. It is now being used experimentally in the manufacture of alloys of iron and of aluminium. Uranium increases the hardness and elasticity of steel, also the hardness of aluminium, but this use has not yet become sufficiently important to cause an increased demand for the metal.

PHOTOGRAPHIC CONVENTION OF THE UNITED KINGDOM.

NINETEENTH ANNUAL MEETING: DERBY, JULY 11 to 16, 1904.

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The meetings and exhibition of apparatus, pictures, etc., will be held in the Mechanics' Institute, The Wardwick.

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Trustees.—Samuel Blatchford Webber and Frederick Albert Edge.

Hon. General Secretary and Treasurer.—F. A. Bridge, East Lodge, Aston-lane, London, N.E.

Reception Committee.—Alderman G. Herbert Strutt, J.P. (Chairman); his Grace the Duke of Devonshire, K.G.; his Grace the Duke Rutland; his Worship the Mayor of Derby (Councillor Cornelius Ham); Alderman Sir Henry H. Bemrose, J.P.; Sir Clement Bowring, Kt., Park Grange, Derby; Alderman Sir Thomas Roe, M.P.; Alderman E. T. Ann, J.P.; Councillor H. Arnold-Bemrose, M.A., J.P.; Rev. C. F. L. Barnwell, Stramshall, Uttoxeter; J. C. Cade, J.P., Spondon; W. G. Constable, Esq., B.A., B.Sc.; Councillor W. Gandy, J.P.; Alderman Edgar Horne, J.P.; N. J. Hughes-Jones, Esq., Clerk to the County Council; Councillor R. Laurie, J.P.; G. Trevelyan Lee, Esq., Town Clerk; J. C. Lee, Esq., Hounslow; Gilson Martin, Esq., J.P., Chatsworth; G. W. Peach, J.P., Langley Hall; F. W. Shurlock, Esq., Principal of the Technical College; J. H. Topham, Esq., Morley Hall; P. K. Tollit, Esq., Head Master, Derby School; John Ward, Esq., Borough Surveyor; E. W. Wells, Esq., Assistant General Manager, Midland Railway; Alderman W. W. Winter; the Officers of the Derby Photographic Society.

Local Executive Committee.—Alderman G. Herbert Strutt, J.P. (Chairman); Mr. A. H. Bennett, Mr. J. B. Brooks, Mr. J. B. Cope, Mr. H. G. W. Dawson, Mr. S. Finney, Mr. F. H. Gandy, Mr. E. Collier Green, Mr. C. B. Keene, Mr. G. Trevelyan Lee, Mr. B. W. Moore, Mr. T. A. Scott, Mr. F. G. Smith, Mr. G. Walker, Mr. F. Willatt, Mr. G. H. Widdows.

Dinner and Entertainment Committee.—Mr. H. G. W. Dawson, Mr. F. H. Gandy, Mr. E. Collier Green, Mr. C. B. Keene, Mr. B. W. Moore, Mr. F. G. Smith.

Selecting Committee (Members' Unframed Print Exhibitions).—Mr. Harold Baker, Mr. E. Collier Green, Mr. C. Barrow Keene, Mr. J. Porritt.

Hon. Local Secretary.—W. Crowther, Corporation Art Gallery, Derby.

NOTICE TO MEMBERS.

On Monday, July 11, the Hon. Secretaries will attend all day from 10 a.m. at the Mechanics' Institute. Members are requested to report themselves as early as possible, receive their badges of membership, and secure tickets for the excursions.

Signature Book.—It is desirable that members, immediately on arrival, should enter their names, full addresses, and where staying in Derby, in the signature book at the Mechanics' Institute.

Plan of Derby.—A plan of the central portion of the town will be found on inset at front of book. The Mechanics' Institute, where the conversazione, evening meetings, and exhibitions will be held, is situated in the Wardwick, and is numbered 1 on the plan. Trams between the Midland Railway Station and the Market-place, every few minutes. Fare, one penny.

Excursions.—Members should obtain tickets for these as early as possible, in order that adequate provision may be made for their comfort and convenience. With regard to Tuesday's excursion it is absolutely necessary that members wishing to go, should write to the Hon. Secretaries, Photographic Convention, Mechanics' Institute, Derby, so that the letter is delivered not later than first post on Monday, July 11.

Permission to Photograph.—The Local Committee anticipates no difficulty in obtaining the fullest permission to photograph at all the places to be visited.

Notice Boards.—Notice boards will be placed in the meeting room. Members are requested to consult these daily.

Annual Dinner and Smoking Concert.—The annual dinner and smoking concert, at which ladies are welcomed, will be held at the Royal Hotel, Victoria-street. (No. 4 on plan.) Owing to the inconvenience caused by members not obtaining their dinner tickets until the last moment, it has been decided to close the list at eleven o'clock on Wednesday morning, July 13.

EXHIBITIONS.

During Convention Week an Exhibition of Apparatus, Pictures, etc., will be held in the Albert Hall of the Mechanics' Institute. There will also be an Exhibition of Unframed Prints, the work of Members of the Convention. A special section will be reserved for pictures taken at the Perth meeting (1903). An Exhibition of Professional Work, by Members of the Professional Photographers' Association, will be open during the week at the Corporation Art Gallery, adjoining the Mechanics' Institute. Admission free to Members of Convention.

Special Notice.—The times of departure of trains on the excursions have been given as correctly as could be ascertained at the time of going to press. It is not expected that there will be any alteration; but in any case the correct times will be stated on the Excursion Coupons.

The Evening Meetings and Excursions are for Members of Convention only.

RAILWAY ARRANGEMENTS.

Midland Railway.—Long-date week-end tickets, at cheap fares, are obtainable at the principal Midland Railway Stations, any Friday or Saturday, available to return by any train on any day (the Sunday immediately following excepted) up to and including the following Monday week. These tickets are issued to Matlock. Return fare—Third class, 17s.; first class, 30s.

Ordinary tourist tickets are issued from London to Matlock (available at Derby) on any day and by any train. Third class, 21s.; first class, 38s. 4d. Tourist tickets, at reduced fares, are also issued to Matlock and Buxton, from the principal stations on the following railways:—Midland, Great Central, Great Eastern, North British, North-Eastern, North Staffordshire, Hull and Barnsley, and London, Brighton, and South Coast.

For further particulars, dates of special excursions, etc., members should consult the bills at the principal railway stations in their vicinity.

ARRANGEMENTS.

Monday, July 11.—For the benefit of those members of Conven-

tion who will be in Derby previous to or early on Monday, members of the Local Committee will attend at the Mechanics' Institute, to act as guides, and will arrange for short excursions as may be required. For particulars see notice boards.

Conversazione.—The opening conversazione will take place in the Albert Hall of the Mechanics' Institute. At 7.30 there will be an official reception by his Worship the Mayor (Councillor Cornelius Boam), the members of the Corporation, and other public bodies. At eight o'clock the Convention will be declared open, and the President, Mr. George Herbert Strutt, will deliver his inaugural address, after which the exhibition of photographic apparatus, pictures, etc., will be on view; musical promenade, refreshments, etc.

Tuesday, July 12.—Excursion to Dovedale—Leaders: Mr. J. C. Lee (Ashbourne) and Mr. T. A. Scotton (Derby). 9.0, conveyances leave the Strand, Derby (back of Art Gallery); 10.45, arrive at Ashbourne; 11.45, leave Ashbourne; 1.0, lunch at Peveril Hotel; 5.0, leave for Ashbourne; 6.0, tea at Ashbourne; 7.0, leave Ashbourne, arriving at Derby about 8.45. Tickets, including drive, luncheon, and tea, 7s. 6d.

Dark Rooms at Ashbourne.—Bull, R. and R., Victoria Studio; Lee, J. C., Market-place.

There will be no meeting at the Convention Rooms on this evening.

Wednesday, July 13.—The annual general meeting and election of the new Council will take place at the Convention Rooms at ten o'clock. The new Council will meet at eleven o'clock. The time and place at which the official group of the Members of Convention will be taken will be duly announced on the notice boards. In the afternoon, at 2.30, the President, Alderman G. Herbert Strutt, J.P., and Mrs. Strutt will give a garden party and reception at Bridge Hill, Belper. Special trains will be arranged for the occasion. The annual dinner and smoking concert will be held at the Royal Hotel, Victoria-street, at 7 p.m. Lady members are cordially invited to be present at the dinner and concert. Tickets (including attendance, but not wine), 5s. 6d.

Thursday, July 14.—Excursion to Hardwick—Leaders: Mr. E. Collier Green and Mr. C. Barrow Keene. 10.5, train leaves Midland Station; 10.53, arrive at Stretton; 11.0, leave Stretton by coach; 12.0, arrive at Hardwick; 1.0, luncheon at Hardwick Hotel; 4.50, leave Hardwick by coach; 5.50, leave Stretton by train; 6.25, arrive at Derby. Tickets, railway, drive, and luncheon, 6s. 6d. At the Mechanics' Institute, at 8.30, a paper by Thomas R. Dallmeyer, Esq., F.R.A.S., on "Telephotography," followed by an exhibition of lantern slides by members of the Derby Photographic Society, under the direction of Dr. E. Collier Green.

Friday, July 15.—Excursion to Chatsworth and Haddon Hall—Leader: Mr. H. H. Bennett. 9.30, train leave Midland Station; 10.20, arrive at Rowsley, and leave by conveyance for Chatsworth; 1.30, leave Chatsworth; 2.0, lunch at Wheat Sheaf Hotel, Baslow; 3.0, leave Baslow, driving via Pilsley and Bakewell to Haddon; 5.15, leave Haddon; 6.30, arrive at Derby. Tickets, railway, drive, and luncheon, 7s. 6d. At the Mechanics' Institute, at 8.30, an unconventional lecture by Thomas Bedding, Esq., F.R.P.S., entitled "The Influence of Photography upon the Modern Stage," followed by a paper by H. Snowden Ward, Esq., F.R.P.S., on "Figures in Landscape," illustrated by lantern slides.

Saturday, July 16.—Short excursions in the neighbourhood, as may be desired—probably to Matlock, Wirksworth, Cromford, etc.

Dark Rooms.—Derby—Bell Hotel, Sadler Gate; County Hotel, St. Mary's Gate; St. James's Hotel, St. James's-street; Municipal Technical College, Green Hill. Also at the following photographic dealers—R. Blaylock, 229, Normanton-road; Derby General Stores, 30A to 33, Victoria-street; Hoare and Son, 8, Osmaston-road; A. Judge, 19, Pear Tree-road; R. Keene, Limited, 24, Iron Gate; F. P. Pemberton, 36, Corn Market, 67, London-road, and 226, Uttoxeter New-road; W. Shepard, 96, Abbey-street.

Hotels, etc.—Bell Hotel, Sadler Gate.—About fifteen beds. Bed, breakfast, and attendance, 6s. 6d. Clarendon Hotel, Station-street.—Eight beds. Bed, breakfast, and attendance, 6s. County Hotel, St. Mary's Gate.—Six beds. Bed, breakfast, and attendance, 5s. Derwent Hotel, London-road.—Six beds. Bed, breakfast, and attendance, 5s. Midland Hotel, adjoining Midland Station.—About thirty

beds. Tariff on application. Royal Hotel, Victoria-street.—thirty beds. Bed, breakfast, and attendance, 6s. 6d. St. James's Hotel, St. James's-street.—About twenty beds. Bed, breakfast, and attendance, 6s. 6d.

Temperance Hotels.—Portland, 19, Midland-road.—Twenty beds. Bed and breakfast, 4s. 6d. Granville, 102-4, London-road.—Bed and breakfast, 4s. Caledonian, 18, Midland-road.—Eight beds and breakfast, 4s. Waverley, 20, Midland-road.—Twenty beds and breakfast, 4s. Grosvenor, 137, London-road.—Six beds and breakfast, 3s. 6d.

Restaurants.—The Cavendish, Corn Market; Cornwell's Midland; Dequies, St. Peter's-street; W. Fletcher, Iron Gate; L. and E. King, St. Peter's-street; Midland Hotel and Railway Station; A. Smith, Victoria-street; H. Ramsden, St. Peter's-street.

Tea Rooms.—W. Fletcher, St. James's-street and Iron Gate; James King, Normanton-road and Wardwick; L. and E. King, Peter's-street; Oriental Cafe, Iron Gate.

Private Apartments.—A list of private apartments, with terms, will be forwarded on application to the Hon. Local Secretary, W. Crowther, Corporation Art Gallery, Derby, to whom all communications on this subject should be addressed.

Please Note.—The Hon. Secretaries cannot undertake the responsibility of engaging apartments. Members desiring such accommodation must communicate direct to the addresses given, and make their own arrangements.

SYNOPSIS OF PROCEEDINGS.

Monday, July 11.—Members of the Local Committee will attend at the Mechanics' Institute to act as guides, and will arrange short morning and afternoon excursions as may be required. Notice boards. At the Albert Hall of the Mechanics' Institute, 7.0, Official reception by his Worship the Mayor (Councillor Cornelius Boam), the members of the Corporation, and other public bodies. At eight o'clock, the President will deliver his inaugural address after which the Exhibition of Photographic Apparatus, Pictures, etc., will be on view. Musical promenade, refreshments, etc.

Tuesday, July 12.—Excursion to Dovedale—Conveyances leave Strand, Derby, 9.0; arriving at Ashbourne, 10.45; leave Ashbourne, 11.45; luncheon at the Peveril Hotel, 1.0; conveyances leave "Peveril" for Ashbourne, 5.0; tea at Ashbourne, 6.0; leave Ashbourne, 7.0; arriving at Derby about 8.45. There will be no meeting on Tuesday evening.

Wednesday, July 13.—At the Mechanics' Institute—The annual general meeting, election of Council, etc., 10.0; meeting of the new Council, 11.0; the official Convention group will be taken by Mr. Barrow Keene. For time and place see notice boards. At Bridge Hill, Belper.—Reception and garden party by the President and Mrs. Strutt, 2.30. At the Royal Hotel.—Annual dinner and smoking concert, 7.0.

Thursday, July 14.—Excursion to Hardwick—Train leaves Midland Station, Derby, 10.5; arriving at Stretton, 10.53; leave Stretton by coach, 11.0; arriving at Hardwick, 12.0; luncheon at the Hardwick Hotel, 1.0; leave Hardwick by coach for Stretton, 4.50; train leaves Stretton, 5.50; arriving at Derby, 6.25. At the Mechanics' Institute.—A paper, by Thomas R. Dallmeyer, Esq., F.R.A.S., on "Telephotography," followed by an exhibition of lantern slides by members of the Derby Photographic Society, 8.30.

Friday, July 15.—Excursion to Chatsworth and Haddon Hall—Train leaves Midland Station, Derby, 9.30; arriving at Rowsley, 10.20; leave Rowsley by coach for Chatsworth, 10.30; leave Chatsworth for Baslow, 1.30; luncheon at the Wheat Sheaf Hotel, Baslow, 2.0; leave Baslow for Haddon Hall, 3.0; leave Haddon, 5.15; leave Bakewell for Derby, 5.23; arriving at Derby, 6.30. At the Mechanics' Institute, 8.30, an unconventional lecture, by Thomas Bedding, Esq., F.R.P.S., entitled "The Influence of Photography upon the Modern Stage." A paper by H. Snowden Ward, Esq., F.R.P.S., on "Figures in Landscape," illustrated by lantern slides.

Saturday, July 16.—Various short excursions to places in and around Derby will be arranged as may be required. Members will be obliged by signifying their wishes to the Hon. Secretaries as early as possible, in order that particulars may be duly posted on the notice boards.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

May.	Name of Society.	Subject.
.....	Croydon Nat. His. and Sc. Soc.	<i>Gum-Bichromate Process.</i> Demonstrated. Mr. J. M. Sellers.
.....	Southampton Camera Club	<i>Helion.</i> Demonstrated. Mr. S. G. Kimber.
.....	Nelson Photographic Society	<i>Platinotype.</i> Demonstrated. Mr. Wm. Sutcliffe.

CROYDON CAMERA CLUB.

May 18.—The intensification and reduction of negatives was dealt with by Mr. J. M. Sellers, in a thoroughly practical and interesting manner. In his opinion, the great majority of negatives could be improved by intensification or reduction, local or otherwise. In no case, however, should either be resorted to without pulling off trial print from the negative it was proposed to operate on. If it was a valuable one, a transparency should be made to guard against accident or failure. Mr. Sellers divided negatives into series of typical, if arbitrary, classes, and proceeded to point out their varying characteristics by diagrams showing the films in section. The varying effects of the different reducers and intensifiers in common use were also well illustrated by a set of prints and graduated slips, from negatives before and after treatment.

In the discussion that followed, Mr. F. W. Hicks said that on several occasions negatives which had been developed, fixed, washed, and intensified under apparently identical conditions did not show equal durability, some in time acquiring markings, whilst others did not do so. Other members narrated their experiences as to the permanency of intensified negatives with the various reagents which, it is almost invariably the case, did not at all accord with one another. One little point mentioned deserves notice. When intensifying with uranium, a number of small circular markings had popped up with annoying frequency, the cause being eventually traced to the ordinary grooved washing rack. The plates being pressed together, and the circulation of water poor, minute air bubbles congregated on the film, and remained there without change of position. Mr. W. H. Smith said he had constructed a washer some years ago, and showed it at the Club, which removed all hypo in twenty minutes, or, at least, its presence failed to show under the usual tests. A washer might be tested by allowing a few drops of milk to enter, and noting when and where the liquid cleared. Mr. F. E. Dunmore said he had recently inspected a washer, which he thought removed the hypo in three minutes precisely, and in answer to a general murmur of incredulity, stated it was a very fine washer indeed. The President, Mr. S. H. Wratten, in reference to intensification with mercuric chloride followed with ammonia, said he had always found it best to use the latter at minimum strength, consistent with a convenient rate of action. Negatives should also be gently wiped with a plectrum of cotton wool. Some water supplies contained a large amount of grit in suspension, this, to a great extent, might be remedied by adjusting a piece of flannel, or other suitable material, over the tap, so as to form a rough filter.

INDECENT Postcards.—Joseph Fullerton, of Camberwell Road, was summoned at the Lambeth Police-court, by Detective Badcock, for wilfully exposing to view in the window of his premises six indecent pictorial postcards. There was a second summons against the defendant, calling upon him to show cause why certain postcards which were seized by the police at his premises should not be destroyed. The defendant said he honestly believed that the cards were not indecent. He had no wish to sell any that were improper. Mr. Hopkins remarked that looking at the cards as a whole, he did not think that any man of good taste or decent feeling could have any doubt as to what was their character. There would be an order for the destruction of the cards, and the defendant would have to pay a penalty of £20.

FORTHCOMING EXHIBITIONS.

June 12-24.—First International Salon in The Hague. Sekretariat Haag, Conrad Kade 65, The Hague, Netherlands.

June-October.—Glasgow Photographic Exhibition. Secretary, Art Gallery and Museum, Kelvingrove, Glasgow.

July 14 to September 30.—Vienna Photographic Society. Secretary, W. Burger, Karmelitergasse 7, Vienna 11.

August 1.—Andover and District Horticultural Society. Photographic Section. Hon. Secretary, W. L. Gradidge, Jubilee House, Andover.

October 1-30.—Berlin International Photographic Exposition. M. Franz Goercke, Berlin W. 62, Maassen-Strasse 32, Germany.

November, 1904. Ilford and District Photographic Society. Hon. sec., W. N. Beal, 155, Thorold Road, Ilford.

November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Sec., James Dunlop, Myrtlebank, Motherwell.

November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.

November 23-26.—Hove Camera Club. Hon. Secretary, A. R. Sargeant, 55, The Drive, Hove.

November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., G. W. Simmers, Aberdeen House, Ramsgate.

December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.

December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104, West 101st Street, New York.

December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.

December 13-20.—Southampton Camera Club. Hon. Secretary, S. G. Kimber, Oakdene, Highfield, Southampton.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

June, 1905.—Northern Photographic Exhibition. Secretary, F. G. Issott, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

May 31.—Ensign-Vidil. £100 in prizes for negatives on Ensign-Vidil films. Houghtons, Limited, 88-89, High Holborn, London, W.C.

June 30.—"Photographic News" Quarterly. Money prizes, silver and bronze medals for prints. Any subject. "Photographic News," 9, Cecil Court, Charing Cross Road, London, W.C.

June 30.—Kodak. £1,000 in cash prizes for pictures taken on Kodak films and plates, etc. Kodak, Limited, 41-43, Clerkenwell Road, London, E.C.

October 1.—Thornton-Pickard. £100 cash prizes for pictures taken with Thornton-Pickard cameras and shutters. Thornton-Pickard Manufacturing Co., Altrincham.

October 10.—Luna paper. £240 cash prizes for prints on Luna paper. Lucien Allegre and Co., 59a, New Oxford Street, London, W.C.

October 15.—Belgian Association Lantern Slide Stereogram Competition. Secretary, M. Vanderkindere, 97, Avenue Brugmann, Brussels.

October 31.—Coxin. 68 prizes for users of Coxin. Judging twelve pictures. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.

December 31.—Barnet. Nineteen classes. Prizes valued at £500 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

March 15, 1905.—Ilford. £750 in prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

M. GLOVER, Limited.—The above-named Company has been registered with a capital of £3,000 in £1 shares, to carry on the business of photographers, etc., and to acquire the business of limited articles. Director, Mr. John James Thomas Glover. Registered office, 124, Stephen's Green, Dublin.

News and Notes.

No. 1 of the "Optical Lantern and Cinematograph Journal" is to hand. It is well got up, and deals in a business-like manner with the subjects it professes to cater for. It should fill a niche at present unoccupied in the world of journalism.

MESSRS. THOMAS ILLINGWORTH AND CO., LTD., of Willesden Junction, have sent us their new price list of picture-frame mouldings. Many new and choice designs in frames are included, and every photographic exhibitor should send for a copy.

A catalogue of second-hand and shop-soiled photographic goods has been sent us by the Tella Camera Co., 110, Shaftesbury Avenue, London, W. Most of the apparatus listed therein is in new condition and all is guaranteed in thorough repair. A postcard addressed as above will secure a copy.

We have received a copy of Messrs. Adams and Co.'s new price list of hand cameras and accessories. It gives full particulars of the Keni, the Videx, the Locka, the Club, the Adams changing boxes, and other apparatus which this firm has made popular. A line to 26, Charing Cross Road, London, W.C., will procure a copy.

We can recommend to the notice of the photographer who intends going South for his holidays this year, the illustrated guide issued by the London and South Western Railway Company. It contains full particulars, etc., of every place of interest in England likely to be sought by the holiday maker south of London and west of Portsmouth. The seaside resorts and holiday haunts in Normandy and Brittany are also served by this line.

We have received specimens of "The Gaze" photo or picture holder, made by Mr. Tress, of 33, Oxford Street, London, W. The holder is a neat little device, consisting of four celluloid "corners" held together by elastic cord and kept in place by a brass strut. The "corners" are slipped over the corners of the photo, the elastics hold them firmly in position, and the strut at back can then be placed at a convenient angle and the whole stood up for show purposes. They should have a good sale among professional photographers who make a display of unframed prints in the window.

The latest edition of Lizars' photographic catalogue is well up to the high standard set by its predecessors. It is a very complete compendium of everything photographic, and includes also full details of all the celebrated "Challenge" cameras, etc., made by J. Lizars. A useful feature embodied in previous editions, in the shape of a section devoted to formulæ and hints for photographers, is still retained. The illustrations are of high merit, and show the adaptability of the firm's products to varying conditions. Copies will be sent free to any applicant, on receipt of request addressed to 20, High Holborn, London, W.C., or 101 and 107, Buchanan Street, Glasgow.

The Formation of Radium.—Evidence is accumulating to show that helium may be produced as a result of the disintegration of the radium atom, and Professor Rutherford has suggested that radium itself originates from uranium. Mr. W. C. D. Whetham remarks, in a letter to "Nature," that in the case of all samples of uranium oxides and salts which he has examined he has found greater amounts of radium emanation from old specimens than from recently prepared specimens of the same compounds. If it should be found by other investigators that this is so in all cases, strong presumptive evidence would be furnished that radium is formed by the disintegration of uranium.

PROF. H. DU BOIS and **H. RUBENS** eleven years ago investigated the polarisation of non-diffracted infra-red rays through narrow wire gratings, with a view to obtaining simpler conditions than in the case of visible short-wave rays. In fact, in the infra-red region of the spectrum, there is much less dependency on the molecular own vibrations of the substance, which so influences the behaviour of the visible spectrum that a confirmation of the electro-magnetical theory meets with the highest difficulties. Now, in a recent paper read before the German Physical Society, Berlin, the experimenters extend their researches to much higher wave lengths, using the so-called residual rays (Reststrahlen) from fluorspar (mean wave length 25.5μ) and from rock salt (mean wave length 51.2μ), the mantle of an Auer burner serving as the illuminant. After being polarised through a reflection on glass or quartz plates under the

angle of polarisation, the rays were reflected from four fluorite five-rock-salt surfaces, whence a concave mirror concentrated on a thermic battery. From the results of these experiments, inferred that the transmissibility of rays will augment for increasing wave lengths. The increase of the unpolarised rays is particularly remarkable, being fairly well in accord with the theoretical value.

Hove Camera Club.—The annual general meeting of this prosperous southern society was held at the Town Hall, Hove, on Tuesday May 17. The report presented by the hon. secretary (A. R. Sargeant) not only showed that the club had passed a most successful year, but that everything augured well for a continuation of its prosperity. Interest in the ordinary evening meetings, excursions, the afternoon elementary lectures, and the postal portfolio section had been sustained in a satisfactory manner, and an annual exhibition had proved a great success in every way. The treasurer's (R. C. Foskett) statement of accounts showed that the financial position of the club was extremely sound, and a balance sheet showing liabilities nil and a balance in favour of the club of £85 7s. 8d. must rejoice the hearts of all concerned. The present success and prosperity of the Hove Camera Club is due in a great measure to the personal application and ability of the indefatigable hon. secretary we are quite convinced, and the club is to be congratulated on retaining Mr. Sargeant in that rôle. J. Colman, J.P., is the president for the ensuing year, and retiring officers are re-elected. In addition to holding the 1904 exhibition, the club has readily acceded to the request of the Fine Arts Committee of the Brighton Corporation to assist them in arranging for an invitation exhibition of pictorial photographs which is intended to hold in the Brighton Corporation Art Galleries in the spring of 1905.

METHOD for Determining Formaldehyde and Trioxymethylene.—C. Kleber thus applies the reaction between aldehydes and alkali bisulphites to the determination of formaldehyde. Solution of caustic soda is added to a concentrated solution of sodium bisulphite till all odour of sulphurous acid is removed. No special precautions are necessary in this neutralisation, since a slight excess of alkali is immaterial. The solution is then diluted until 50 C.c. of it exactly neutralises 50 C.c. of N/NaOH solution. Formaldehyde acts upon this as an alkali, and it may therefore be titrated as follows:—5 C.c. of the formaldehyde solution to be tested is introduced into a flask with a little phenol-phthalein solution. As it almost always contains free acid, this is cautiously neutralised with a few drops of N/NaOH solution. The standard bisulphite solution is then gradually introduced from a burette until the red colour which first appears is discharged. With strong commercial formalin, as used in photography (of about 40 per cent. formaldehyde) the heat of combination of the aldehyde with the bisulphite is sufficient to complete the reaction; but with more dilute solutions it is necessary to warm the liquid after the first disappearance of the red colour, and add more bisulphite as it reappears, and continuing the successive additions until it no longer becomes evident on warming. 1 C.c. of the standard bisulphite solution is equivalent to 0.05 C.c. of formaldehyde. Trioxymethylene may be titrated with the same solution. 2 Gm. of the substance is gently warmed with a few drops of water; a few drops of phenol-phthalein are added, and standard bisulphite slowly run in, with constant agitation, until the solid matter is entirely dissolved and the red colour has disappeared; 1 C.c. of the standard bisulphite is equivalent to 0.05 Gm. of paraformaldehyde.—"Pharm. Rev."

The Photography and Printing Crafts Department of the Manchester School of Technology, Manchester, has just issued its summer syllabus for 1904. The subjects included are:—Natural colour photography; lecturer, Charles W. Gamble. Syllabus: Explanation of the principles underlying the synthetic and subtractive methods of colour reproduction; outline of the work of Abney, Ives, Du Haeron, Hübl, Joly, Lippmann, Lumière, and Sanger-Shepherd; the processes to be adopted for any particular class of work; colour screens and sensitive plates. Particular processes: Synthetical—The methods of Ives; the monocular and binocular Kromskops; the negative and their corresponding positives; subtractive—the Sanger-Shepherd processes for transmitted and reflected light; making the negative and positives; colour processes in conjunction with the printing press. Photo-lithography, lecturer, R. B. Fishenden. Syllabus: Fundamental principles; the action of light on bichromated col-

umen; compounds of fatty bodies with zinc, calcium, and aluminium; direct and transfer processes; indirect methods; the use of the negative and its relation to the method adopted; the various kinds of prints required; reproduction of different classes of original; lithography in colours and in combination with other processes; collotype; printing on aluminium. And Carbon Printing, by Francis Fielding. Syllabus: The principles underlying the various methods of printing, and a comparison of the processes; the printing methods in vogue; methods of sensitising, dry-plate, and carbon tissue; reversed negatives, and the methods of printing them direct in the camera and by stripping; celluloid negatives; the character of the negatives required for carbon printing; preparation of the negative; actinometers; printing on sensitive tissue; development for single transfer; the preparation of drawings and other papers to receive the printed image; the method for double transfer and the preparation of temporary supports for double transfer; transferring to final supports; the use of lantern slides, transparencies, and opals by the autotype process.

Pharmaceutical Society.—The annual dinner of the members of the Pharmaceutical Society was held last week. The President of the Society, Mr. S. R. Atkins, was in the chair, and the company, numbered upwards of 200, included Sir William Church (President of the Royal College of Physicians), Sir M. M. Bownaggee, Mr. J. Henniker Heaton, M.P., Mr. Marshall Hall, K.C., Mr. David Howard (Institute of Chemistry), Professor H. G. Shaw, Mr. W. O'Malley, M.P., Mr. J. Reid, M.P., Mr. J. W. Bownaggee (President of the Royal College of Surgeons), Dr. T. Stevenson, Mr. J. Wilson Swan, Dr. J. Attfield, Mr. T. Fairley, Mr. W. Treasurer, Mr. R. Bembridge (Secretary), Mr. T. H. Idris, Mr. T. W. Newsholme, Mr. Lough, M.P., Mr. J. W. Bowen, Mr. A. E. Ekins, and Mr. Charles Umney. The President gave the toast of "The Houses of Parliament." He said that the Society had a Bill in the House of Commons—the Pharmacy Bill—which they trusted would come to a successful issue. They had been charged by onlookers with having conceived the Bill in a sort of trade-union spirit. If they had done so, it had been no injustice, for it was one of their objects to promote the interest of their own body. He denied, however, that the Bill had been conceived in such a spirit. From the first to the last provisions it was prepared in the public interest, and all that was wanted was that the Bill should be discussed. Mr. Lough, M.P., Mr. M. Bownaggee, M.P., acknowledged the toast. The President then proposed the toast of "The Medical Profession," and said that they as pharmacists asked that in the future they should be accorded a representation, a status, in the preparation of the Pharmacopoeia, which at the present time they did not possess. Mr. William Church, replying, said that the connection between medicine and pharmacy had undergone during the last few years a remarkable change. His profession at the present time could not compare with the activity which the pharmaceutical profession showed. He mentioned a feature upon which he might congratulate his profession as theirs was that the medical profession looked with distrust on the preparations which pharmacists placed in their

Madame Curie Became a Scientist.—There is an interesting article in the St. Petersburg "Novosti" which deals with the biographical details concerning the early life of Madame Curie, the Russian lady to whom and whose husband is due the wonderful discovery of radium. The writer of the article, M. Rousakoff, was a pupil of Madame Curie's father, M. Sklodovsky, Professor of Physics at a Warsaw college. It was there where Madame Curie began her scientific career. The father's devotion to experimental science was all-pervading; theories, in his opinion, were of secondary importance, never a lesson passed in which he did not prove a theory by a practical experiment, regretting only that the resources of the laboratory did not allow for the necessities of a laboratory properly equipped. Worldly pleasures were as nothing to this impassioned scientist, and every free moment he spent among his physic bottles, being too poor to keep an assistant, M. Sklodovsky, after every experiment, had to clean his own tubes and phials. But when his daughter was old enough to do so, she gladly took this task

off her father's hands, for the child had made the laboratory her nursery, where tubes and bottles were her dolls, and where it soon became evident that she had inherited her father's passion for experimental science. Serious and thoughtful far beyond her age, the child would often pass whole days in the laboratory, enveloped in a large apron and surrounded by dusters and cloths, by means of which she put everything into perfect order. Soon she knew the place of every article, the ingredients and utensils required for every experiment, and could describe every process demonstrated before the pupils. The Professor adored his daughter, but considered her laboratory work as only play, and never seemed to dream of a serious scientific career for her. But the pupils knew better. To them, the child soon became the "professorovna" or lady-professor, and as such they gave her their allegiance and admiration. The moment came when the girl had to go to school; but this did not take her from her beloved laboratory. No sooner did she return home than she was among the tubes and retorts and phials, placing them all in their order and spending the evening in assisting her father to prepare for next day's experiments. And thus gradually the little "professorovna" became her father's unpaid assistant, working hard at the girls' school during the day, and harder still at her father's laboratory at night. The boy pupils, therefore, were not surprised when, some years after they had left the college, they heard that she had brilliantly passed the examinations at her school and had gone to Paris to devote herself entirely to the study of physics. The writer of the article, himself a Russian, ends his interesting sketch by remarking, laconically: "Perhaps if the Russian Government had been more generous towards the physical laboratories of its colleges, M. Sklodovsky might never have allowed his little girl to be initiated into the secrets of science."

Commercial & Legal Intelligence

THE Burglary at Dollond's.—At the Mansion House Police-court on Wednesday last, before Alderman Sir H. Davies, M.P., Michael Thowasso (16), Peter Carwadella (15), Angelo Gianicoli (16), Alexander Merralli (13), Charles Maroni (14), and Thomas Falney (15), all boys of Italian nationality, were charged on remand with being concerned together in breaking and entering the premises of Messrs. Dollond, 35, Ludgate Hill, and stealing a number of opera glasses and other articles. Mr. Tyson Crawford, C.C., testified to the value of the articles stolen. Sir Horatio remanded Gianicoli, Merralli, Maroni, and Falney, and sentenced Thowasso and Carwadella to one month's imprisonment with hard labour.

FRAUDULENT Uses of Photography.—The remarkable history of an enterprise known as the London Penny Omnibus Association engaged the attention of the magistrate at Westminster Police Court on Saturday, when Arthur Bartlett, forty-five, of West Ealing, was brought before Mr. Horace Smith, on remand, charged with being concerned with others not in custody in obtaining money by fraud and false pretences. Mr. Rowe, barrister, prosecuting for the Public Prosecutor, said that a man named Robert Devereux Knowles, who was wanted by the police in the beginning of 1899, started an advertisement agency in Victoria Street. Five months afterwards Bartlett joined him, and a brass plate announced the genesis of the London Penny Omnibus Association. A room was taken for 10s. a week at 637, Fulham Road, and this was called the traffic office. An old building, shared by costermongers and others, was engaged at Vanstone Place, and this was grandiloquently referred to as the granaries and stores of the association. Advertisements were then inserted in the newspapers inviting depositors to participate in a safe investment, promising 10 per cent. interest and bonuses. Among other impostures resorted to was a book of manipulated photographs taken about Christmas, 1900. As the decrepit horses owned by the association were not sufficiently numerous to fill the stalls of the stables at Walham Green they were shifted four times to make "nice pictures" of fully-occupied partitions. There was another "nice picture" of a smart coach and four, but these were borrowed for the occasion from jobmasters.

Correspondence.

- * * *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*
- * * *We do not undertake responsibility for the opinions expressed by our correspondents.*

THE PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION'S MEETING.

To the Editors.

Gentlemen,—In the account of the above a suggestion was brought forward with reference to a branch for assistants. As an assistant who has served a genuine apprenticeship and who is now in his fifth year, permit me to state that I consider such a branch is not only desirable, but is gradually becoming a necessity. There are now so many young persons who, having obtained a slight knowledge of photographic technique as amateurs, come and push themselves into the ranks as professional assistants. The result is that our labour market is overstocked, and good assistants, who have given years to the study of their business, are pushed out, because duffers will work for nothing. To this latter fact the advertisement columns of the B.J.P. bear witness. It appears to me, therefore, that a branch of the P.P.A. should be formed to enable the assistants of to-day to combine, not as malcontents, to be always striking for more pay or less work, but to protect themselves from this invasion, and from those low-class photographers whose one policy is to grab and think nothing about the quality of their work or the treatment of their assistants. It would appear that the P.P.A. is waiting for a mandate from the ranks of assistants. That being the case, I believe it is the duty of the assistants to rise to the occasion. I trust that you may see fit to publish this letter as it stands, but suppressing the address. Thanking you in anticipation,—I remain, yours truly,

CARL E. PETERSEN.

To the Editors.

Gentlemen,—I notice in your report of the P.P.A. meeting last week a suggestion by Mr. Fry to promote some branch or association in which assistants could join. Although we are grateful for his kindness in bringing the matter forward, still, I should think it would be much better had we some organisation of our own. A general trades' union, that would include assistants in every branch of the profession, not forgetting the dry plate and paper coaters. The increased demand for cheap labour, combined with the large number of amateurs who help to fill these vacancies for a mere pittance in order to gain some experience, is, in my opinion, mainly responsible for the bad state and general ruination of our trade. How are we to remedy this? Immediate action is necessary, in order to discuss best means of improving matters.—Yours faithfully,

A PROFESSIONAL ASSISTANT.

May 23, 1904.

A LESSON FOR PHOTOGRAPHERS.

To the Editors.

Gentlemen,—For many years now I have made a point of purchasing one of the illustrated guides to the Royal Academy, and enjoying a feast of the good things therein displayed. Situated far from the centres of art, I can yet, through these half-tones, enjoy the pictures that I cannot see in reality. The colour is absent, true; and yet, mayhap, they are on that account more valuable to the photographer, who sees the lines and masses of the pictures, unembarrassed by the wealth of colour of the originals. In the half-tones we have monotone representations of the pictures, and from these we may learn much.

A study of the book—it is "Black and White's" guide I have—shows much that might be possible by photographic means. A careful study of these will teach the seeker after the beautiful many valuable lessons.

In the figure studies and portraiture, we are struck by the prevailing note of simplicity present in all these; accessories to the figure

or figures there are, but these do not obtrude, like the accessories of too many of our photographers; no, they are relegated to a place, and only play their part in the composition of the picture, the figure being, as it ought to be, *the* picture.

In the landscapes we find that, although true art conceals yet these all follow the accepted rules of composition; the masses and masses arrange themselves in academic methods, although elaborations of the main theme may be wide as the poles asunder. Where figures are introduced, these play their part in the scheme of composition; we instinctively feel that we would not have them absent; they are indispensable notes in the harmonic chord for the pictorial anthem. Examples might be cited, and I might mention various illustrations for special study, but what need? Everyone ought to search these out for himself—or herself—study them thoroughly, and find the why and the wherefore of the various lines and masses. The knowledge thus gained will bear fruit in the improvement of our own work.

COUNTRYMAN.

PSYCHIC PHOTOGRAPHY.

To the Editors.

Gentlemen,—I have noticed with some interest articles appearing in some of your late numbers relating to psychic photography, well as the more exact and scientific notices of the manifestation of the "N" rays and the radiations corresponding to these rays. Persons, resembling somewhat the halos accredited to certain personalities, according to some legendary or historical accounts, desire to give some experiences. Many years ago, as a young man, I took some interest and made some investigations in so-called "psychic" phenomena, especially as connected with so-called "spirit" photography. I think I am safe in saying that pretty much of that sort of work that was exploited was "faked." None of the exploiters, beginning with Mumler, who flourished in Boston twenty-five years ago, to his numerous followers and imitators, came under my notice, would submit their work to any reasonable test that would preclude fraud or faking; consequently the results shown have no value whatever to one of unbiassed judgment.

But further than this, not very long ago, in response to a statement made in your columns alluding to a gentleman in this country who had obtained and was obtaining remarkable results relating to "spirit photography," I made the acquaintance of a party for the purpose of investigating. The results he exhibited were so evidently produced in the ordinary way, some of them being copies of half-tone prints, exhibiting the screen work prominent, that but one conclusion was obvious, that either he was imposed upon by others (as he claimed to produce them through other mediums, times), or was an impostor himself.

There is, however, one peculiar species of phenomena that I caused to notice, on account of engaging in experiments for investigating the truth of the so-called psychic photography, to which I desire to call the attention of experimenters in that line, and dropped the whole matter some twenty-five years ago. The serious every-day business problems prevented me from continuing interest in a subject that ought to be probed thoroughly by careful investigators, to which my attention was called lately by reason of the "N" ray and "personal radiations" theory advanced.

It was at the time that wet plates were exclusively used for portraiture that I repeatedly noticed, in making groups against dark plain backgrounds, that lines of light, misnamed halations, would appear behind the back, or rather shoulders and neck, of some persons wearing dark or black clothing. I attributed the phenomena, which occurred most frequently in the case of rather short-timed or under-timed plates, to the precipitation of silver upon the line of black clothing cut rather suddenly into the somewhat lighter background. But I also noticed that only one, or perhaps two, figures would show this peculiarity, and it occurred to me one day to test the matter by changing the positions of the figures in a repetition of the negative. To my surprise, I found that it occurred to the same figures only as in the first trial. I noticed the effect particularly in a group of spiritualists who were making experiments at my suggestion, where the phenomena occurred with one of them who was supposed to be what they termed a strong medium. If I can hunt up any of these negatives of twenty-five years ago, I will take pleasure in sending you prints of them.

but that time other experiments (in the photo-engraving line particular) so absorbed my leisure time that I lost sight of the matter, and after the adoption of the dry plate, shortly after, I noticed the phenomena again. Now, this is a matter worthy investigation by those having the leisure; but it is evident that rays, to be observed, must have certain conditions for their development. First of these is either a wet collodion plate, or one absolutely free from halation. I would suggest a medium rapid double-plate, backed with an opaque paint. Next, a plain dark background, or one not totally black, and a rather short exposure. It is, of course, not to be expected that the phenomena occur in every case, as I noticed it only occasionally; but when they occur, the changing of positions in a group will be the means of making the test whether it is peculiar to the person. Of course, it is necessary that the figures be outlined against a perfectly plain background, in order not to be mistaken.

With these hints, I leave the matter to the numerous readers of the Journal who have the leisure and interest to make the experiment.—Yours respectfully,
D. BACHRACH.

25 Studios, 1331, F. Street, N.W.,
Washington, U.S.A.

To the Editors.

Gentlemen,—One evening last year, I attended a rather large meeting at the offices of Mr. W. T. Stead. There I inspected a large and varied assortment of Mr. Boursnell's productions. They exhibited as illustrations as "psychic photography," the discussion of that subject being the purpose for which the meeting was called. I had been invited to act as "Leader of the Opposition," so to speak. One or two believers, including Mr. Stead, having spoken, I called upon to give my views. I gave them, honestly and fully. They were unfavourable to the photographs, and evidently useful to most of the assembled guests. It may, perhaps, interest readers to learn the impressions made upon me by the photographs displayed.

They say, at once, that I consider mere views to be valueless in a connection. Mere arguments are without weight. On the other hand, it is futile to argue that, in certain cases, the photographer could not possibly have used trickery—could not possibly know whose spirit was required to appear—could not possibly obtain a portrait of that person, even had he known. Those negative propositions which cannot be proved. Yet that is how the "faithful" argue, crying "proof," where there is no proof. On the other hand, it is equally futile to argue that the photographs are not genuine, because the photographer might not have been able to acquire the information and facilities said to be at his reach. That is how the uncompromising sceptics argue. Again, proof is obviously unattainable. Whatever credence they give to the photographer's own word, that credence conveys no proof to anyone.

It may be asked, then, if we reject all views and arguments, what is to be discussed? To that I answer, there remains all that a sensible man need care to discuss, viz., the photographs themselves. Let them tell their own story, unaided and unobscured by preconceived considerations. If we find their evidence inconclusive, it will be time enough to seek further aid. Personally, I have ceased to look further. The photographs I inspected were

direct evidences adduced were of two kinds. Firstly, such as were palpable to all, except those who are blind because they will not see. Secondly, such as are palpable only to the photographic observer.

In the first place, then, the following palpable facts were evident to the non-technical observer. Each photograph represented a person, above one of whose shoulders appeared a fair expanse of uniformly tinted background. Upon this plain area was shown a comely-subdued portrait of some supposed "spirit." In some the spirit appeared as a kind of vignette; in others, it was surrounded by a particularly hard and stiffly-draped decoration, of something analogous to book-muslin. The woven texture was clearly discernible. This drapery was said to represent the "aura" enveloping the spirit. But it did not envelope

the spirit. Had it done so, the spirit could never have shown through it. It was arranged after the fashion of drapery around a picture or a mirror. Its outline was as hard and clear-cut as the jagged edge of a broken plate. In one instance the spirit and its "aura" were not "in register." The spirit-image overlapped the aura on one side, leaving a gap between them on the other, like a picture pushed sideways out of its frame. Lastly, one could not fail to note the fact that the spirit-portraits of those who lived before the advent of photography resembled reproductions of prints and drawings, while the images of those who have lived subsequently mostly resembled reproductions of photographs. Now, I ask any man of common sense to consider these palpable facts, and then tell me what are his conclusions.

Passing on to evidences of the technical order, the self-betrayal of the photographs becomes accentuated to the last possible degree. In no case were the shadows of the spirit deeper in tint than the background, though the high lights were often as white as those of the sitter. The half-tones were deficient, as they would be in an under-exposed image impressed over a fully-exposed neutral tint. The lights and shadows were distributed in a manner somewhat similar to those of the sitter. They showed that the spirit was not self-luminous, but was illuminated from without. The spirit-images showed that kind of depreciation so distinctive of a "copy." The grain of the original paper was frequently discernible. Superadded to this, the retouching stipple of the original photograph was often in evidence. Above all, those prints which had been left untrimmed gave a damning evidence which no ingenuity can explain away. The border-line made by the rabbet of the dark-slide was, in some cases, doubled, and in some cases trebled! Surely, there would appear to be some rational connection between the double and treble exposures, thus indicated, and the results produced.

Here, again, I am content to set aside my own conclusions, and leave your technical readers to state their own deductions from the facts as shown. Mere arguments as to the impossibility, or otherwise, of trickery being employed are of no account. Once we see that (no matter how, when, or by whom) the photographs have been "faked," it must be sheer folly to waste a moment in further investigation.—I am, Gentlemen, yours, etc.,

NEVIL MASKELYNE.

Egyptian Hall, W.,
May 21, 1904.

PHOTOGRAPHY IN PRISONS.

To the Editors.

Gentlemen, "Photography lessons for prisoners, and a wide extension of general education facilities" have, says the report of the Prison Commissioners for Scotland, been attended with very successful results," says the "Daily Mail," May 18, 1904. What are they turning the profession to? Who shall we have in the ranks? We are told that working men throw down their tools and refuse to work with a "jail-bird." Is not this a matter for the P.P.A. to investigate?—Yours faithfully,

HOWARD SHAW.

25, Thames Street, Windsor,
May 23, 1904.

ACCORDING to the "Builder," some recent radiographs made in Philadelphia by the aid of radium-bromide show that the emanations from this substance are able to penetrate cast iron without difficulty, and steel to a smaller degree. "In one of these experiments," it says, "two pieces of cast iron and a piece of steel were tested, the cast iron being laid on a strip of lead—a metal almost impermeable to radium emanations. After an exposure of thirty-eight hours the negative was developed, and it then became evident that the rays had passed through both pieces of cast iron, and were intercepted by the lead, so that a distinct image of the latter was visible beneath the fainter shadow of the cast iron. Although less permeable, the steel had clearly been penetrated by the rays. Those results are of considerable interest, and suggest the use of radium as a practical means of detecting flaws in metals which are impermeable to the X-rays."

Answers to Correspondents.

- ** All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.**
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PHOTOGRAPHS REGISTERED:—

E. H. WATERMAN, 64, Grosvenor Road, Aldershot. *Photograph of the King in Motor Car Watching the Troops.*

H. E. SUMNER, 1, Queen Street, Godalming. *Photograph of Hughes' Memorial Church and Schools, Godalming. Photograph of Group of Ministers. Photograph of Interior of Hughes' Memorial Church.*

E. SCHULZE, 62, Wilmsholme Road, Withington, Manchester. *Three Photographs of Wedding Cakes.*

E. WALTERS.—As the copyright in the picture is yours, and has been reproduced and sold without your permission, you have cause of action, that is, if the facts are as stated in your letter. We should advise you to consult your solicitor on the matter.

ADDRESS WANTED. —TYPE says: "Kindly give name and address of one or two printers' outfitters' firms where I can get type, ink, etc." In reply: Penrose and Co., Farringdon Road; Winstone and Sons, Shoe Lane; Hughes and Kimber, West Harding Street, E.C.

PLATINUM TONING. —PRINCE says: "1. I shall be obliged if you would let me have the formula for platinum toning bath for wet collodion lantern slides. 2. Also a good varnish for same, to be applied with heat." In reply: 1. Any of the baths used for paper will answer if they are used more concentrated, i.e., made up with less water. 2. Ordinary negative varnish is suitable for lantern slides if it be fairly free from colour. Mawson and Swan's hard varnish is as good as any.

RATIO OF STOPS. —SAYS: "I have a Ross 6 in. by 5 in. symmetrical lens, with loose stops, which are No. 0 to 6, the first being the largest. Will you tell me the name of this system of marking and the relation of these numbers to the 'intensity ratio' system of numbers?" In reply: The lens is evidently an old one, as that was the way stops were marked until the present system was adopted. If we mistake not, the exposure required is doubled with each succeeding smaller stop. If you write to the makers they will tell you for certain, as we are not quite sure on the point.

PHOTOGRAPHING IN A CAVE. —MAG asks: "Could you give me a hint as to how much magnesium ribbon would be wanted for exposure on a group, quarter-plate size, taken in a cave, stop f. 16? I enclose a piece of the ribbon I should use, so that you may see the width." In reply: We really can give no idea as to the quantity of ribbon required, as we do not know the area to be illuminated. As the stop to be used is so small, the exposure would have to be somewhat long, and the chance of some of the figures moving is great. We should advise you to employ a flash light instead of ribbon.

BROKEN NEGATIVE. —ARTISTIC PHOTO COMPANY say: "We have had the misfortune to have a negative broken through the post, after being retouched (see print enclosed). Can you inform us how we can print from same without showing the crack, as the lady cannot sit again on account of being ill, and wishes us to fulfil the order from same without the crack being shown if possible? We might say that the film is broken. How would vignetting very close do?" In reply: As the film is broken through, and the crack prints white, the best thing to be done is to vignette the figure. The white line can then easily be spotted out. Did this not occur to you?

PHOTOGRAPHY IN NORTH AFRICA. —J. F. M. says: "I intend to make a month's voyage along the north coast of Africa on business and would like to combine pleasure with same in a photographic way. Can you give me any hints as to conditions to plates to use and exposure, etc.? I mean for snap-shots. I have a half-plate 'Sanderson' and also magazine camera. Would take both. Should extra-rapid plates or medium be used, and should exposure differ much from here? Is any book I could read up on the subject?" In reply: The correspondent will find a good deal of useful information in Mr. P. R. Salmon's book, "A Photographic Tour in the East," published by Messrs. Strangeways, Tower Street, Cambridge Circus, London, W.C., price 2s. 6d.

COLLODIO CHLORIDE PRINTS. —R. DUNCAN says: "I use collodio chloride matt. P.O.P., and get different colours in toning from brown-grey to blue-black. 1. Would you kindly inform me all shades are of the same permanency? 2. And if, when a print is left in, say, twenty minutes, would the last quality be good? 3. Some of my prints have a bronze in places just after mounting, which disappears when (this is not the bronze caused by over-printing). Please inform me how to get rid of this. 4. Are the lasting qualities of C. C. paper as good as platinotype, and how can I be confident of the permanency of my prints?" In reply: Practically, they will be equally permanent. 2. Yes. Deeper toning will no doubt remove the bronzing, but it does not show when the prints are dry, why trouble about it? 4. Theoretically, no; though they may be made stable if carefully produced.

THE Royal Society gave a banquet on Tuesday evening at Whitehall Rooms as a welcome to, and in honour of the foreign delegates attending the congress of the International Association of Academies, the inaugural meeting of which body opened on Wednesday at Burlington House. The men of science and philosophy learning who were present had come from countries north and south and east and west, and intermingled with them at dinner were many of their English confrères in allied departments of knowledge. From this point of view the gathering was one of a uniquely distinctly interesting character, significant of that concord and brotherhood of the intellectual forces of civilised lands which constitute one of the lofty ideals of the association.

AN automatic aeroplane, containing a photographic apparatus, the invention of an Englishman, says the "Express," will shortly make its appearance at the seat of war, and may be expected to have a considerable effect on the progress of the campaign. It is sent up to a considerable height, and driven four miles away from the base at which it is held captive, and brought back after taking a complete photographic map of two miles of the country over which it has hovered. Thus an army possessing this apparatus can safely obtain a detailed plan of an enemy's position, showing every particular the disposition of guns, trenches and forces. Moreover, the aeroplane will register the exact distances of all the objects photographed. Similarly, it can be sent up from the deck of a warship to photograph, for example, an enemy's harbour and fleet, thus enabling its possessor to train his guns on the object of attack with deadly effect, or to assault a position with all the advantages of an accurate knowledge of what he is attacking.

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THE BRITISH JOURNAL OF PHOTOGRAPHY" JUBILEE NUMBER (1854-1904).

celebrate the completion of the fiftieth year of the BRITISH JOURNAL OF PHOTOGRAPHY we are issuing next week (June 10) a Special Jubilee Number of the publication, which is universally recognised as the oldest and most influential of its kind in the world.

The ordinary issue of the Journal of June 10 will be more than doubled in size in the text portion, and amongst other things will include, by way of supplement, an illustrated history of THE BRITISH JOURNAL OF PHOTOGRAPHY, with portraits and Biographies of the Eminent Men of Science, Naturalists, and Photographers who have been identified with the conduct of the paper during the last fifty years.

A souvenir of a unique celebration in photographic journalism the "B.J." Jubilee Number will undoubtedly be a most enormous request, as it is not too much to say that the history of the paper during the half-century of its existence is most intimately bound up with the history of photography itself.

This Special Issue of THE BRITISH JOURNAL OF PHOTOGRAPHY many thousand extra copies will be printed, as the demand for the paper will be very largely increased. Moreover, it is intended to give the Jubilee Number a specially organised world-wide distribution, so that the greatest possible publicity will be secured for the occasion on the completion of its fiftieth year of existence.

EX CATHEDRA.

Photographing Lightning. The thunderstorms that have been experienced in different parts of the country during the past week or so have been sufficient to remind us that thunder is now "in season," and will be for some few months to come. Photographs of lightning are always interesting, and often very so to meteorologists, but the opportunities for obtaining them are, frequently, few and far between, therefore, those who are desirous of securing them should be on the alert during the summer months. To those who have not yet attempted to obtain photographs of lightning a few practical hints may, possibly, be welcome. These photographs, it may be mentioned, can only be taken successfully at night, or when the sky is perfectly dark. When a storm is expected the lens of the camera should be focussed for infinity, and the dark slides filled with plates of moderate rapidity. The camera is then arranged at a window pointing in the direction of the storm. The shutter of the dark slide should then be withdrawn, the lens uncapped, and the lightning waited for. As soon as a flash occurs the lens should be capped, the shutter closed, and another slide introduced, and the operation repeated with other plates. It is not advisable to attempt to obtain two flashes on one plate. It is advisable to use a wide angle lens, as that will include a great expanse of sky, so that the chances of obtaining the electric discharge depicted on the plate is the greater. In all cases the plates should be backed so as to get the image sharply defined by avoiding halation. Photographing lightning is always tedious and uncertain work, and if the operator secures one or two good negatives with the exposure of a dozen plates he may consider himself pretty fortunate. Still a good picture of lightning when secured is an achievement and something to be proud of.

* * *

A Caution to Tourists Abroad.

The tourist season has commenced, and photographers travelling on the Continent should be careful where they use their cameras. We are once more reminded of this on reading in the daily papers of the arrest of an ex-colonel of the Royal Artillery at Belle Isle on a charge of espionage. We are not told that photography had anything to do with the arrest, but the mere fact that the gentleman was arrested shows that the French authorities are still on the alert for supposed spies. It often happens in out-of-the-way places in France that a visitor's inquisitiveness, particularly if he is accompanied by a camera, leads a suspicious or over-energetic local official to imagine he is a spy, and he is arrested accordingly. Not a few English photographic tourists have been subjected to the indignity of arrest, and been detained for hours.

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perhaps for a day or more, while inquiries are being made about them, and, perhaps, their plates examined or spoiled. Such has been no uncommon thing in the past and possibly will not in the future, hence our alluding to the subject just now to caution our readers as to what may happen to them in some circumstances. It is pretty generally understood that in all countries, including our own, that photographing in the neighbourhood of a fort is not allowed, even if the fort itself is not included in the picture. Cameras are always looked upon with more or less suspicion on the Franco-German frontiers, and tourists should always be careful how, and where, they use them, or they may quickly find themselves in trouble. It is not pleasant to have to spend a day out of a short holiday in durance vile. Passports are now not necessary in most of the Continental countries, but notwithstanding that the English photographic tourist will do well to be provided with one. Its cost is but nominal, it may be had without any difficulty at the Foreign Office, and when obtained is good for all time. It is also well, before starting on a tour, to get it vised here at the Consulate of the country the tourist is going to; here he will be able to ascertain what restrictions, if any, there are on the use of cameras in that country. The possession of a passport will not, of course, prevent a photographer from getting innocently into trouble, but it will often materially help him out of it by proving his identity and his innocent intent. Here is another hint. It is always well to make inquiries at the hotel where the tourist is staying if there are any restrictions with regard to the use of the camera in the place before he commences to use it.

* * *

Photography and Science.

It is a little difficult to conceive, nowadays, what science would do without photography. In almost every branch it is daily requisitioned for one purpose or another. Probably no branch of science has profited so much by photography as astronomy, for much of our present knowledge in that direction is entirely due to it. Stars that are too weak in light to be seen by the eye, even with the most powerful telescopes, are detected by photography, their magnitude determined, and their position in the universe definitely located. Last week Mr. E. W. Maunder, at Gresham College, in the first of a series of four lectures on "Recent Solar Researches," dealt with the subject of the changes and movements of sun spots. During his lecture he explained that at the Royal Observatory, Greenwich, two photographs of the sun are taken daily when it is visible, and that when the appearances are specially interesting an extra number are taken. The Greenwich photographs, he said, were supplemented by others taken in India, and also in the Mauritius, and thus, as complete as possible, a photographic record is secured. With the aid of lantern slides the lecturer described the photographic operations. The lecture throughout was illustrated with slides showing the different phases of the sun spots, so that the audience could at once realise their varying appearances. At the conversazione of the University of London last week, photography was largely in evidence as illustrating its utility in science and manufactures. For example, there were photo micrographs of sections of iron and steel which had been polished and then etched by a reagent and photographed. From the photo-micrographs of the metals the expert can determine with practical exactness, the proportion of carbon in the metal, the heat at which it was worked, and the mechanical treatment it had received, and by this means was often enabled to determine the cause of fracture. Amongst the photographs shown were a series of very fine cloud photographs, and the Royal Astronomical showed a number of transparencies of the great sun spots of 1903, with the surround-

ing flocculi. Photographs were also exhibited illustrating solar and meteorological changes. There was also a very interesting exhibit in the shape of some photo-micrographs that were taken with an unusually large camera, in which the results are sharper than they are when a smaller camera is taken and afterwards further enlarged. This, by the way, is a subject that photo-micrographers would do well to take into consideration, for when the picture is taken directly to the full size required, it follows that the result should be sharper than when the work is done in two operations with the intermission of a transparency. In each operation there must necessarily be some loss of sharpness, if only from the granularity of the plates employed. As has been said above, it is difficult to see what science would be at the present time were it not for photography.

* * *

More Sea Serpent.

It is much to be regretted that there was no photographic camera on board the French gunboat *Décidée* on a recent occasion when it happened to be in the Bay of Along, on the coast of Tonkin; or, supposing that there was a camera, that there was no one who thought of using it. For there was an opportunity of securing a picture of the real sea serpent such as does not very often occur. The commander of that vessel reports to his admiral that one day about 300 yards beyond its bows appeared on the port side a large, round, black mass, which those on board took to be a rock. Then the rock moved, and it was thought to be a gigantic turtle. But when it stretched itself to its full length in vertical undulations it was seen to be a flattened serpent thirty metres, or nearly one hundred feet long. It dived right under the gunboat, and came up on the other side so close to the vessel, that the doctor, the boatswain, and several others were able, by bending over the gunwale, to get a good view of the monster. Its head and neck were like those of a turtle, and the skin generally was dark brown, with rings or patches of yellow. It emitted "jets of vapoury water," and soon afterwards disappeared. Now, here is a most circumstantial account of the appearance of a monster which is generally supposed to be a myth. But there are so many other reports of the same nature, which have been recorded in ship logs for years past that we are bound to believe that there cannot all be visionary. It is a pretty generally accepted axiom that where there are persistent rumours with regard to an occurrence, there must be a substratum of truth underlying the statements. And the appearance of what is known as the sea serpent has been so often vouchsafed for by independent and honest observers that we must believe that there is a foundation for the reports. We must, of course, allow for exaggeration in many of the tales, notably in the case of the appearance recorded by a well-meaning Norwegian bishop more than a century ago who illustrated his account with some obviously impossible pictures of the monster. Still, we must feel that there is evidence in support of its existence is overwhelming. The question is ever to be satisfactorily settled, it must be by photography, and we believe that the time is not far distant when an opportunity will come of photographing one of these appearances. We shall then be able to say without doubt whether it is really a serpent, a school of porpoises, a flight of birds, or any of the other things by which doubters have explained away the apparitions. In these days it is quite a common thing for men and women of means and leisure to take a trip round the world. They think far less of such an undertaking than did our forefathers of a journey from London to Edinburgh. They all carry cameras with them, and will rest with these globe-trotters to set at rest the mystery which surrounds the oft-encountered sea serpent.

the meantime it would be interesting to know why the artists on board the *Décidée* did not photograph the creature, which was so close to their ship that they could serve the details of its complexion.

Photographers.

In a letter signed "Countryman," which appears in our last issue, there is a very valuable hint to photographers, especially to those who, like its author, are shut out from opportunities of visiting picture exhibitions. It is that they should study the illustrated catalogues, which now, thanks to half-tone blocks, are issued in such profusion. This recommendation is a most excellent one, for although these reproductions are only in black and white—we suppose that we shall have them in colour some day—they give a true representation of form, gradation, and composition. We all know, to our sorrow, that of late years there has been considered "good form" to sneer at Academic methods of art training. The young man who has had a few months' experience with a quarter-plate camera considers himself quite competent to get on his legs at the Royal Photographic Society, and point out the weak points in the work of Michael Angelo, Raphael, or any other painter. But the thoughtful worker knows very well that this kind of bunkum, although it may impose upon the ignorant, and be of great encouragement to other quarter-plate beginners, is not worthy of a moment's consideration. There are certain laws of harmony and composition in the making of a picture, as there are in the scoring of an overture, and if we outrage them, our work, although it may excite an ephemeral notoriety by reason of its eccentricity, will not last. Those who have made a name in the world of art have done so by hard study of the principles upon which art work is based, and photographers cannot do better than follow their lead. The painter can choose his own models, and can place them in his composition where he lists. He can light them from right or left as he likes, and if one item is too obtrusive he can tone it down or eliminate it altogether. A photographer can only play such tricks with his pictures to quite a limited degree, and he can never hope to emulate the painter in anything produced by the camera. But he can ascertain by a study of the works of painters, how the wielder of the brush would have treated a given subject. And here we have the reason why photographers should omit no opportunity of visiting picture galleries, or studying reproductions of pictures. The Academy sketches started by the late Mr. Henry Blackburn represented the first contribution to this kind of pictorial literature, but now that the half-tone method has reached such perfection we get most valuable photographic reproductions of the principal pictures which appear not only at the annual exhibition of the Academy, but at most of the other galleries. These catalogues can often be picked up at the bookstalls for a very small price, and from an educational point of view they are never out of date. We would also call attention to the issue of the "Catalogue Illustré" of the Paris Salon, which is procurable in London, and of the beautifully printed "Figaro Salon." Our country correspondence has done good service in calling attention of photographers to an opportunity for study which otherwise they might have neglected.

Political Cartoonist.

The political cartoon used to be peculiar to the pages of "Punch," but it now appears in dozens of other papers. The vast increase in this class of caricature is due, of course, to the same cause—the increase of pictorial illustrations generally, namely, the cheapening of the work of reproduction by the photo-

graphic process block. One thing, at least, we may congratulate ourselves upon, and that is the great gain in refinement which characterises these drawings, coarse in execution as some of them undoubtedly are. It was not so always, as collectors of old caricatures well know. Up to the time of Cruikshank many of these productions were not only coarse in drawing, but so coarse in another way that no respectable dealer would care to exhibit them in his shop window. Many of us must often have wondered what are the feelings of our leading politicians when they see themselves caricatured week after week, not only in the pages of the comic papers, but in the daily journals as well. At last, however, we are able to lift the veil, and are able to ascertain at least how they are regarded by the advocate of Fiscal Reform, who has, perhaps, been more often the subject of caricature than any public man living or dead. The story was told the other night at a dinner given to Mr. F. C. Gould, whose drawings are so familiar to the public, on which occasion it fell to the lot of Sir H. Campbell-Bannerman to propose "the guest of the Evening." The leader of the Opposition told how one day he was in the tea-room at the House of Commons, looking at the pages of the "Westminster Gazette," in which some caricatures of Mr. Chamberlain appeared. "Are you looking at the pictures?" said the latter. "Are they not good?" "Yes," was the answer, "they are always humorous."—"And always good-natured," added Mr. Chamberlain. And he went on to remark that he rather liked being thus portrayed, and had never found in the drawings anything to complain of. This is a high compliment to Mr. Gould's good taste; and one which, no doubt, he will be very proud of. And Sir Campbell-Bannerman was no less reticent in his admiration of the artists' work, and he pointed out that the old caricaturists of the beginning of the last century and even those who came after, were often ill-natured and grotesque in their imaginings. This was a very mild way of putting it, as those who are acquainted with the old works well know. In the print room at the British Museum we one day came across a volume of a journal which had an ephemeral existence at the beginning of the Victorian era. The late Queen's marriage seems to have been thought a fit subject for satire of a most gross kind, and many pictures were published in those pages which would not for one moment be tolerated now. One thing is very evident, and that is the desire to represent the late Prince Consort as a detested foreigner. He appears in many of these cartoons, and is invariably held up to ridicule. The artists' ignorance, or that of the editor from whom he received his instructions, is exhibited by the way in which the "foreigner" is made to express himself—in the broken English of a Frenchman, not that of a German. We may all feel glad that while photography has given artists, many of whom would otherwise never have reached the public, the means of making themselves known, both they and their publishers have now learnt better manners.

ART.—Wealthy Patron: This portrait doesn't resemble my wife a particle—not a particle. Photographer: No; it doesn't look much like her, but, my dear sir, the technique, the technique. "Indianapolis Journal."

PHOTOGRAPHIC ENTERPRISE.—At the recent great fire at Lowestoft, where 300ft. frontage of mills and warehouse were ablaze at one time, Mr. H. Jenkins, of Pier Terrace, Lowestoft, secured a series of photographs of the conflagration, and, with the assistance of the Rapid Bromide Printer of his own invention, which we recently noticed in these columns, was able to have picture postcards of the event ready for sale within an hour of the negatives being taken.

ELECTRIC LIGHT AND COPYING.

WE have received so many comments, and been asked so many questions regarding our article on "Copying by Electric Light," which appeared in these pages a couple of months ago, that it may be desirable to further amplify our instructions or hints. We have been asked whether the arc-light would not be better than the incandescent. The question contains its own reply: If facility in getting work through and shortness of exposure be a paramount necessity, there can be no doubt that it is the better; but we would wish to point out that our remarks were made not for the benefit of "trade enlargers"—who, it should be presumed, need no teaching from us for the conduct of their business—but for the larger army of professional photographers, whose need for copying is simply sporadic, as it were; who do not keep apparatus constantly in position for copying purposes, but have, rather, to set it up each time occasion arises, and would desire to do it with as little disarrangement of surroundings, and with as much despatch as possible. A flexible cord with a Y branch to hold the two globes or even a single cord for one only can be attached or removed as readily as replacing a spirit lamp, and, while providing all the illuminating outfit necessary, occupies no space. As to the time of exposure, ten seconds with two 32 candle power lamps is quite sufficient when copying to the same scale. It is when an enlargement of several diameters is needed where the short exposure with an arc-light would be felt to be so advantageous. One other advantage of the latter is the greater ease with which even illumination may be obtained. It is in this matter of even illumination that any material difficulty might arise with an incandescent light. When the latter is fixed for illuminating the picture to be copied, it will generally be noticed that streaks and lines of light make their appearance in the illuminated area, brought about by the globe being of irregular thickness. There will, however, be found certain positions that it can be placed in to produce an even field of light, and this, whatever the pattern or shape of filament adopted. These positions are mainly found by placing the globe in an almost horizontal position, and revolving it till the required evenness presents itself. This irregularity of the light-area is more readily perceived if the light be first allowed to fall on an even surface, such, for example, as a piece of white cardboard; when the photograph itself is lighted up the want of evenness might not be at the outset observed but for this warning note, though it would be quickly enough noted on the negative obtained. If difficulty should be experienced it can, however, be quickly got rid of by adopting ground glass or opal globes, which give a very even glow of light. But they cause considerable increase in the time of exposure required, and, further, they cannot be so satisfactorily used with a reflector to increase the light. We recently saw a very ingenious example of a costless kind, yet very efficient. It consisted of platinotype tin cut open with a pair of shears after removing the bottom and throwing away the lid. The curved sheet of brilliantly-surfaced tin-plate thus obtained was opened out to a shallow curve to an extent found by experiment, and mounted on a rough wood base. The exact curve to be given to the tin-plate sheet was, as we say, found experimentally; but obviously the shape required was a parabola, which would reflect parallel rays from any luminous source placed at its focus. For the particular purpose we are now discussing, the use of such a reflector would serve the additional purpose of screening the lens from the light of the lamp during the exposure of the plate. This is a very important matter, for, seeing that the lamp would be placed between the lens and the object, a powerful light would be cast upon the lens which

would inevitably cause a fogged negative to be obtained unless a screen of some sort were interposed. A curious experience we ourselves met with in this connection may be noted with advantage. We had obtained an excellent 12 x 10 negative; but it was marred by a fogged margin of about an inch in width, as though the plate had been "light-struck." The box from which the plate had been taken having been laid aside for a long time we concluded that an unrecorded accidental partial exposure to light had taken place, and we used an entirely fresh box. To our surprise the same fogged margin again occurred, and we could not at once diagnose the cause. Eventually it was found that the screen we had made use of to shield the lens from the entry of extraneous light—a piece of white cardboard—was within the area of reflection (referred to in our previous article as the V area), and the picture before the camera had a glass in front, the brightly-illuminated cardboard was reflected in the glass and photographed as part of the picture. This leads to the consideration of still another case of injurious reflection, and with which we will conclude our article. If the picture to be copied has a glossy surface, or be copied behind glass, portions of it will, if the copying camera have a polished surface, be reflected from that surface and re-reflected to the lens, and an irregularly fogged image be given. With such a camera, therefore, the expedient should be adopted of destroying the possibility of injurious reflection, and possibly the simplest plan is to place a piece of blank paper or cardboard in front and pierced with an aperture just large enough to permit the lens's action to be unimpeded. A similar treatment must be extended to the table upon which the camera and copying board rests, or otherwise its reflection, especially with a light coloured wood, would mar the integrity of the image at the margin in juxtaposition.

COUNTER TALK.

By the AMATEUR OPTICIAN.

THE man who has a difficulty in getting in his accounts—who has not?—finds the trouble, annoyance, and anxiety intensified by the fact that in nine cases out of ten he starts in to collect his debts at a time when he is actually short of the money. A very successful and wealthy business man once gave me advice which, put briefly, came to this: "Never go out collecting your accounts when your pocket is empty," or, in other words, do not wait until it is really necessary you should have the money. I know the truth of this from painful experience, and I do not at all mind admitting the fact.

Looking through a prospectus of the Royal Photographic Society, I remark an omission to which I think the attention of the managers might be directed; this is a lower scale of subscriptions for country members. The matter may of course have been considered by the council of the R.P. Society, but the unevenness of the impost still remains. Many a country member rarely goes to London—I have not been in the city for five years from various causes. Why should the London members enjoy all the privileges of membership, privileges which are out of the reach of nearly all country members, and pay no more for them? Another point. Has not the "Fellowship" been cheapened very considerably of late years? I must confess that, knowing very well two or three men who use the initials F.R.P.S. after their names on their bill-heads and circulars, I am greatly puzzled as to their "special" qualifications: estimable men in their way, but absolute without the "special" qualifications in the sense one would naturally use the term. It is clear that nomination papers are signed with very little thought or discrimination. In the ca

of the R.P.S. this is regrettable but not criminal. Now in the dental profession, which I claim to know something about, I once met with a case which was, to say the least, extraordinary. The Act of 1878 (Dentists) allowed the title to all who were practising the profession alone, or in conjunction with pharmacy, prior to a certain date, which I think was December 31, 1878. There was also an exemption in favour of apprentices who at the time had not completed their indentures. Well, a few years ago I met frequently in the way of business a young fellow who practised and had his name on the register. Quite accidentally I became aware of his age, and then found that at the time of the passing of the Act in question the gentleman was of the tender age of ten years! It was of course no business of mine, and I did not investigate further, but it must be clear that at the age of ten years the boy was at school and not an apprentice; also, that when the nomination paper was signed wherein he claimed exemption, two responsible tradesmen signed their names to a declaration which was false, and might have subjected them to considerable unpleasantness.

A customer has just come in for a nice little order for a set of photographs of a number of shop fronts, the premises being for the most part in very busy thoroughfares, the work has had to be done at a time anterior to the morning milkman. My friend has been struck by the varied exposures required for such work, and at such different times as five, six, seven, and ten o'clock. At first the exposure given was an average two seconds; the lens, a rapid rectilinear, stopped down to F.22. This proved to be a correct estimate for the early morning exposures, but excessive for those later in the day, all being taken purposely without sunlight. I am inclined to think that the exposure in the earlier hours was a shade more than two seconds, as it is not easy to guarantee an absolute certainty with the lens-cap only. However, no plates were wasted, the over-exposed being amenable to the mercurial intensifier. I developed one of these over-exposed plates with the "Imperial" Standard developer, mixed firstly at normal strength, then diluted with water to three times the bulk. But, after all, the term "excessive" may not be the correct term to use in such a connection. Take a shop-window of up-to-date character, with plenty of mahogany and plate-glass, and full of goods, mostly small and of all colours; what is the correct exposure at this time of year? Really, I think the old rule of "exposure for the shadows" applies here, almost, if not quite, to the same extent as if the subject were an interior; and if we say that a good rule would be to expose for the darkest object in the window, we should not be far wrong. As a matter of fact, the so-called two-second 6 a.m. negative may have a little more sparkle than the two-second 10 a.m. plate, but the print from the latter is to my mind the more interesting and valuable of the two because, with a glass, objects quite in the deep recesses of the window enclosure may be clearly distinguished, while at the same time better lighted goods in the front have by reason of so-called over-exposure become toned down to their relative values. So much for the first batch of these negatives. My friend now proposes to use a shutter for those dealt with after 9 a.m. and before 12 o'clock; and it is quite easy to imagine that one may go to another extreme, using a shutter, with such subjects; for it is clear that comparative over-exposures may be made into good results, whereas under-exposures would be fatal.

Professional photographers of class—and as a class—do not advertise to any extent, but when they venture to call attention to their attainments and their productions in such ways as are open to a certain section of the professional element, it is pleasant to note how very effective their advertisement may become by the exercise of that æsthetic taste which, after all, is the possession of all artistic photographers of

the higher grade. I am led to this reflection because of the receipt by me of a very tasteful little card sent out by Mr. Pendry, of Nottingham; nothing elaborate or showy about it, the main feature being a specimen of this gentleman's work, with prices which are moderate, the subject a pretty little child. As this has been begged of me by several lady friends already, and will probably be shown to many others before the card goes the way of all cards, sooner or later, I cannot conceive of a more promising and permanent advertisement.

PSYCHIC AND SPIRITUALISTIC PHOTOGRAPHY.

[Abstract of paper read before the London and Provincial Photographic Association, May 28, 1904.]

It is due to the memory of the late J. Traill Taylor that record should be made of the gratitude that all students of the subject feel towards him for having so courageously championed spirit photography, having after most careful investigation found it a great truth. The last decade has brought so many new truths to the surface. X-rays, N-rays, and wireless telegraphy have familiarised us with the psychic idea of spirit vibrations, so that it is but fitting that spirit photography should be brought prominently before the photographic world.

Great progress has been made with spirit photography by unseen helpers, who have had to learn and experiment; and the examples shown this evening are of much higher excellence than were those which engaged the attention of Mr. Traill Taylor.

In tracing the effects of psychic photography, reference must be made to other phenomena. We are, of course, spirits now, and when the material body dies the spiritual one emerges, and enters upon a new stage of existence. Some two hundred years ago Addison expressed an opinion that all nature swarms with spirits, and that we have multitudes of silent and unseen spectators to all our actions. John Wesley has recorded that a woman he knew was a natural seer, who could see spirits night and day; and to-day we have thousands of clairvoyants who say that we are encompassed with clouds of witnesses, which I have abundant reason to know is true, as proved by a visit to a photographer who was a clairvoyant and a clairaudient (i.e., has the gifts of seeing and hearing spirit visitors), and to my amazement he produced a spirit photograph of my little niece, quite different to any portrait taken before she passed away. Upon another visit the photographer told me that an old gentleman was standing at my side, and when the plates were developed there was an excellent presentment of my grandfather, wearing a white cravat, as represented in an oil painting, and which the photographer could not have seen. Spirit photography seems to have originated in this country, for it was in 1851 that a young photographer, in business with a partner in Fleet Street, had frequent quarrels with his partner on account of the plates showing on development curious markings, patches, hands, and in some cases portions of a face; and, clean the plates as he would, the uncanny markings were persistent, till in despair he refused to take any more pictures, and devoted himself for years to other branches of the business.

Eight years later, Miss Houghton, of London, a worthy and conscientious lady, was told by her spirit guides that a time was approaching when spirits would be impressed upon the photographic plate, and that she would be one of the workers, and this was verified in "The Chronicles of Spirit Photography," published in 1882, illustrated with over fifty reproductions of photographs taken by Mr. Hudson, who, like all pioneers, had to suffer persecution by those who thought that anything beyond their range of knowledge must be fraud. Meanwhile our American cousins were not idle, for in 1861 W. H. Mumler, of New York, was startled to find that he

had photographed an invisible sitter, as did another photographer in Connecticut.

Mumler was subjected to severe tests by scientific and photographic experts, who had to acknowledge that the manifestations were genuine. Dr. Dean Clarke, telling how Mumler cut a new sheet of glass, and produced upon it a negative having a clear likeness of his mother who had been in spirit-land about nine years.

Quoting from "Miracles and Modern Spiritualism," by Dr. A. Russell Wallace, F.R.S. :—

"The test of clearly-recognisable likenesses of deceased friends has often been obtained. Mr. W. Hewitt, without previous arrangement, obtained perfect likenesses of two sons many years dead. The author also testified to obtaining a most unmistakable likeness of his mother. Mr. Thomas Slater, optician and amateur photographer, took a new camera of his own manufacture to Mr. Hudson's studio, saw everything done, and obtained a portrait with a second figure upon it, and on experimenting in his own house obtained remarkable results, the first containing two heads by the side of a portrait of his sister, one of those heads being unmistakably the portrait of the late Lord Brougham, the other of Robert Owen. One of the most extraordinary pictures obtained by Mr. Slater was a full-length portrait of his sister, in which there is no second figure, but the sister appears covered all over with a kind of transparent lace drapery, which on examination is seen to be made of shaded circles of different sizes quite unlike any material fabric I have seen or heard of."

Mr. John Beattie, of Clifton, an old photographer of twenty years' experience, made some valuable and conclusive experiments, assisted by Dr. Thomson, of Edinburgh, an amateur photographer of twenty-five years' experience.

The figures produced are, for the most part, not human, but white, shaded patches, variously formed, and in successive pictures change and develop with a more perfect or complete type. In one is a luminous rayed star of large size, with a human face faintly visible in the centre, these lights being accurately described by a clairvoyant present. Sometimes twenty consecutive exposures produced nothing unusual; hundreds have been made, and more than half complete failures; but the successes have been well worth the labour; they demonstrate that what a sensitive person sees, even when no one else sees anything, may often have an objective existence.

Mr. Andrew Glendenning is honoured in the annals of spirit photography. For over forty years he has experimented, written upon, and generally upheld the importance of this valuable evidence of an after-life, which is summarised in his volume entitled "The Veil Lifted." In 1893 he carried on a long series of experiments with Messrs. Robertson and Duguid, a well-known medium, and also with Mr. Traill Taylor, who, after numerous exhaustive tests, was fully convinced of the genuineness of the results obtained. The Rev. H. R. Hawies should also be mentioned, as he had the pluck to hold an exhibition of spirit photographs at his own church rooms.

Here are the four forms of psychic photographs:—

1. Of forms, symbols, flowers, auras, vibrations, etc., invisible to normal sight, but visible to clairvoyants, though clairvoyants vary greatly as to their power of spirit vision, some being able to cognise a far higher rate of spirit and etheric vibrations than are others.

2. Of emotions, such as anger, fear, etc., Dr. Baraduc, of Paris, having obtained a remarkable series of these, and he probably possesses the, at present, rare phase of mediumship which constitutes a psychic photographer; he can by placing sensitive plates near the various nerve centres and ganglions, receive markings and lights on the plates, which are to him an index of the state of the patient.

3. Of etherealised and materialised forms, or spirits who for

the time being talk, sing, move, look, behave like mortals, and are visible to all sitters at the seance; under exceptionally favourable circumstances, as many as forty may materialise during one evening. In all these cases, with the exception of some of those of Dr. Baraduc, the use of a camera is necessary.

4. When plates properly protected are held by the sitters in their hands, in the presence of a suitable medium, and markings, landscapes, pictures, and portraits are precipitated direct on to the plate by the spirit workers. The late Mr. C. Lacey had a curious collection of this class obtained during sittings extending over many years; and at the meetings of the Psychological Society Mr. Gambier Bolton and his friends have also obtained interesting results.

It may, therefore, be suggested that recognisable portraits of people deceased, at times differing from any taken while in the mortal, having been obtained, frequently under test conditions, and also that designs, faces, and other manifestations having been produced on plates without the aid of lens or camera, also under test conditions, places psychic photography above, or independent of, the rules and laws of ordinary photography. In the words of Mr. Traill Taylor: "Some were in focus, others not so; some were lighted from the left, the sitter was from the right." In the face of the accumulated testimony the time has arrived for those of us who have investigated the subject to turn the tables on those who keep repeating the parrot cry of "fraud," and request them to produce any similar results under the same conditions.

It is a curious fact that so far as my observations have proceeded every photographic medium seems to produce a class or species of work quite distinct from any other, the forms or subjects in each case manifesting in a slightly different manner.

Imitation psychic photographs are often talked of, but seldom seen. It is easy by double exposure, etc., to produce weird-looking effects, but it does not pay to do so. Where is the market?

As to painting on the background with some solution invisible to the eye, but visible to the sensitive plate, an artist who could limn some of the lovely faces shown in these photographs would adorn the walls of the Royal Academy, and not the backgrounds of a needy photographer; and the nonsensical suggestion is effectually disposed of when plate after plate is exposed with intervals of a few seconds only. I show to-night three portraits of the same beautiful spirit, all quite different, taken rapidly one after the other.

Sir W. Crookes describes in "Researches in Spiritualism" the elaborate means employed to photograph the beautiful spirit materialised of Miss F. Cook. The spirit walked and talked for nearly two hours. You will see on the screen another photograph of a materialised spirit taken with Miss F. Cook as medium, taken by flashlight, seven or eight people being present, the phenomenon of materialisation being one of God's greatest wonders.

At seances held under good conditions a small cloud of magnetic aura will rise from the floor, and in a few seconds assume a spiral shape, rapidly revolves and enlarges, and in a few more seconds a living, sentient being, pulsating with life, emotion, and vitality. Materialised spirits can be photographed by any one with a camera; but it is quite another matter to photograph the invisible that necessitates the presence of a special mediumship. It is important that all photographers carefully examine all negatives showing abnormal lights and markings, for which the plate manufacturers are often unjustly blamed; they are generally explained away as fog, faulty slides, pinholes, etc., but are very often embryonic stages of this phase of mediumship, and that consists of the ability to provide spirit workers with an aura, atmosphere, or emanation which enables them to so far materialise or crystallise their vibrations, that the sensitive plate can be affected,

though the form will not be visible to anyone but a clairvoyant. Clairvoyants can see and describe spirits posing, but the plate does not record them, owing probably to the photographer not supplying the requisite materials to enable the form to be built up, or a prejudiced or hostile frame of mind fatal to attaining good results. In rare cases where the latter's magnetism is too strong or inimical to spirit vibrations, an auric veil, or netting, may appear in front of the spirit. The size of mesh varies apparently to suit each individual case, and the photograph has somewhat the appearance of process work. With some mediums the unseen find it necessary to envelop themselves with an aura as a protection from the disintegrating human influence, giving rise to satirical remarks from those who know no better, for it would probably surprise them to learn that even we incarnate ones are surrounded with an aura sometimes to the extent of several feet, this varying with the character and thoughts of the individual.

H. BLACKWELL.

AMERICAN NOTES AND NEWS.

LIGHTING WHITE DRAPERY. To keep it from developing so far ahead of the face that it becomes "chalky," can be accomplished, say a writer in "Wilson's," by making a frame similar in shape to the vignette board used in front of the lens to vignette off the lower part of the figure, but have just the frame of this board. It can be cut out of a board or made of wire. On this frame stretch a thickness of black veiling, which can be secured at the dry goods store. Now use this screen exactly as you use your vignette board, only raise it so the entire drapery is covered with it. The veiling does not stop out the light from the drapery, but retards it, making it register slower. Some exquisite effects can be obtained by using two or three thicknesses of veiling, each succeeding thickness being about one inch less in width, which will give the effect of gradual reduction in intensity as it goes toward the base of the picture.

FOCAL LENGTHS OF LENSES.—Too little attention is paid by the average amateur photographer to the proper focal length of the lens used by him in his work. This is especially noticeable in the many specimens of amateur portraiture exhibited both publicly and privately. "The Photographic Times Bulletin" remarks:—"This same ignorance or carelessness is also too often in evidence in professional work, the professional, however, often pleading in extenuation that his studio was too short for him to use a long focus lens. The use of lenses of insufficient focal length is to a certain extent due to the desire of the manufacturer to comply with the demand for a compact instrument, thereby sacrificing one of the most important features in order that his instrument when closed will measure one-sixteenth or one-quarter of an inch less in breadth. It is generally taught that the focal length of the lens should at least equal the base-line of the plate, though it really should be at least one and one-half times the length of the base-line for the correct rendering of the perspective. When the photographer can only afford one lens he should be certain that the above requirement is complied with."

MOUNTING GLAZED P.O.P. PRINTS.—A method for mounting gelatino-chloride prints so that they lay flat and smooth and still retain their gloss, the same as when they come from the ferrotype plate, is given in "The American Amateur Photographer." If such prints are simply mounted dry the edges curl up or they are not smooth on the mount, and if mounted wet the gloss is lost. Just before putting on the ferrotype plates treat the prints to a bath of: Water, 9 ozs.; formalin, 1 oz. The prints are left in this formalin bath for three minutes and are then washed in three changes of water and then squeezed

to the ferrotype plates in the usual manner. When dry the prints may be dipped in water and mounted in the usual way without any injury to the gloss. If any of the paste gets on the face of the print it may be removed with a damp cloth without injuring the gloss. Prints may be treated with the formalin bath as soon as they are sufficiently washed, or they may be dried and treated at any subsequent time. The one thing necessary is that the prints shall be put on the ferrotype plates as soon as they are treated with the formalin and washed. In mounting the prints they should only be moistened enough to make them lay limp.

HOW TO COPY AN OLD FADED PICTURE.—Every photographer, doubtless, has at times had old faded photographs brought to him to be copied, and in some cases they were so dim that they were almost invisible. After examining the treasured old picture they would, with a frown and shake of the head, pass it back to its owner with the reply: "Am very sorry, but it is too badly faded for me to do anything with it." "The American Professional and Amateur Photographer" suggests the following way out of the difficulty:—"Proceed in the usual manner, but, instead of making only one negative, make two. Give one full time, and undertime the other just a little. For example: If you give the full negative five seconds, give the other one, say, three seconds. Care should be taken not to move the camera between the first and second exposure, as it is necessary that both negatives be of the same size, and occupy exactly the same position on the plates. If there is any retouching to do, let it be done on the full-time negative. Now take both negatives and place them together, the face of the undertimed one to the back of the full-timed one; then bind them together so that they will make one negative, as it were, and then print in the usual way. Owing to the intensity which is produced by the combined negatives the printing will be slow, which will give good contrast, as well as preserve all of the fine detail in the original picture. The result will surprise you, and you will find that the copy you make in this way is far superior to the original picture, and will please your customer to such an extent that he or she will wear 'the smile that won't come off.' Just try it."

THE DEALER'S DUTY TO HIMSELF.—If there be a better method of stimulating business, of increasing sales, of multiplying possible customers, of preventing the loss of those already secured, and otherwise assuring oneself of a trade that is constantly improving in its value, than by the active forcing of photographic literature, I am afraid it has not yet been discovered, says the editor of "Camera Craft." The connection is so plain and the inference so palpably conclusive that no argument is required. There is a dealer in a New Jersey town who has so stimulated trade in his locality that the popularity of amateur photography in his city has called down upon the heads of the residents thereof comic skits in the New York papers. To quote from a recent sample of this kind of enviable publicity: "Travellers passing through the town at night imagine the place is suffering from fire beyond the control of the Department, but it is only the residents indulging their taste for photography through the medium of the flash." The principal dealer in that town has for years ordered a certain number of copies of every photographic magazine published. This number is well in excess of the estimated sale, so that copies are always obtainable. None of the unsold ones are returned. Each one remaining unsold at the end of the month is handed to some appreciative novice, and the result of six months' practice of this method has made that dealer an enthusiastic believer in the virtue of his methods. How different is the spirit displayed by the average dealer. He complains that the small profit and trouble and expense of returning unsold copies does not warrant him in carrying them. That he is deceiving himself, robbing himself, and curtailing his possible

profits by his short-sighted policy is evident. A moment's reasoning should convince him that his duty to himself demands a different set of tactics.

STRAIGHTFORWARD PHOTOGRAPHY.—Photography has passed through various trials. It has silenced many foolish claims. It has been damaged by men unfit to practice it. It has been used for improper and immoral purposes, and more, it has been pronounced worthless and untrue, remarks a writer in the "St. Louis and Canadian Photographer." It has now gained a position where attempts to belittle it will fail; its usefulness is acknowledged. Photographic publications at home and abroad are united in claiming its worth, and rival each other in giving information for its successful practice. Intelligent and self-respecting professionals unite with the Press in forwarding such a desirable end. Perhaps it was a mistake entertained by most of the old-time photographers that a photograph should at least be distinct; not necessarily wiry, but fairly distinct. Nowadays there is a different sentiment in this regard; according to some, a picture must be a blur or it is not artistic (?). This idea may become popular. But it will be some time before men of sense will believe in it. Some publications, both home and foreign, are embellished with indistinct, mushy illustrations that are a disgrace to the art of photography. If they are artistic, then the less we have of that kind of art the better. The fact is, they are not art or commonsense, and should be retired to oblivion. They should meet a universal condemnation. Some of them, besides being dim, are so black that the outline cannot be discerned; they look as if they came from the place spoken of by the prophet Job, "A land of darkness, as darkness itself—without any order, and where the light is as darkness." Possibly the writer is too severe on such as have different opinions, but I believe that the man who "stands up" for good photography should hit such abortions, and hit them hard.

A JOURNALISTIC PHOTOGRAPHER AT THE SEAT OF WAR IN KOREA.

WHEN the first landing of Japanese soldiers took place in Korea an Enterprising American photographer stood on the bund and made pictures of that landing by the light of a magnesium flash. He was Robert L. Dunn, photographer of "Collier's Weekly," New York. The war correspondent of the "Morning Post" (Mr. J. Gordon Smith) has sent from Tokio an intensely interesting and graphic account of Mr. Dunn's later adventures with the camera during the period of the first naval engagements between the Russian and Japanese fleets. He says:—

"Mr. Dunn had gone to Korea in anticipation of war. On the night of the 7th of February he was on the bund at Che-mul-pho. He had come from Seoul. Why, he cannot say; he credits his coming to that strange journalistic premonition which some call 'newspaper instinct.' With other correspondents he had been awaiting news from St. Petersburg or Tokio to tell him if it was to be war or peace, but the mail steamers had been stopped; the wires were silent. Without an idea of what was to occur he walked about the bund, looking at the riding lights of the foreign warships. The harbour was filled. All the Powers had representative vessels there. Looking into the night beyond the fleet, which included the 'Variag,' the 'Koriets,' and 'Sungari,' Mr. Dunn saw a number of flickering points beyond the lighthouse at the harbour mouth. This was at nine o'clock. He watched the lights, which looked like big fireflies, and something, perhaps that 'newspaper instinct,' induced him to stay, despite the bitter cold. Soon the rumble of the engines of many ships sounded near, and, with hundreds of lights—torches held by soldiers and coolies—he saw that the steamers were Japanese transports. From them flotillas of boats, each thronged with troops, came out of the night, all plainly lit by the flares their occupants held. Long strings of boats and scows towed by steam pin-naces came towards the bund.

"In the first boat were coolies, perhaps a thousand of them. They

ran about the shore on landing gathering wood, planks from the wharf and drift, and soon they built a line of great fires on the bund. Some secured barrels of oil from a go-down, and coolies ran from fire to fire throwing oil on the flames. With a roar the fires leaped, flames rose high and sparks showered like fountains. The long line of fires illuminated the darkness for some distance and reflected the water, then flooding at its highest mark. What a picture scene presented, especially to those who watched from the 'Variag,' 'Koriets,' and other ships. The transports—how many there were could not be distinguished—had come, with wonderful assurance past the Russian ships to within a hundred yards or thereabouts of the shore. From there they debarked five thousand soldiers, a clad in top-coats and hoods and heavily accoutred.

"Mr. Dunn ran for his camera and apparatus, which were lying at an hotel a few hundred yards away. A few minutes later he was in the branch office of the Nippon Yusen Kaisha seeking permission from the general commanding the expedition to use a flashlight and camera on the bund. He demonstrated how the magnesium flared and incidentally photographed the general, who then laughingly gave permission. He commandeered several clerks, who carried on office chairs and a table, which were converted into a stand at the water's edge for the camera. There were some striking pictures. The photographer forgot that it was bitter cold; that his hands were freezing. Boats were being pulled ashore, and overcoated soldiers were jumping into the icy waters, waist deep, to scramble to the great fires. With the steam rising from their drying uniforms the glow on their faces and uplifted hands, and the weird effect from the leaping fires, the groups offered great picture possibilities and Mr. Dunn made many exposures, when someone shouted, 'The Russians!' Crowds had been gathering. Che-mul-pho is a small place, and news travels fast. The excited Koreans in the throng startled by the flash of the magnesium, had cried, 'The Russians!'

"The photographer ran, fearing for the camera he now valued highly. At the hotel he unloaded the machine and secreted the films. Then, reloading it, he went from fire to fire. He 'snapped' Japanese soldiers huddling about fires, others landing little boxes of ammunition, coolies piling mats of rice, and many other things before a whistle sounded, and, hurriedly forming, the soldiers marched round a corner and were gone. Mr. Dunn would have followed, but was afraid to risk the loss of his camera. Before retiring he had secured a ticket from the commanding officer permitting him to accompany the force to Seoul at daylight. Few in Che-mul-pho slept that night, but Mr. Dunn wanted a short sleep to refresh him for the work of the morrow, and he slept until five o'clock. It had been arranged—so the officer told him—that the force would entrain at six o'clock. But he found on arrival at the station that the troops had gone in the middle of the night. They had passed through Che-mul-pho, and the ships in which they came had left before daylight.

"Mr. Dunn made his way to Seoul. The Korean capital looked warlike. The photographer felt that at last war had come. Soldiers were marching in column through the dirty streets and entering the great gates with massive towers and overhanging roofs and profuse beam-work. Korean soldiers were drawn up in line here and there, but they took no part in affairs. Crowds gathered, and Japanese school children were massed to sing war-songs. Mr. Dunn knew that at noon 5,000 soldiers would mess, and he was hurrying to get a photograph of the great tiffin. At the edge of the camp a Japanese officer stopped him, and at that time the war started. A dull boom sounded miles away, then another, and still another. The Japanese officer thrust his forefingers out excitedly, pointing towards Che-mul-pho, over twenty miles away. In all the English he could command the officer said: 'Russia-Japan-cross-hear-hear.'

"The photographer forgot the mess. The war he had come to see had started twenty miles away. He ran and leaped into a jinrikisha, shouting to the 'kurumaya,' 'Five yen if you get me to the station in ten minutes.' The coolie did not understand the language, but he comprehended the five yen note waved in his face. He called two men to help him, and the three earned the money. The movement of troops had stopped all passenger trains. There was no train. Afar off the cannonading sounded, and, thinking there might be a chance to get away from the junction at San-do, seven miles away, Mr. Dunn hired another jinrikisha. Inside a

ck he had gathered seven coolies to assist the man who dragged
Madly they hurried him through villages, over frozen rivers,
ough ice-covered paddy-fields, and over great sand plains. These
e most trying. He rode, walked, ran, then rode again, and
ly reached the station. He offered a thousand dollars for the
of an engine, but in vain. He was told by the stationmaster
t no engine could now be hired y a foreigner, for war had
ted and the Japanese were in charge. There was nothing for it
to wait for the regular train. It seemed an interminable space
ime before it came, but come it did. With his precious camera
ched tight the photographer clambered into the train, and after
de that was slow, disgustingly slow, arrived at Che-mul-pho.

Mr. Dunn ran to the water's edge. The hundreds of sampan
usually there had fled. By the persuasion of flashing yen notes the
tographer got four, and, through a choppy, rough sea, hurried to
United States gunboat 'Vicksburg,' lying at anchor in the har-
r. On the way he crossed the sizzling waters over the exploded
ck of the 'Korietz.' There was no one at the rail of the
cksburg' to welcome him or to stop him from boarding. All were
ching the Russian vessels which had been wrecked by Japanese
s from the other side of the deck.

In an instant Mr. Dunn had his camera focussed and its tripod's
ts fast in the gunboat's deck; sailors who assisted him in the
k being several dollars the richer. Through the finder he saw
'Variag,' powerful as she had been a few hours since, rolling
n every wave of the flooding tide. The battle he had heard
a far was over, and the cruiser was returning with her funnels
corated, ragged holes framing the daylight beyond in the two
ks that remained. Wreckage strewn her decks. Guns were twisted
almost completely dismantled. Coats, caps, boots, and all manner
things were flung across the deck-plates. The photographer
d see all these things through the glass, and regretted that he
not on those decks with his camera. While he photographed
e curls of smoke appeared in places, small lights flickered, then
ed into huge torches. The cruiser was on fire.

Sailors of the 'Vicksburg' watched with intense feeling. They
y from fugitive Russians that forty-two bodies were being cred-
ed in that fire, which seemed to have broken out just where the
es had been hurriedly placed by the fleeing Russians. As the
sank the flames rose; when dusk came they became bright in
rest with the coming darkness. Shortly before 6 o'clock the cruiser
ered and listed over further to starboard until she sank. Before
went down, in a neutral harbour, with sailors of all the world's
ers gazing, the flames had reached her magazine, and detonations
wed quickly on each other as the shells and munitions exploded.
all the while on the deck of the 'Vicksburg' a photographer
busy making exposure after exposure, with the officers too
ested to interfere. They, like hundreds of others on many
s, were watching the destroyed 'Variag,' for which Russia had
n the Cramps of Philadelphia over a million pounds, and each
t of flame, each detonation, and each list was timed by the naval
ryers.

See the 'Sungari'—she's aflame,' a boatswain shouted from the
side. All rushed across the deck to watch the second bonfire—
photographer with them. From the side of the burning 'Sun-
they saw a boat leaving. As she left the flames rose quickly
end to end of the steamer. The man in the boat, who was
so Mr. Dunn tells me—to have gone to a French ship, had
erately fired the 'Sungari.' Like a great torch, with clouds of
e rising high, she burned all night, and the charred hulk sank
ay rose—a day which showed only the smoke-stacks and bat-
t upper-works of two vessels and a portion of the beam of
ner above the surface.

So these wrecks the photographer went at daylight, and more
res were added to the collection he made. All of these prongs
tell why he has just received a cablegram from his paper
h reads: 'Bravo, Dunn!'

YAL Institution.—His Serene Highness Albert Prince of Monaco
on Friday evening last a discourse at the Royal Institution,
sing for his subject "Oceanography," especially that section of
science dealing with marine life at intermediate depths.
Prince had equipped a ship as a whaler chiefly to
mine the marine animals on which whales feed, and his
quest he came upon several new and rare varieties, especially
abalopoda, pictures of which were thrown on the screen. Lord
n presided.

THE DERBY CONVENTION: THE EXCURSIONS.

[From the Official Handbook.]

DERBY.

DERBY, the chief town of the county bearing the same name, lies in
the valley of the Derwent, at a distance of about six miles from the
point where that river joins the Trent. It is 127 miles from London,
59 from Manchester, 39 from Birmingham, 36 from Sheffield, 29 from
Leicester, and 16 from Nottingham. It is a county borough, and its
Council consists of 16 aldermen and 48 councillors. Its population
at the 1901 census was 105,000. Since then its area has been extended,
and the estimated population in June, 1903, was 118,707. Its staple
manufactures are iron (heavy bridge and girder work and machinery),
trimmings, and lace, and various other textiles. Silk, formerly a most
important industry, has all but departed. It is the headquarters of
the Midland Railway Company, in whose locomotive and carriage shops
are employed something like 13,000 men.

HISTORY.

Derby is an ancient town. It is extremely probable that even in
Celtic times a town stood on the site, but of this there is no direct
evidence. The Roman station of Little Chester (Castrum Parvum) is
within the borough, and is, in fact, less than a mile from the Market
Place. This camp commanded a bridge over the Derwent, the piers
of which were still in existence about a century ago, and was probably
founded about 86 A.D., and continued to fulfil its purpose till the
Romans withdrew in 410. Coins, pottery, and other signs of Roman
occupation have been found rather plentifully. In Saxon times the
town was known as Northwerthig, probably owing to its position
with regard to Repton, the ancient capital of Mercia, a pretty village
about seven miles away, famous for its school and its Saxon crypt,
and well worth a visit. The Danes called it Deoraby, from which
its present name is easily derivable. It came under Danish rule about
874, and was one of the famous burghs of the Danelagh. After changing
hands several times, the Danes were finally driven out in 948 by
Edmund. At this time it was a royal borough, and had a mint of its
own, from which coins were issued down to the reign of Stephen.
In the reign of Edward the Confessor it was recorded that there were
243 burgesses, representing a population of 1,000, and that there were
14 mills. But at the time of the publication of the Domesday Book,
these had fallen to 100 burgesses and 10 mills. We are told that half
the fighting inhabitants perished with Harold at the battle of Hastings,
which will fully account for the decrease. Charters were conferred
on the town by Henry I., Henry II., and John, and the town acquired
the right of electing its own bailiff in 1202. The first royal visit
recorded was that of Edward II., on his way to Boroughbridge, and
it afterwards entertained James I. and Charles I. During the great
civil war it was an important station of the Parliamentary army, the
most prominent local leader being Sir John Gell. Other important
historical events are the fact that the ill-fated Mary Queen of Scots
stayed here during one of her melancholy passages from one prison
to another, her resting place being Babington House, the site of which
was near to the present Grand Theatre. The Earl of Devonshire pro-
claimed "The glorious Revolution" from the front of the Town Hall
in 1688, and Prince Charles Edward Stuart touched here the southern-
most point of his "invasion," in 1745. He stayed at Exeter House in
Full Street, a fine old mansion, pulled down in 1854. The oak wains-
cot round the room in which he held the council at which it was decided
to retreat, has been preserved, and now covers the walls of the Com-
mittee Room at the Public Library and Museum, where also may be
seen other relics of the period. There was serious rioting in 1817, and
again in 1831. The former was the result of a disturbance made by
the stockingers and weavers, and their leader was beheaded for high
treason, and the latter was due to the rejection of the Reform Bill.
Another rather notable local event was the suppression of local football
in 1846 at the point of the sword. This game had been played in the
streets from the earliest times, the combatants being the two parishes
of All Saints and St. Peter's. The great day for it was Shrove Tuesday,
and it was continued till it became a menace to public safety. In 1842
the town was visited by an unexplained flood, the waters of the Mark-
eaton Brook rising suddenly and placing all the principal streets five
or six feet under water. In 1645 and again in 1647 and 1665 the town
suffered severely from the plague, and this brief account sums up nearly
all that is notable in its history. It may be added that His Majesty

King Edward paid two State visits to the town when Prince of Wales, and her late Majesty Queen Victoria came in 1891 and laid the foundation-stone of the New Royal Infirmary.

STREETS.

The main thoroughfare of Derby runs nearly due N. and S. for about a mile and a half. The southern portion of this commences near the Midland station, and is known as the London Road. Reference to the plan will show that this is continued in a more or less straight line by St. Peter's Street, Corn Market, Market Place, Iron Gate, and Queen Street, terminating at St. Alkmund's Church. On this main thoroughfare are situated four of the five ancient parish churches, four of the principal banks, and many of the chief business houses. Several important thoroughfares cross or lead into this main artery of traffic. Of these the chief is at the bottom of St. Peter's Street, and for a considerable distance this covers the course of the Markeaton Brook above referred to. On the right hand coming towards the town this forms Albert Street, at the end of which is the Corn Exchange, now used in the evenings as a Palace of Varieties. On the left is Victoria Street, in which are the Royal Hotel, the new tramway offices, and the post office. Continuous with this is the Wardwick, in which thoroughfare will be found the place of meeting, the Mechanics' Institute and Albert Hall, and next door the Public Library, Museum, and Art Gallery. This street in turn leads on to Friar Gate and the high road to Ashbourne. Other main streets are the Osmaston Road, which leaves the main artery at a point locally known as "The Spot," at the top of St. Peter's Street. Along this road are the entrances to the Arboretum, a pretty little park given to the town by Mr. Joseph Strutt in 1840; the Royal Crown Derby Porcelain Company's works, which will well repay a visit, and the principal iron works. St. James's Street in the centre of the town contains the hotel of the same name, and a large portion of the post office; the Strand, which joins it, is another covered brook course, and in this are the Town Club, the Liberal Club, and the main entrance to the Art Gallery; St. Mary's Gate, opposite all Saints' Church, contains the Assize Courts and the County Council offices; and in King Street at the north end of the town stands Derby School. The streets are well lighted in the centre of the town by electricity, and in the other parts by gas, and there is a fairly good omnibus and tramcar service.

CHURCHES AND PUBLIC BUILDINGS.

A castle once existed in the town, but no trace remains, and the last mention of its existence dates back to the thirteenth century. The name is perpetuated in Castle Fields and Castle Street. In like manner no trace is left of the six religious houses which once flourished, dedicated to St. James, St. Helen, St. Leonard, and St. Mary, or of the Dominican Friary. Their name still survive in streets where they once stood. St. Peter's Church, thrice restored, still contains the oldest surviving church work, dating from the twelfth century, and containing several traces of Norman work. In the churchyard, a building now used as the parish room, was once the Grammar School. Its foundation goes back to 1160, and it is consequently among the very oldest educational institutions. The next oldest of the ecclesiastical buildings is the little chapel of St. Mary on the Bridge, now in use as a mission room for St. Alkmund's Church. This dates back to the early fourteenth century, and the bridge at whose foot it originally stood has long been gone. Next in antiquity is the fine tower of All Saints, which dates from the sixteenth century, and is one of the finest specimens existing of the Tudor Perpendicular period. From the ground to the top of the pinnacle is 210 feet, and it stands on a base fifty feet square. The body of the church is of later date, and was built in 1725. It was probably the best that could be done at the time, but is altogether unworthy of the noble tower. In the church is a very fine wrought iron screen, by Bakewell, a good altar piece, and the Devonshire Chapel, containing the tombs of many members of the Cavendish family, among them that of the famous "Bess of Hardwick" and her soldier son. Of the old church of St. Werburgh, built in 1608, tower and chancel only remain, the latter doing duty as a vestry. Here Dr. Johnson was married, and there is a fine monument by Chantrey. A new and stately church, built in 1894, from the designs of Sir Arthur Blomfield, adjoins. St. Alkmund's Church, which enshrines the remains of Derby's patron saint, was built in 1847. Its graceful spire rises to the height of 216 feet. Near it, only separated by the width of Bridge Gate, is the beautiful Catholic Church, dedi-

cated to St. Marie, built in 1839, its designer being the elder Pugin. Of the modern churches, the finest are St. Andrew's, on the London Road, generally known as the "Railway Church," designed by Sir Gilbert Scott, and St. Luke's, in Parliament Street, which was built as a memorial to Bishop Lonsdale in 1870-1.

CHATSWORTH AND HADDON HALL.

The railway journey for the first twelve miles is the same as Thurlston's, but at Ambergate we turn off and travel on the main line to Manchester, passing up the Derwent Valley and its beautiful scenery through the Matlocks and Darley Dale to Rowsley. The drive from Rowsley is a very pretty one. From the picturesque village of Beal there are two routes to Chatsworth, the one on the left bank of the Derwent being by the private road through the park, the other over the bridge and along the high road to the model village of Edenshaw. A pretty bridge spans the Derwent, called the Waterloo Bridge, and crossing this we arrive at Chatsworth.

CHATSWORTH.

The Manor of Chatsworth was acquired by the Cavendish family in purchase about the middle of the sixteenth century. It appears in the Domesday Book as a Royal possession, being then held for the King by one William Peurel, an ancestor of those Peverils whom Sir Walter Scott made so famous. It passed successively into the hands of the Leche and Agard families, and from the latter into those of the Cavendishes. Sir William Cavendish, the second husband of "Bess of Hardwick," at her earnest desire, parted with some of his southern estates in order that he might acquire lands in Derbyshire contiguous to her estates in that county. Chief among these was Chatsworth. He pulled down the old Hall of the Leches and Agards and commenced a new building, which he did not live to see finished, but which his widow completed. In this building the unfortunate Mary, Queen of Scots, suffered imprisonment no less than five times between 1570 and 1581, her custodian being Bess's fourth husband, the Earl of Shrewsbury. The furniture of the rooms she occupied is now at Hardwick, and in the park at Chatsworth may be noticed a heavy stone building surrounded by a moat, still known as Queen Mary's Bower, and where tradition says, she went daily for fresh air and exercise. Another name associated with Chatsworth is that of Hobbes, of Malmesbury, who was tutor to the second and third earls. He spent all his time between Chatsworth and Hardwick, writing all his books there, and died at the latter place in 1679, aged ninety-two.

"Pess of Hardwick's" Chatsworth was all but pulled down by his great great grandson, the fourth Earl and first Duke of Devonshire, an eminent man who shone equally as man of letters and a politician. He was prominent among those who brought over the Prince of Orange the details of the scheme being worked out by him and his fellow conspirators at a little inn on Whittington Moor, near Chesterfield. In 1688 he began to build the present Chatsworth, the architect being one William Talman, who worked under the direction of Sir Christopher Wren. A few portions of the ancient hall were retained, among them the central hall and the long gallery. The work was finished in 1700, and the last alterations and additions were made by the sixth Duke between 1820 and 1840, under the guidance of Sir Geoffrey Wyatt. The house appears now very much as it did in 1707, and few people give it credit for being so venerable in years. The splendid gardens were laid out and improved by Sir Joseph Paxton, whose fame afterwards became worldwide in connection with the Great Exhibition of 1851 and the Crystal Palace. Within the house all is stately and magnificent. The fine Landseer among the pictures should be specially noted; the beautiful statuary and the magnificent wood carving; but the space at our disposal precludes further reference in detail.

HADDON HALL.

Chatsworth is a palace, a noble pile, but it has been said, incongruously in its situation. Whether this be true or false, no such charge could be brought by the most carping critic against Haddon. Situated on its green knoll, under the lee of a lofty hill, embosomed in beautiful timber, with its broken sky line of embattled tower and turrets, and its prattling trout stream beneath, its worn grey walls seem as much the work of nature as of art. No more perfect mediæval home is to be found in the kingdom, and surely none more picturesquely situated.

At the time of the Domesday survey, Haddon was owned by Henry de Ferrars' family; but it appears shortly afterwards to have passed to the Avenells; Avice, a daughter of which family married Richard

Vernon (tempo Richard I.), and thus it passed into that celebrated family. The earliest document referring to Haddon is an authorisation by John, permitting this Vernon to fortify his house. For over centuries Haddon remained in the hands of the Vernons, and then the famous (and possibly mythical) elopement of Dorothy Vernon, heiress of the celebrated King of the Peak, Sir George Vernon, John Manners, second son of the Earl of Rutland, it passed, near the end of the sixteenth century, to the Manners family, and later to the Dukes of Rutland.

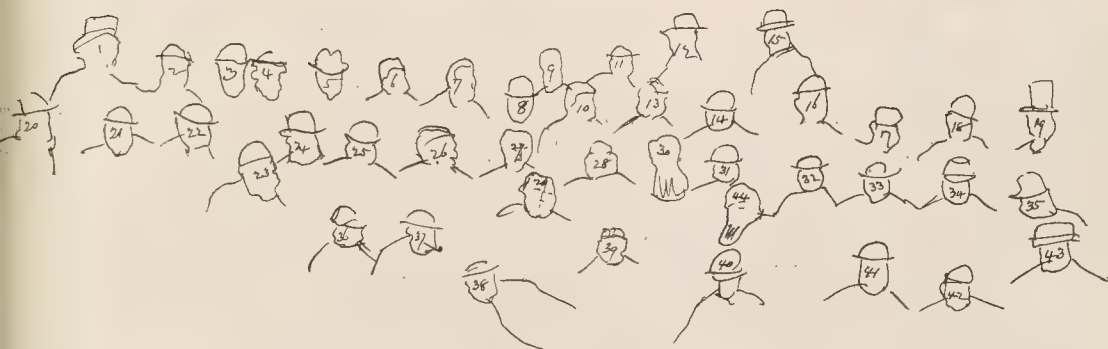
Chaplain's room, so called, onward to the Chapel. This is at the south east corner of the building, and consists of a plain Norman nave, with the south aisle considerably modified by the subsequent chipping of the caps and round arches into their present pointed form, and a chancel with a good window of the perpendicular period. The noteworthy objects here are the Norman font, the famous "squint" in the S.W. angle of the chancel, and the large carved vestment chest. As we enter or leave the chapel, we may note the beautiful bell turret rising over the entrance.



Photo by]

THE FIRST CONVENTION GROUP, DERBY, 1886.

[T. Scotton.



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|--------------------------------|----------------------|----------------------|--------------------------|-----------------------|
| S. D. McKellen,
A. Pringle. | 10. A. L. Henderson. | 19. R. v. — Macdona. | 28. W. Turnbull. | 37. Richard Keene. |
| J. Place. | 11. — | 20. C. Barrow Keene. | 29. J. Traill Taylor. | 38. — |
| F. Cooper. | 12. B. J. Edwards. | 21. — | 30. Alex. Tate | 39. J. J. Briginshaw. |
| R. L. Kidd. | 13. — Smith. | 22. — | 31. Walker (Eastman). | 40. F. P. Cembrano. |
| W. H. Prestwich. | 14. A. Seaman. | 23. John Stuart. | 32. H. W. Smith. | 41. T. Scotton. |
| Pollard Graham. | 15. H. Starnes. | 24. F. A. Bridge. | 33. H. M. Hastings. | 42. W. K. Burton. |
| J. Bolden. | 16. Jerome Harrison. | 25. A. Haldon. | 34. J. B. B. Wellington. | 43. Harding Warner. |
| | 17. — Morgan. | 26. — | 35. — | 44. W. England. |
| | 18. Austin Edwards. | 27. G. Mason. | 36. W. Cobb. | |

Haddon contains fragments of all the principal architectural periods from Norman to the latest Tudor. Situated on a limestone platform, overlooking the meandering Wye, its plan probably conforms pretty much to the lines of the ancient wall of the late Norman period, portions of which still survive, embodied in the later work. Owing to the slope on which it is built, the western portion is between twenty and thirty feet lower than the eastern base, which partly obscures the beautiful sky line. We enter by the main gateway, at the N.W. corner, where late Norman details may be observed; and pass into the lower quadrangle, and thence, on the right, into the

The Norman work is about 1160, the lower west window and the north aisle about 1310, the chancel, clerestory, and south arcade about 1425, and the bell turret, and probably the entrance doorway, 1455. Crossing the courtyard, we enter the main block of buildings which separates the two quadrangles, noticing as we go the State apartments, continuing the line of the chapel on the south side, with their external flight of steps. In the passage may be observed a Roman altar, found between Haddon and Bakewell, indicating that an Imperial Cohort was stationed in the vicinity. On the right of the porch is the great hall; on the left, the kitchen and its

offices, leading immediately out of which are the dungeon-like larders. The Banqueting Hall is entered through a massive oak screen, pierced by two doorways, and ornamented by antlers. An iron bracket and ring may be observed as we enter, to which, it is said, the arm of the too abstemious drinker might be fastened, so that the quantum of liquor which failed to go down his throat might pass down his sleeve! The screen forms the front of the Minstrel's Gallery, beautifully panelled—and at the opposite end of the room is the raised dais for the lord and his family; and here also is the high table from which they fed. Connected with the Banqueting Hall is the smaller and more modern dining room, with its charming Oriel window looking out over the garden, and its beautiful panelled wainscot. Ascending the stone staircase, we come to the State apartments; the drawing room, with its old tapestry, and its beautiful stucco work; the Earl's bedchamber beyond; and still further the small ante-room, or page's bedchamber.

Returning to the landing, we ascend by a flight of solid oak steps to the Long Gallery, or ball room, the most beautiful in the whole building; about 100 feet by 18 feet, this noble room extends nearly the whole length of the south side of the upper courtyard, and is wainscotted throughout in oak of superb workmanship. A fine doorway near the upper end of the gallery leads into the ante-room, where is the door through which Dorothy Vernon is said to have eloped. Hence, we pass to the State bedroom, with its great four-poster, Queen Elizabeth's mirror, fine tapestry, etc.; and thence to the old state room, with more fine tapestry, whence we may ascend to the Eagle or Peveril Tower for its glorious view. Descending, we are conducted by Dorothy's steps to the gardens, terraced one above the other with their beautiful old-world style and their charming view of the exterior of this "Stately Home of England."

BRITISH EXHIBITS AT ST. LOUIS.

THE exhibits at St. Louis are classified into 144 groups, and of this number Britain is represented in about three-quarters. The "Times," of May 26, says: "In many of the groups it must be admitted that the representation is extremely meagre—in some cases nothing at all, or a single small exhibit by a single exhibitor—but in many others this country more than holds her own, even against rivals that have cultivated the habit of taking part in international exhibitions to a far greater extent than she has."

The first department in the official classification is devoted to Education, and here Great Britain occupies an area of 6,500ft., or, if the kindred department of Social Economy be included, of 7,310ft.

The second department of the official classification is devoted to art and here the British exhibit, occupying nearly 21,000ft., is extremely good. Although the committee which organised it exercised a somewhat severe method of selection, they can justly point to it, as Mr. Humphry Ward says in the introduction he contributes to the catalogue, as among the best, largest, and most important ever sent from our shores. "It is equal or superior to the display made at Chicago; better than that made at Paris in 1900; and not inferior, in the opinion of good judges, to the remarkable collection sent to Brussels in 1897." In the four groups of Paintings and Drawings, Engravings and Lithographs, Sculpture, and Architecture this country has no fewer than 1,322 entries, the whole being fairly representative of the state of the arts in the United Kingdom and the British Empire generally during the last decade. In addition, there are three rooms devoted to arts and crafts, in which are arranged 411 exhibits of original objects of art workmanship. The galleries in which the British Art section is housed are decorated with a frieze designed, and for the most part painted, by Mr. Walter Crane, the scheme consisting of a series of shields, connected by decorative scrolls of oak, rose, and bay foliage.

Various processes of reproduction—engraving, mezzotint, photography, etc.—form the first group of the department of the Liberal Arts—a department which is remarkably comprehensive in character. The photographic exhibits are numerous and good. Of the three sections into which they are classified, the first contains 242 examples of pictorial photographs from nature by some of the most noted British workers in this field, and the second, devoted to scientific photography, illustrates in 249 exhibits various applications of photography to the study of astronomy, the minute structure of meta-

geology, biology, etc. The third consists of 300 of Sir Benjamin Stone's history photographs, and is calculated to prove particularly attractive to Americans, containing, as it does, a pictorial record of festivals, ceremonies, and old customs surviving in England, as well as of places and events of historical interest, such as Westminster Abbey, Stratford-on-Avon, and the Coronation."

Exhibitions.

DEVONPORT EXHIBITION

ALTHOUGH this exhibition has been in existence for thirteen years and has always been more or less vigorous, its members have always been content to hold only club exhibitions, to which outside photographers have not contributed, and have not until now, although present is the eleventh exhibition, invited the contributions of general photographic public. The members have now made a new departure, and have great reason to congratulate themselves upon both the quality of the exhibition and its numerical strength. Probably both these qualities have been helped by the fact that many of the exhibitors at the recent Plymouth Photographic Society Exhibition have transferred their exhibits bodily to the present one. But, beyond that, the response of exhibitors has been excellent, some of the best of those who generally exhibit will be found represented. The club is well placed in the matter of room accommodation, its home being at the Borough Technical School, where meetings are held, and where the exhibition is splendidly shown in one of the fine rooms of that institution. No exhibition in the West has been better hung, and the simple decorative scheme, as well as the hanging, is creditable in the highest degree to Mr. Alfred Earl. Nothing has been better done in the West than this. Even after all, it had been wiser to have had a little different method in the arrangement of numbers, for this part is rather a bit of a Chinaman's puzzle, and not simple at that. To those who have to look at prints over for reporting purposes the plan adopted does not conduce to the preservation of a gentle spirit, and tends to the possibility of doing an injustice to the exhibition itself. However, as the Devonport folk will live and learn, it is possible the next exhibition will in this respect be an improvement. It may be said that, as a whole, the exhibits are characterised by a general excellence that should encourage the members of the club to push on to still greater things, for it is undeniable that, though the membership is good, the number of those who have contributed is unsatisfactorily few. The patron of the club is the Lord of the Manor, the Right Hon. Lord St. Levan, who gave a gold medal for the best work in the open classes. Dr. E. S. Saunders gave a silver medal for the best work of the members. The judges were:—Mr. Henry R. Babb, F.R.P.S., master of the Technical Schools; Mr. Chas. E. Brittan, and Mr. H. Coath, F.R.P.S., and these gentlemen, representing the art and the technical sides of photography, may be relied upon as having done their best in the duties that fell to them, and no slight task either. Including sets of lantern slides, the entries exceed two hundred and fifty in the open classes. The membership exhibition run to about a hundred and ten or so. The following are the classes:—

Class 1 (Open): Landscape, Seascape, and River Scenery.—This is a good class of nearly a hundred frames, very well arranged in relation to each other, but rendering a hunt for all the exhibits one person a necessity, as well as to discover the consecutive numbers. The silver plaque is secured by William Clayden for his "A Gleam of Light" (38), a study of shipping in a hazy atmosphere with a strong patch of light in sky and reflected in a shimmering sea; but a like distinction might well have gone to Arthur Marshall's "Garden of Sleep" (44), a quiet corner in a churchyard, where wild blossoms are luxuriant, and the scene is peaceful and calm. F. Mortimer's "In the Height of the Storm" (10) is second with a bronze plaque. This is one of his fine wave studies, but we venture to think that "A Wind Sea" (9) is a trifle the better. Another bronze plaque is secured by Dr. Grindrod's "Hauling Timber" (67), a tea subject justice, and is somewhat heavily printed. Honourable mention goes to "The Silenced Highway" (6), Harold Burkinshaw,

scene, rather cleverly rendering the half-tone in the snow. picture quite worthy of a better award. "Winter" (14), by Wright, is a fine rendering, full of good quality, of a snow-laden landscape, through which flows a stream of cold-grey water, handled in every way. "Moorland, Arran," by Samuel Bourne, landscape treated in an excellent spirit. We like A. W. Hicks's "Woodland Graces" (25), a study of beautiful trees, through which sunshine plays. G. H. Faux's "Morning Mist" (27) is a very study of mist in a woodland, but there would have been more if the foreground rendering had just a suggestion of detail. Grindrod's "Going to the Meadow" (74), a flock of sheep being seen from the spectator, has much good quality in it. William Men's "A Misty Morn" (37), a soft study of fishing-boats in a tidal pool, is artistic, but the left half of the print contains the best portion of the whole. Maxwell Warmock's "The Wood" (63) is a delightful study of woodland, in which a trunk of a silver birch plays a principal part, over all a fine flush of light. This certainly deserved recognition.

Class 2 (Open): Portraiture, Figure Studies, and Animals.—A lot of clever work, and a class of good proportions, numbering about 100. There is great variety, too, and excellent technique throughout. Arthur Marshall's "A Study" (47), a charming example of portrait of a girl bending over a flower, lit softly, with a fine gradation of tones and very excellent posing, gains the gold medal given by St. Levan for the best picture in the open section. Probably The Prie-Dieu (50) is quite equal to it in every way—a serious subject, treated reverently, even to the framing, which is unious and in complete tone with the print. F. C. Bowtell's is a silver plaque for "Among the Lambs in Spring-time" (88), a creditable bit of work, but equalled, if not excelled, by several contributions in the class; say, for instance, W. Claydon's "Island Ponies," a charming study of a Dartmoor scene, or F. W. Mayne's "Breton Fisher Girl" (14), a fisher maiden on a low-tide with a softly-receding distance. H. P. C. Harpur's "With a sweat he earns what e'er he can" (45) has won a bronze medal. It is a study of an old gardener (at five o'clock, say?), who is warm, and is wiping his brow, being supported at the same by his spade, or supporting his spade, it is not clear which, he does it. This leaning spade makes a bad line, and were away or doing work on its own account. No honourable mention occur in this class, though surely there was opportunity to do so easily enough. A. R. Hunt and Muriel Hunt show some splendid examples of cat studies, but they are mounted too many on the mount, and do each other injustice. V. T. Paul's "Lighting" (82) is a portrait study of a fisherman who is lighting his pipe. Under G. Gibson has some fine bird studies, of which, perhaps, "Razor Bill" (30) stands out prominently. Dan Dunlop's "Normandy Girl" (69) is a striking example of portraiture, softly lit, and a good model. Dr. Grindrod's fine head studies, "Head of an Old Man," "Edward Elgar," and "Arbuthnot Smith," stand out as most excellent work in every way.

Class 3 (Open): Architecture and Photographic Work not included in Classes 1, 2, and 4.—This is not a very big class, but it is good quality and subject, mostly representative of architecture and photography. The silver plaque has been secured by Perceval W. Crane with "Crypt de l'Aquilon, Mont St Michel, Normandy" (13), a very creditable example of such work, but surely equalled in every way by "Doorway, Ely" (24), George H. Faux, a fine example of detail work, softly and delicately rendered, or "Chapel, Haddon" (26), by Arthur Marshall, which is awarded a silver medal. It is a fine piece of work, in which all is clear and soft, and not overcrowded with small details. The bronze medal goes to D. W. Kyle for "Begonias" (5), most excellent work, and other examples are of about equal merit, though "Shirley Temple" (4) and "Chrysanthemums" (7) perhaps excel it. E. Seydmore has honourable mention for "Flower Study" (21), a fine study of roses. Harold Burkinshaw's "The Castle Gateway" (3), S. G. Turner's "The Monk's Entrance" (8), and "The House of Prayer" (33) and S. G. Turner's "Crypt, Worcester Cathedral" (33) are creditable examples of outdoor and indoor architectural work.

Class 4, Lantern Slides (Open), is a very good lot indeed, in which the silver plaque goes to Ellis Kelsey for a lot, mostly figure work; the plaque, Thos. Wright, fruit studies; honourable mention,

F. J. Mortimer, wave studies; and Dr. Geo. H. Rodman, for radiographs of mollusca, showing the internal structure of the shells.

The Members' Section, though not so full as the open one, is characterised by good work, and in variety. It is most creditable to the members, who up to the present have not had an opportunity to show in connection with open work in their own exhibition.

Class 1 (Members): Landscape, Seascape, and River.—This is strong in numbers, reaching to nearly seventy. The silver plaque goes to J. Trouern Trend's "Evening—Barbican" (27), a picture which residents in the locality will greatly appreciate. In the quiet, soft, still water of the pool a little coasting-trading steamer lies. She is artistically got into just the right spot, and all the rest is soft and subdued. Just a little more cloud might have helped the title. Bronze plaque to Rev. H. O. Fenton for "Those green-robed Senators of mighty woods" (12), a very finely-rendered example of woodland scenery, well selected, and with technique of the best. W. H. Mayne's "Path Through the Wood" (48), is a nice bit of woodland, with just enough of detail to make it pleasant. J. Trouern Trend is very fully represented, and among the best of them are "A Tit-bit on the Tamar" (31), "Ever and anon a shadow steals swiftly by" (36), "Mirrored in the Silver Stream" (28), "Amidst Sunshine and Shade" (35). Of Alfred Earl's work, probably the best is "Eventide" (60), a scene on a local river—the Tavy. A. J. Catford has an excellent thing in the "Timber Cart" (45), a rural scene, in which the lighting is soft and well managed.

Class 2 (Members): Portraiture, Figure Studies, and Animals.—This is a small but excellent lot. In this the only award is a silver plaque to A. J. Catford for "Toilers of the Sea" (3), a fishing-boat scene in a harbour, in which necessarily there are many details, but on the whole the subject is handled with great discrimination and carefulness. The same worker's "An Attentive Listener" (4), two fishermen engaged in a yarn, is good. Alfred Earl's "From Shadow into Sunlight" (8), an old lady ascending a stone stairway, in which light and shade is well handled.

Class 3 (Members): Architecture and work not included in Classes 1, 2, and 4.—A class of excellent merit, but of moderate dimensions. W. H. Mayne secures the silver medal given by Dr. E. S. Saunders for the best picture in the Members' Section for "Softly falls the golden ray" (15), a very charming study of a belfry and an old font, in which the lighting is very cleverly managed. In "Sunshine and Shadow" (3), by J. Trouern Trend, is a well-selected bit of the front of an old house and a stairway of stone that leads up to it—strongly lit, with, however, the effect of sunlight well rendered. Rev. H. O. Fenton's "To the Lady Chapel" (1) and "Hallowed by the feet of holy men of old" (2), and W. H. Mayne's "The Sneyd Tomb, Woolstanton" (7), "Interior, Berry Pomeroy Castle" (10) and "Norman Doorway, St. Germans" (13), comprise some skilful technique and artistic selections.

Class 4, Lantern Slides (Members), though only a few over a dozen sets are of good quality. A. J. Catford has secured the silver plaque, J. Trouern Trend a bronze plaque, and honourable mention goes to Jas. Batten and Jno. F. Coombes.

On Wednesday evening Mr. Jno. F. Coombes lectured on "Down along, the history of a Scilly week-end," which was much appreciated by the large audience which gathered to hear him.

The club may be congratulated upon the successful first open exhibition it has held. Some of the success of this may be accorded to the energetic and painstaking hon. secretary, Mr. A. J. Catford, who has put great zeal and tact into the work, and who has led up to this event with thoughtful preparedness, so that the Devonport Camera Club's first start in a public way is the best exhibition it has ever held.

INAUGURAL EXHIBITION AT THE CARTWRIGHT MEMORIAL HALL.

The exhibition of pictorial photographs forms a very interesting section of the art collections in the Cartwright Memorial Hall, Bradford. These are brought together in a room in the basement, which was, indeed, originally planned by the architect as a mere workshop, but which the Cartwright Hall Committee felt, as the building progressed, was too useful a room to be devoted merely to packing-cases and the like. It has consequently been finished off in general conformity with the rest of the building, and will be a most valuable addition to the accommodation. Considerable advances

have been made by the leading workers in pictorial photography during the last few years, and even since the last photographic exhibition in Bradford the progress has been marked. The work which was then placed on exhibition came as a surprise to the great majority of the artistic public, who had enjoyed few opportunities of making themselves acquainted with the productions of the many amateurs of artistic culture who had adopted the camera as the instrument of their expression. The work of the amateurs has not been without its effect on the productions of the professional photographer, and the public have come to insist on a vastly higher standard of artistic quality, and at the same time have learnt to be willing to pay adequately for good work. If, therefore, the present exhibition is somewhat less startling than the former, in consequence of the education of the public in the knowledge of what photography itself can do, it will not be less interesting. In actual quality of work it is certainly far ahead of any collection which has previously been seen in Yorkshire.

The Exhibition Committee were fortunate in having in their midst that enthusiastic photographer, Mr. Alexander Keighley, of Keighley, and they have been able to leave entirely to that gentleman the whole responsibility of organising the section. Mr. Keighley's intimate acquaintance and influence with the leading workers in England and abroad have stood Bradford in good stead. He happily contrived to secure the assistance and interest of Mr. Alfred Stieglitz, of New York; M. Robert Demachy, of Paris; Mr. A. Horsley Hinton and Mr. Reginald Craigie, of London; and Mr. J. Craig Annan, of Glasgow, and through the assiduous labours of those gentlemen, sectional groups of work, representative of the various schools in Great Britain, in France, and America, have been brought together. The whole exhibition includes 220 pictures, about fifty representing the American Photo-Session, of which Mr. Stieglitz is the leader, and about forty are from France. Every one of the pictures included in the exhibition is the work of an individually invited contributor, and the whole collection may honestly be said to represent the high-water mark of pictorial photography.

The place of honour in the gallery is occupied by Baron de Meyer's portrait of the King, which well catches the dignified amiability of his Majesty's expression. It is, in addition, a real work of art, which is more than can be said for some of the King's painted portraits. The exhibition of work by the English photographers of eminence is peculiarly fine. The strongest department is, perhaps, among the landscapes. Mr. Keighley himself, Mr. Horsley Hinton, and Mr. Charles Job are the principal among a considerable number of exhibitors who have used their cameras upon landscape with exquisite effect. Mr. Horsley Hinton's contributions include his well-known pictures, "Melton Meadows" and "Weeds and Rushes." Mr. Keighley sends his fine study of a French peasant in her cottage, entitled "Grace before Meat." He also contributes largely to the landscapes. His "Ploughing in Tuscany," his "Picardy Pastoral," and his "Peace" fully sustain his reputation as a worker with a fine sense of the romantic in landscape. Mr. Charles Job's work is also full of poetry and of atmosphere, his "Evening Calm" being instinct with soft sunny quality. His "On the Arun" is also a memorable work. Viscount Maitland is represented by several naturalistic pieces, though lacking distinction, and Mr. Charles Moss by some broadly treated, and in many respects excellent—though not unexceptionable—works. His "Bracken and Gorse" is, perhaps, his best, though this suffers from being printed in a colour which is far from being the best possible choice. Mr. Grindrod's "Hauling Timber" is a happy piece of photography, full of vigour and movement. Mr. Cochrane's "Quarry Team" is a somewhat similar piece of composition. Mr. Bland's "Bronte Bridge, Haworth Moor," is a piece of fine, strong work which is memorable. Mr. Charles L. Emmanuel sends some clever contributions. Mr. J. Croisdale Coultas shows how, in the hands of an artist, so sordid a view as that of the river Aire near Leeds Bridge may be made delightful. Mr. Walter Bennington has a picture of London with the dome of St. Paul's looming through the smoky atmosphere—a study which reminds one of Charlotte Brontë's enthusiastic description in "Villette" of a similar scene.

The figure studies contain much clever work. Among the most powerful is Mr. Grindrod's masterly portrait of Dr. Elgar, and Mr. F. Hollyer, Mr. R. Craigie, and Mr. J. Craig Annan send some fine portrait studies of well known men, among them the particularly

fine piece of portraiture of Mr. G. J. Frampton, A.R.A., and Mr. Hermann Vezin. Mr. David Blount comes out strongly a numerous contribution, and Mr. Cochrane sends a well lighted cleverly composed portrait of a sculptor. Mrs. Barton has a set of somewhat unequal figure studies, based obviously on a study of the works of the old French and Italian painters. The among them are certainly very fine indeed in line and tone. Mr. Page Croft is also a contributor of works of high merit. The architectural pieces are not numerous, but they include Mr. Bl. "Wirksworth Church," probably one of the finest pieces of a tectural work that the camera has ever produced, and a number. Mr. F. H. Evans's clever studies of York Minster. Mr. F. Mortimer shows some capital sea studies.

The American Section is an exceedingly interesting contribution. The honours belong especially to Mr. E. T. Steichen, who has some works in the exhibition, every one brilliant successes, and some or three masterpieces. Mrs. Kasebier is also a contributor of striking and sound work, while other contributions of remarkable power come from Mr. A. L. Coburn, Mr. J. T. Keiley, and Clarence H. White. The French collection is on the whole, perhaps less interesting, though M. Demachy and M. Puyo send some excellent works.

FORTHCOMING EXHIBITIONS.

June 12-24.—First International Salon in The Hague. Sekretar Haag, Conrad Kade 63, The Hague, Netherlands.

June-October.—Glasgow Photographic Exhibition. Secretary, Gallery and Museum, Kelvingrove, Glasgow.

July 14 to September 30.—Vienna Photographic Society. Sekretar W. Burger, Karmelitergasse 7, Vienna 11.

August 1.—Andover and District Horticultural Society. Photographic Section. Hon. Secretary, W. L. Gradidge, Jubilee House, Andover.

October 1-30.—Berlin International Photographic Exposition. Franz Goercke, Berlin W. 62, Maassen-Strasse 32, Germany.

October 19-20.—Rotherham Photographic Society. Hon. sec., B. Hemmingway, Tooker Road, Rotherham.

November, 1904.—Ilford and District Photographic Society. Hon. sec., W. N. Beal, 155, Thorold Road, Ilford.

November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Sec., James Dunlop, Myrtlebank, Motherwell.

November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.

November 23-26.—Hove Camera Club. Hon. Secretary, A. Sargeant, 55, The Drive, Hove.

November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., G. W. Simmers, Aberdeen House, Ramsgate.

December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.

December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-10 West 101st Street, New York.

December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.

December 13-20.—Southampton Camera Club. Hon. Secretary, S. Kimber, Oakdene, Highfield, Southampton.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Glasgow.

June, 1905.—Northern Photographic Exhibition. Secretary, F. Issott, 62, Compton Road, Harehills. Leeds.

FORTHCOMING COMPETITIONS.

June 30.—"Photographic News" Quarterly. Money prizes, silver and bronze medals for prints. Any subject. "Photographic News," Cecil Court, Charing Cross Road, London, W.C.

June 30.—Kodak. £1,000 in cash prizes for pictures taken with Kodak films and plates, etc. Kodak, Limited, 41-43, Clerkenwell Road, London, E.C.

October 1.—Thornton-Pickard. £100 cash prizes for pictures taken

Thornton-Pickard cameras and shutters. Thornton-Pickard Manufacturing Co., Altrincham.

October 10.—Luna paper. £240 cash prizes for prints on Luna paper. Messrs. Allrege and Co., 59a, New Oxford Street, London, W.C.

October 15.—Belgian Association Lantern Slide Stereogram Committee. Secretary, M. Vanderkindere, 97, Avenue Brugmann, Brussels.

October 31.—Coxin. 68 prizes for users of Coxin. Judging twelve prizes. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.

November 1.—Barnet. Nineteen classes. Prizes valued at £500 for lantern slides and prints made with Barnet products. Elliott Brothers, Limited, Barnet, Herts.

December 15, 1905.—Ilford. £750 in prizes for negatives on Ilford. Ilford, Ltd., Ilford, E.

Patent News.

The following applications for patents were made between May 9 and May 14, 1904:—

Printing Frame.—No. 10597. "Improved photographic printing frame." John Batty.

Printing Silver Pictures.—No. 10898. "A method of toning silver pictures." (Neue Photographische Gesellschaft Actiengesellschaft, Germany.) Arthur George Bloxam.

Printing Frames.—No. 10948. "Improvements in or relating to photographic cameras and to printing frames for use with same." Frederick Joseph Seaman.

Printing Screens.—No. 10951. "Means for exposing photographic films in conjunction with flexible colour screens." Joseph Thacker Clarke.

Cutter.—No. 10965. "Improved appliance for cutting circular and oval photographic prints on paper." James Davenport.

Slide and Changing Box.—No. 11064. "Improved photographic slide and changing box." Joseph Podan Howe.

Slides.—No. 11108. "Improvement in photographic objectives." Complete specification. Franz Urban and Optische Anstalt C. P. Goerz Actiengesellschaft.

The following applications for Patents were made between May 16 and May 21, 1904:

Printing Paper.—No. 11,192. "An improved method of preparing photographic printing paper in the gum bichromate process." John Page Croft.

Apparatus.—No. 11,286. "Apparatus for use in photography." Arthur Noad.

Cameras.—No. 11,677. "Improvements in hand cameras known as box or magazine cameras." Alfred Sidney Spratt.

Printing Tray.—No. 11,699. "A convertible photographic rocking tray." Percy Shelley.

MESSRS. J. J. GRIFFIN AND SONS, LTD., of 20-26, Sardinia Street, John's-Inn-Fields, W.C., have asked us to draw the attention of readers to their new advertisement scheme, in connection with which they are distributing 500 of their Cyko Cameras at nearly half price. In addition there is a prize competition in which fifty awards are to be divided amongst the 500 lucky purchasers. Particulars, conditions, etc., will be forwarded on receipt of name and address.

PARTICULARS are to hand from Messrs. Fuerst Brothers, of 17, Tottenham Lane, E.C., relating to Pinaverdol, the new colouring material of the Cyanine series, specially adapted for sensitising slides of silver collodion, emulsion for green, and for sensitising plates for orange, yellow, and green; and to Pinachrom, the sensitiser which they claim to excel in sensitising qualities their productochrom T. Hoechst. These products are manufactured by the Farbwerke vorm. Meister Lucius and Bruening Hoechst, Germany. Messrs. Fuerst Brothers are the sole agents for the United Kingdom, and will be pleased to answer any inquiries in respect to the sensitisers and dyes.

New Apparatus, &c.

The "Royal Standard" Dry Plate. Made by Messrs. Cadett and Neall, Limited, Ashted, and sold by Kodak, Limited, Clerkenwell Road, E.C.

In the past few years the rivalry among dry plate makers has been for speed. This feature has been so absorbing to the maker, and so much advertised to the consumer, that both photographers and manufacturers have been to a large extent misled. Speed secured at the sacrifice of the many other essential qualities to a good negative is a step backward instead of forward on the part of the manufacturer, and leads to many failures and disappointments to the photographer.

The "Royal Standard" plate, which we have recently tried, appears to be an excellent production in every way. It is made in two speeds, rapid and extra rapid. The rapid we found fast enough for studio exposures in good light, and for ordinary snapshots out of doors under strong actinic light conditions, yielding negatives full of gradation and easy to develop. The extra rapid we have found not only extremely fast, but with a fineness of grain not usually accompanying high speed in the modern dry plate. The makers claim great rapidity, density, freedom from fog, and lack of grain for these plates, and our experience bears out these claims fully.

Good results can be secured from the "Royal Standard" with any good standard developer; but the pyro-soda formula specially recommended gives excellent results. This formula is simple, and well within the ability of any amateur photographer both to compound and use. For the convenience of those who do not desire to mix their own developer, the "Royal Standard Developer" can be procured ready prepared, either in powder or liquid form.

Branfill's Curves for Square Measurement. Sold by A. W. Penrose and Co., 109, Farringdon Road, London, E.C.

To the photographer who has many blocks made from his prints, or, indeed, the draughtsman who desires to know the exact superficial area in square inches of any design, etc., up to 14 x 10 inches, this piece of apparatus will prove invaluable. It is a framed graduated scale of curves, so ingeniously arranged that if any flat rectangular object is placed on it, so that one corner is against the upper left-hand corner of the frame, the number on the curve nearest to the lower right-hand corner of the object will indicate the number of square inches contained in it. We have already found this an extremely useful appliance for the measurement of square inches in process and other blocks.

"Cardium" Colours. Sold by Messrs. A. Peache and Co., Orlando Road, Clapham, London, S.W.

"Cardium" transparent colours appear to be a new departure in colouring mediums for tinting photographs. They are sold in the shape of small card ovals covered with what appears to be a layer of colour embodied in gum or gelatine. A full range of colours is supplied, capable of tinting any sort of photographs on any base. They are applied by means of a brush and water in a similar manner to ordinary moist water colours, and flow very easily on glossy surfaced prints, leaving little or no brush marks. We have tried them on various prints, and the results are decidedly satisfactory and effective. The colours are put up in sets in neat tin boxes, and are inexpensive.

ERITH and District Photographic Society.—This society held its second meeting, at Mr. Major's rooms, on Friday last. A programme was gone through which embraced a flash-light demonstration and an exhibition of cinematograph films and lantern slides. A society of this kind should enlist the support of all lovers of the photographic art residing in the district, as the assistance obtainable through this medium is of intrinsic value. It is hoped that all interested in the movement will be present at the next meeting, which takes place on Friday, June 10, at 8 p.m. The address of the Secretary is Kilgraston, Erith.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

June	Name of Society.	Subject.
6.....	South London Photo. Society...	Sale and Exchange Evening.
7.....	Neelson Photographic Society...	Ozotype. Demonstration. Mr. J. Egan off.
7.....	Rotherham Photo. Society	Architectural Photography. Mr. H. W. Bennett
8.....	North Middlesex Photo. Soc. ...	Ten Minutes' Papers by Members.
9.....	London and Prov. Photo. Assn	Open Night.

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

MAY 26th.—Mr. T. K. Grant in the chair. Mr. H. Blackwell read a paper entitled "Psychic and Spirit Photography," after which fifty lantern slides were projected of alleged spirit photographs, every one of which bore evidences of being produced by certain well-known methods, that of the lecturer's niece, upon which such stress was laid, showing the pattern of carpet upon the knees of Mr. Blackwell (explained later on as quite in accordance with spirit life, where astral carpets are in general use). Silver prints exhibited in the room enabled the members to judge accurately how far the effects gained were genuine spirits or not.

A visitor asked whether photographers who are clairvoyants could themselves photograph spirits. Mr. Blackwell replied that photography does not produce spirits, they come of their own volition. A clairvoyant photographer could photograph spirits, he said, but personal magnetism was important; even a new background required magnetising.

Mr. Brown was anxious to know if any spirits were present at the time, as he had a camera ready to take their photographs. Mr. Blackwell replied he had no doubt that there were many spirits present, perhaps that of the late Mr. J. Traill Taylor, but not being clairvoyant he could not be sure. Mr. Haddon had handled a great many magnets under all conditions of light, but had never seen any luminosity emanating therefrom. Mr. Blackwell was of opinion that if Mr. Haddon tried the experiment in the presence of a clairvoyant he would see emanations.

Mr. Child Bayley said it was a great pity that amongst the whole of the photographs exhibited all were such as could so easily be made by means so well known to the expert, and none which in themselves bore evidence of being purely spiritual. He had seen photographs taken under what were termed critical conditions, and the negatives showed certain signs to him which were evidence of a celluloid transparency having been used to get the spirit, such as marks made by turn buttons in a front filling slide, whilst the outer portion of negatives showed that it had been taken in a rebated slide. Mr. Blackwell could not account for Mr. Bayley's experience, but would assure the members that the spirit photographs of his niece were genuine. She had never been photographed in the two positions shown whilst alive. If Mr. Bayley wanted to imitate these photographs he would have to photograph hosts of beautiful women unlike any he knew. Mr. Traill Taylor was satisfied with the genuineness of the conditions and results, and Mr. Bayley cautioned Mr. Blackwell that the accounts of Mr. Traill Taylor's paper, which appeared in spiritualistic papers was a gross travesty of the meeting. Mr. Blackwell, continuing his reply, said that the spirit people make their own psychic negatives; he had seen the same phenomena and could not explain the reason.

Mr. Becket emphatically denied that Mr. Traill Taylor ever admitted that he was convinced of the genuineness of spirit photographs, and asked, why did not spirits do something useful. Would any photographer care to send these specimens to a competition? Spirits are said to be of higher intelligence and have greater powers than we mortals; still the presence of one unbeliever is sufficient to spoil a seance. Mr. Blackwell said that many very valuable inventions had been suggested and plans given by spirits.

Mr. Henderson, after apologising to the lecturer for having made a mistake in his identity, gave a brief account of his endeavours during a period of thirty years to secure genuine spirit photographs, but he had always failed, counter tricks were explained that were practised, but all were explained away. Miss Florence Marryat's book contained many accounts of Mr. Henderson's spiritualist efforts recorded as

genuine. Mr. Hay Taylor had written him to say that his father was not a believer in spirit photography.

Mr. Blackwell said that it was not fair to go to seances with intention of upsetting it, that if a materialised spirit be seized the medium suffers greatly, the molecules fly back to medium, seize the spirit is wicked. Mr. Traill Taylor has no doubt been able to communicate with Mr. Henderson, but he has surrounded himself with such a wall of prejudice that the spirit cannot penetrate. He said spirit photographs the camera must be magnetised, and Henderson's failure must be because his camera was not magnetised.

Mr. Kindon asked the members and visitors to thank Mr. Blackwell by acclamation for his paper, and Mr. Blackwell expressed himself very pleased with the kind receptive manner he had been treated to. He considered it was a duty to bring these subjects prominently forward, and hoped that spirit photography would open out a new world of interest.

BURTON-ON-TRENT AND Y.M.C.A. PHOTOGRAPHIC SOCIETY.

At the first meeting of the summer session of the above society F. W. Edwards gave a very successful lecture and demonstration "Hypo." The subject of his discourse, he stated, would suggest scientific or theoretical lecture rather than a practical demonstration and he had, in fact, chosen it as illustrating the harmonious relation of the science and practice of photography, and he would endeavour by a judicious mixture of theory and practice, not only to add knowledge of his auditors by elucidating the underlying principles of the chemistry of photography, but also to apply this theoretical knowledge to the practical purposes. The lecturer went on to describe the elements of which hyposulphite of soda is built, and exhibited slides of the substances, afterwards proceeding with the manufacture of showing in a very clear manner how the various elements are chemically united. Passing on to the discussion of hypo as a fixing agent, necessary to give a preliminary explanation of the action of hypo on the sensitive emulsion on the plate, when he would show how the hypo acted on the unaltered silver and rendered the image permanent. The hypo had done its work it should be got rid of as quickly as possible and before the lecture was closed he would give some excellent practical hints for the elimination of the salt, while for those who still preferred the usual method of extracting hypo by means of water he would give particulars of delicate tests for ascertaining whether any of the hypo still remained in the film. The lecture throughout was illustrated by experiments on each point touched upon, and at the close Mr. Edwards was commended for the excellent way in which he had handled the subject and the advice and important information he had imparted to those present.

CROYDON CAMERA CLUB.

MAY 25th.—It will certainly not be the fault of one or two members in the club if the gum-bichromate process is not given a fair trial by the members generally. Quite recently Mr. Hugh Allen illustrated his method of thick coating with an excess of gum and minimum pigment, and on the above date Mr. G. M. Sellors followed with a lucid demonstration of thin coatings in conjunction with micro-printing. Both approach the subject from the standpoint of endeavouring to get as fine gradation and detail as the process is capable of with an entire absence of that aggravating air which assumes the process an infinite superiority over all others. That it is the plastic of all may be taken for granted, but, on the other hand, with experienced workers, gradation is frequently lost, and a wasp and general indecision obtained, which no mere painter would touch for a moment.

Mr. Sellors dealt with the matter in an impartial spirit, as evidenced by his opening remarks. The process, he said, was not a trial one for the lazy man, it was uncertain, and the worker would rejoice if he got one good result out of ten. There was a risk that the strain involved might eventually qualify the enthusiast for one of those establishments devoted to the alleviation of mental distress. Abuse of the process was abundant and frequent, but this was to be wondered at, having regard to the many distressing exhibitions. The advantages were capability of almost unlimited reproduction, cheapness, choice of colour, and, provided durable pig-

employed, permanency. He had read up the authorities; they contradicted each other in nearly every detail and frequently themselves. Every man would therefore have to work out his own road.

The systems in use might be broadly classified as follows:—(1) Single coating. (2) Multiple coating and printing. (3) Mr. Allen's method. (4) Mr. Foxlee's method of Mariotype by pressure. The last, I thought, had not received the attention it deserved. Personally, he preferred multiple coating, by suitably adjusting the proportion of pigment at different stages, the scale of gradation, usually limited, might be enormously lengthened, and negatives so harsh as to be unprintable by any known means could be successfully dealt with. With multiple printing there was, however, the ever present fault of registration. He had obviated this by sprinkling the paper as far as possible by a preliminary wetting and drying, and then mounting it on a suitable cardboard, provided the edges of the paper were clamped over the back of the card there was no danger of the two separating in the subsequent operations. Other methods had been suggested, such as securing adhesion to slate by rubber solution, but these were needlessly complicated. A very good ready-made board could be found in an artist's oil sketching tablet.

Amongst the many practical points raised, which space will not permit us to enter into, Mr. Sellors said he preferred the sodium to the silver salt, its greater solubility gave increased sensitiveness. He also sized his papers, and thought the expensive badger hair softener unnecessary.

SOUTHAMPTON CAMERA CLUB.

June 30.—A lecture and demonstration was given by the Hon. Secretary, Mr. S. G. Kimber, on a new printing process, called "Helion."

The lecturer described Helion as a print-out silver paper of superior texture, upon which artistic and permanent results of singular richness and beauty are easily obtainable with certainty and simplicity of working.

Unlike the other makes of printing out paper, it has no intermediate organic support such as gelatine, but the paper is saturated with an emulsion only, and when properly toned with platinum, in the lecturer's opinion, as permanent and beautiful as a cyanotype itself.

In the course of an exhaustive demonstration, Mr. Kimber advised the use of plucky negatives and printing in the shade as far as possible, and emphasised the necessity for thorough washing before fixing and after fixing. He strongly recommended the use of Coddington's and Wellcome's chloroplatinite tabloids for toning. He showed how tones varying from light brown to black could be obtained at will from one and the same bath. The demonstration was illustrated with a quantity of prints from all classes of negatives, and a number of 12 x 10 flower studies taken on Barnet new orthochromatic plates which the lecturer warmly eulogised and advised for all classes of work. These were considered highly satisfactory in tone and quality. The lecturer also advocated the use of Lustralene for imparting richness and depth to all classes of matte papers.

The souvenir in connection with the Countess of Ancaster's Fête at the Albert Hall on June 2 consisted of portraits of some of the children taking part, photographed after the style of the Old Masters, by Speaight, the well-known child photographer. Most of the pictures have been copied after some famous painting of children, the backgrounds specially painted from the originals. So unique are the portraits that the Committee of Managers of the Royal Institution of Great Britain requested the loan of them for a meeting of its members a few days back. The binding is in harmony with the contents, and has been copied from a volume of the eighteenth century. The preface is also out of the common, as it consists of extracts from speeches on the work of the N.S.P.C.C. by the King, Lord Chief Justice, Mr. Asquith, and Earl Roberts. Only a limited edition was printed, and the compilers are handing over the net profits of the publication as their contribution to the funds of the Fête.

News and Notes.

ASSISTANCE for Patentees.—Inventors, photographic or otherwise, will rejoice to know that from next January the Patent Office proposes to render them some service in return for the high fees which it exacts. Under the Act of 1902 the department actually intends to inform applicants for patents whether their inventions have been wholly or partly forestalled. In the United States this has long been recognised as the primary duty of a Patent Office. Our easy-going department has left rival inventors and patentees to settle such matters for themselves by costly lawsuits.

A MUCH Photographed Tree.—We wonder how many times the famous Cheapside tree at the corner of Wood Street has been photographed. It must be getting towards its two hundred and fiftieth year, for it was planted just after the Great Fire to mark the site of St. Peter's in Chepe, which then suffered destruction. It was the last place within the City boundary where rooks built, and they were faithful to it until the middle of the last century. It has not forgotten how to put forth buds, and is now in full leaf. The terms of the leases of the low houses at the west end of Wood Street are said to forbid the erection of another storey or the removal of the tree, in which case it must be the most expensive bit of timber in existence.

DICKENS'S Home in Danger.—The peaceful quietness of Gadshill Place, the home of Charles Dickens, will soon be a thing of the past. The long, pleasant road from Strood to Gravesend will shortly be broken up by the speculative builder, and the Chatham and District Electric Tramways Company propose to make their terminus at the spot. Fortunately, Gadshill Place itself is not at present involved in these operations. But the charm the building had for its famous owner will vanish when the rural aspect of the surroundings has disappeared. Photographers should make the most of the present opportunity to secure records of the great novelist's favourite retreat before it is too late.

WHERE Hogarth Lived.—Another old house even more famous in its way than Gadshill Place, and one which has probably received scant attention from the peripatetic photographer, is William Hogarth's riverside home, now the depository of so many of his famous prints. Situate in Hogarth Lane, Chiswick, it has the popular advantage of being reached by electric tram. In the painter's time this modest, three-storied, red-brick building, now all but lost amid closely packed dwellings, thronged by the labouring classes, was a feature in the open country, sheltered by tall elms. Up till lately it was occupied by a market gardener, and it was put up for sale as the site of more small cottages. The public owe it to the artistic taste and liberality of Colonel Shipway, of Chiswick, that this memorial has been rescued from the suburban speculator. The Colonel has purchased it, and, under the direction of Mr. Frederick W. Peel, architect, the structure has been restored in all possible details to what it was when Hogarth lived there. Additional interest is given to the place by the 135 prints of Hogarth's works which adorn the still panelled walls. The house was opened on Wednesday as a Hogarth Museum, and in celebration of the event a dinner was held there on Saturday evening last. An oblong room, quaintly wainscotted, with a low ceiling and old-world windows, was used for the occasion, and, although it was the largest room in the house, only fifteen were able to sit down within it. Sir L. Alma-Tadema, R.A., presided.

ART.—At the dinner celebrating the opening of the Hogarth Museum, the toast of "Art" was submitted by Mr. Aston Webb, R.A., President of the Royal Society of British Artists, who said that the word had been somewhat degraded of recent years. There was art furniture and art fabrics, and there were art dealers. He was afraid the distinguishing feature in each case was the absolute absence of art. There were, of course, a great many things which had no art in them. A painting might be an admirable portrait and a house might be conveniently built, and yet both lack the magic touch of art of which Browning said, "The little more, how much it is; the little less, what worlds away!" Sir L. Alma-Tadema, who replied, quoted a friend of Christina Rossetti as saying, "As the sun colours flowers, so art colours life." Art had many phases—sometimes it taught a lesson and sometimes it told a story. Hogarth was a great master in both these

directions. Hogarth told stories second to none, and he was a great moral teacher. His portraits were also second to none, and the portraits not less important than pictures which told a story. The object of a portrait painter was to scrutinise the character of his sitter. We can commend these remarks to our brethren of the camera who wish to attain success as portrait photographers.

SCOTTISH ART.—It will be recognised that there is a considerable difference between the English and the Scottish schools of painting. The Southerner, for example, thinks the subject of a picture—the literary, or story side of art—is the principal object in few. The Northerner thinks more of the way the picture is painted—the technical, the artistic side of art. "Art for Art's sake" is more accepted and more understood in Scotland, and for this reason is more catered for, than is the case with those whose clients reside in her wealthier sister in the South. Therefore, the painters of the Low Countries and of Spain—notably Frans Hals and Velasquez—have exercised the greatest influence on present-day Scottish art. In earlier times, the influence of Hobbema was nearly supreme; and Patrick Nasmyth, one of the most charming of cabinet landscape painters Scotland has produced, was a result. Cuyp, Ruysdael, and Van de Velde were likewise the artistic progenitors of "Jock" and Andrew Wilson, and combined the inspiration of Hobbema and Ruysdael. Rembrandt greatly influenced Sir Henry Raeburn, and in his manner of painting heads the great Scottish portraitist's finest achievements are most easily described as being Rembrandtesque; while the Genoese period of Van Dyck was to a considerable extent echoed in the earlier full-length portraits of the same artist, and of Watson Gordon and Graham Gilbert. In the present body of the Royal Scottish Academy Frans Hals has several followers, and Velasquez is avowedly the master on whom the President, Sir James Guthrie, has formed his splendidly masculine art.—D. CROAL THOMSON in the "Art Journal."

THE NEW TRADE MARKS BILL.—The new Trade Marks Bill, which should be carefully watched by the photographic manufacturer, among others, somewhat widens the definition of registrable trade marks. "By this means," says Mr. Fletcher Moulton, in an interesting explanatory memorandum, "many trade marks will be registrable which are excellent for the purpose of distinguishing the goods of a manufacturer, but which would be excluded under the interpretation given by the Courts to the present definition. The registrability will turn mainly on the question whether the proposed mark is, in fact, distinctive, which is the only matter of practical importance in the case of a trade mark. The limitations that at present exist are highly technical, and have led to much controversy and litigation, without any commensurate benefit to the trading world." If we are not mistaken, there is another argument in favour of the measure; it prepares the way for an international system of trade marks. A feature of the measure is that under it a trade mark may be limited in whole or in part to a particular colour or colours, a proviso which, as is pointed out in the memorandum, is of special importance in view of the difficulties often experienced in getting recognition in foreign countries of British registrations. There are useful provisions as to dealing with instances of honest, concurrent use of the same or nearly identical trade marks, and as to associated trade marks—i.e., marks owned by the same proprietor for the same goods and so closely resembling each other that they would be calculated to deceive or cause confusion if they were registered by different firms. There are also useful provisions intended, subject to certain conditions, to confirm trade marks which, although they would be valid under an existing law, might be challenged on the ground that the definition at the date of their registration was narrower. Probably the most valuable of all the changes is that to the effect that the registry shall be conclusive evidence of the right to the exclusive use of the trade mark. This, it is pointed out in the memorandum, was undoubtedly the intention of previous enactments, but the language of the Acts has proved insufficient to carry out that intention.

THE PLAIN MAN AND ART.—Mr. Frederick Wedmore delivered an address on "The Plain Man and Art" at the Borough Polytechnic in connection with the South London Loan Exhibition of Pictures. The discourse was of the nature of a lively attack on the pretensions of

untrained persons to pronounce opinions on pictures or good work, and it laid down the law that the "plain man" and the artist were in two quite different worlds. The widest gulf the lecturer, Mr. Wedmore, was the gulf that divided them. The plain man, if he liked art at all, liked it for its story. The artist, whether writer or painter, liked it for its treatment. As to pictures and the understanding of them, Mr. Wedmore had no smooth words for the plain man. Despite heart-gladdening anecdotes which had reached them from the East End as to the effect produced on the "worker" by the contemplation of Mr. Watts's allegories, Mr. Wedmore was not foolish as to suppose that because there was a picture exhibited to people who had never thought about art at all became, with suddenness of miracle, ready to receive it. Whatever might be said pleasantly and flatteringly said in a sentimental catalogue of speech of a "star turn," the understanding of any great art requires two things—a temperament and a training. Half-trained people, Mr. Thackeray had indulgently noticed, hugged to their souls the second-rate. In art of any kind the second-rate was sure of the affection of the ordinary Englishman. As for the idler—whether of slums or Piccadilly—he knew nothing of art at all; and Mr. Wedmore was to say to the millionaire that the spirit of art counted for nothing in his existence, he should flatter him even more than a minor politician was wont to flatter the poor. For the relief of the unintelligent painter Heaven had sent in abundance the universal patron. Undue diligence, the lecturer declared, had been the ruin of many painters. Keeping them closely fixed to the studio narrowed their lives and narrowed and weakened their conceptions.

LORD KELVIN ON RADIUM.—Professor Rutherford's lecture at the Royal Institution last week, wherein he propounds radium as a new source of energy that might account even for the vast age of the earth, has attracted much attention. The professor referred to the theories of Lord Kelvin on this subject, the veteran physicist has been interviewed by a representative of the "Westminster Gazette" to see if he accepted the new theory. Lord Kelvin, who was reading Professor Rutherford's new book on "Radio-Activity," proceeded to quote some suggestions which he has recently published, as follows:—"But this leaves the mystery of the untouched Curie's discovery that it (perpetually?) emits heat at a ratio of about 80 centigrade calories per gramme per hour. Emission of heat at this rate goes on for little more than a year, say, 10,000 hours (thirteen and a half months), we get as much as would raise the temperature of 800,000 grammes of water by 1 centigrade. It seems to me utterly impossible that this can be accounted for from a store of energy lost out of the gramme of radium in 10,000 hours. It seems to me, therefore, absolutely certain that if emitted heat at the rate of 80 calories per gramme per hour found by Curie at ordinary temperature, or even at the lower rate of 38 by Dewart and Curie from a specimen of radium at the temperature of liquid oxygen, can go on month after month, energy must somehow be supplied from without to give the heat which gets into the material of the calorimetric apparatus." Lord Kelvin ventures to suggest—he would not put it forward as a fact—that somehow ethereal waves might supply energy to the radium while it was giving off heat to the ponderable matter around it. "The facts about radium," said Lord Kelvin in subsequent conversation, "are so wonderful and so different from anything known, or conceived, in science ten years ago, that even wild temporary hypotheses are pardonable. The whole of these wonderful facts have followed systematically on the original discovery of radio-activity by Henry Becquerel. They are a wonderful family, these Becquerels, and the public must imagine that the discovery of astounding facts about radium resulted from any particular flash of genius. Antoine Becquerel, my great-grandfather, I remember as Director of the Physical Department of the School of Science at the Jardin des Plantes. I met an introduction to him when I went over to Paris on coming down from Cambridge in 1845. His son Edmund, his grandson Henry, Henry's son John have all done very much to clear the mystery of radio-activity. But this book of Professor Rutherford's is wonderful. It is full of indisputable and mysterious fact, and the praise accord the author cannot be too exalted."

Correspondence.

Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.

We do not undertake responsibility for the opinions expressed by our correspondents.

THE PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION MEETING.

To the Editors.

Gentlemen,—When I first read the two letters with the above heading, I thought I must have got hold of a back number of the *B. J.*, but no, it was dated May 27, 1904. We have had these sort of letters before. It has been decided over and over again that something must be done, and that at once, but it never is. The reason is simple. The workers in any trade to do any good in the way of improving their condition must be able to control two things, viz., the working hours and the rate of wages. In photography, for various reasons, this is impossible.

It is quite true that the ranks of more-or-less incompetent assistants are filled to overflowing; and here I would offer a word of advice to boys of an apprenticeable age, who, having bought a "Brownie" and taken successful pictures of father, mother, and the baby, think they will become professional photographers. Give up the idea, my young friends, and go in for some trade or profession which supplies everything everybody wants, but do not make for themselves. It may mean all the difference to you, between a good square meal at regular intervals and genteel starvation.

If the P.P.A. would only bring its long-talked-of scheme of certificated assistants to a head, and could induce employers to engage only certificated workers, it would do more to improve the position of incompetent men in six months than all the Assistants' Unions could in a lifetime.—Yours truly,

DROP SHUTTER.

THE PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

To the Editors.

Gentlemen,—I have noticed with some interest articles appearing in your valuable paper concerning the formation of a branch connected with the P.P.A. for the benefit and interests of professional assistants. We all must admit that Mr. Fry's suggestion is a good one. It is a very easy matter for professional assistants to form a society that may prove profitable to them, but I really think it is the duty of our seniors, such as the P.P.A., as it is to-day, to form a branch for assistants. Certificates are also a necessity. As it is rather hard for a clever young artist to have no more distinction than a duffer, who is depending on the same level, through working for next to nothing, to gain experience.

I shall be glad to read in the *BRITISH JOURNAL OF PHOTOGRAPHY* that a branch is being formed.—Yours truly,

C. H. B.

May 28, 1904.

PITY THE POOR ASSISTANTS.

To the Editors.

Gentlemen,—May I ask a small space in your valuable paper, to the assistants' grievance? An operator of great experience tells me he has answered sixty advertisements, always enclosing a stamp in reply; but out of all that number he has not received one reply. I also know several cases where legal proceedings were threatened before their specimens, etc., were returned, and in some cases they are not returned at all. No doubt there are a very great many answers to all the advertisements in the *BRITISH JOURNAL OF PHOTOGRAPHY*, but I think you will agree with me that a photographer should at least return photos, references, specimens, etc. I am sorry to say this applies more to so-called first-class photographers.—I am, yours faithfully,

A POOR ASSISTANT.

THE KODAK COMPETITION.

To the Editors.

Gentlemen,—Will you be kind enough to announce in your columns that at the grand Kodak amateur competition, in which £1,000 is to

be given in cash prizes, will close on June 30. Perhaps you would be good enough to state also, since there seems to be misapprehension in the minds of some of our competitors, that under Condition 7 of the N.C. film competition, it is stipulated that not less than three prints are to be entered; this, of course, means prints from separate negatives, not three prints from one negative.—Yours faithfully,

May 28, 1904.

KODAK, LIMITED.

41-43, Clerkenwell Road, London, E.C.

PSYCHIC PHOTOGRAPHY.

To the Editors.

Gentlemen,—Reading over the very interesting letter of Mr. N. Maskelyne on psychic photography, I find that the damning evidence given by him is not such a proof of fraud as he thinks, if he has seen only the prints, and not the negatives. Allow me to say here that I am not a believer in these psychic photos, but the border lines doubled or trebled can be obtained, and probably are a daily occurrence with many, as if you consult the prints in the printing frame, and do not replace it in the same position, especially when printing in the sunlight, these border lines will show easily. The case would be different, of course, as I said above, if the negative shows these lines.—Yours very truly,

A. LEVY.

Asnières (Seine), May 27, 1904.

To the Editors.

Gentlemen,—In view of the letter of Nevil Maskelyne in your issue of May 27, I would refer him to my letter on the above in your issue of May 6, and I ask you, in fairness to Mr. Boursnell, to allow me to supplement that letter with further information in his favour, and I have nothing to say against him. From 1895 to 1898 I went to his studio over fifty times, and obtained a larger number of spirit photos than any other of his customers—about sixty in all, under the test conditions enumerated in the said letter.

To get at the root of spirit photography, a thorough investigation must be made of the *modus operandi*, in the place itself where they are produced, as well as a careful and oft-repeated scrutiny of the man bringing them to light, as regards not only his demeanour and motive, but so as to enable one to arrive in due time at a correct appraisal of his moral character. "A tree is known by its fruit." But though the fruit of human character is very complex in some people, we can by perseverance in the study and the ripening process of dilatory time arrive by dissection at such an estimate of him as will remain permanent in our memories. Mr. Boursnell is undoubtedly a man of perfect honesty. Any person forming an opinion of his photographs without all-round inquiry, leaving no stone unturned, no chink uncovered, that will let in the light upon them, is liable to harbour a wrong conclusion. The difference between my sixty spirit photos and a "faked" photograph is just similar to that between a natural flower and an artificial one. Let N. M. place one of my photos and a "faked" photo side by side, and even he will perceive the difference, consisting largely of finer texture in everything depicted in the spiritual. In every transaction with the spirit photographer I bought the negative. I sold the entire collection recently to Mr. Blackwell, the amateur collector of psychic photos, he being, of course, a connoisseur, who, like Mr. Stead and the late Mr. Traill Taylor, can pick out a genuine spirit picture from among a number of counterfeits, or vice versa, with one eye. Much the same as dealers in gems tell the genuine from paste. When I was a youth I went to see Professor Anderson, "the Wizard of the North," an old-time conjurer, at the Amphitheatre, Liverpool. I saw through half his tricks at my first visit, and in the course of a second visit I mastered the remainder, and explained to my friends how the Wizard operated. I am sure that if Mr. Boursnell had but once used trickery under my eyes he would not have escaped detection. It is a cruel injustice to him to suggest in a publication of the high authority of the *BRITISH JOURNAL OF PHOTOGRAPHY* that his work is "faked."—Yours truly,

J. E. STERLING.

BUFF: "Have you no memento of your mother-in-law, who came to so sudden an end in Africa?" DUFF: "No, worse luck. We only succeeded in getting a photograph of the cannibal that ate her."

Answers to Correspondents.

- ** All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.**
- ** Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.**
- ** Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.**
- ** For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.**

PHOTOGRAPHS REGISTERED :—

S. Yeo, 54, High Street, Dorking. *Photograph of the Dorking Town Military Band.*
 F. Bustin, 151, Cheltenham Road, Bristol. *Three Photographs of Johnnie Trinley.*
 T. H. Price, Parsonage street, Dursley, Glos. *Two Photographs of Three Young Pipers and Bitch.*
 J. A. Derbyshire, 10, N. W. Market Street, Chorley. *Photograph of H. Bradley, Esq.*
 J. Eastwood, 34, Coronation Street, Blackpool. *Six Photographs of Rough Sea at Blackpool.*
 T. S. Robinson, 185, High Street, Homerton, London. *Photograph of Salvation Army Band, Congress Hall, Clapton, London.*

STAINED PRINTS.—"M. A. C." asks: "Will you kindly give me the cause of stains in prints as per enclosed, as this comes after mounting? Is there insufficient washing? Paper used is P.O.P." In reply: The stains are due, in a word, to carelessness. The prints have been allowed to stick together while in the fixing bath. You say that the stains come after the prints are mounted. The two sent, which are badly stained, have not been mounted at all.

PHOTOGRAPHS OF THE MOON.—L. FINLAY asks: "Would you kindly answer the following—(1) Did Daguerre take the first photo of the moon? (2) Can flying bullets be photographed? In reply: (1) Daguerre did not, we believe, ever photograph the moon. It was photographed in 1854 or 1855 by Jas. Hartup, and at about the same time, or a little later, as a stereoscopic picture by the late Warren DeLa Rue. (2) Yes; Professor Boys produced some very successful ones some years ago.

"T. B."—Your letter and the untuned prints you send puts quite a different complexion on the matter. If you, as you say, can taste the hypo on the negatives, it is not at all surprising that the prints are stained before they are toned, except where the film of the negative is protected by the retouching medium, which acts, to an extent, as a varnish. We should advise you, as an employer, to personally see that the negatives are properly fixed and washed, and when that is done that they are varnished afterwards, whether you print out of doors or in.

OPINION WANTED.—"STIGMATIC" says: "I shall be obliged if you would kindly pass your opinion upon the lighting, posing, and retouching of enclosed prints. Would they be considered first-class work?" In reply: The work is fairly good, that is all we can say of it. It is certainly not first-class. In the worked-up print, accompanied by the untouched one, the likeness has been altered. The lighting of the so-called "Rembrandt" one is by no means good. From merely seeing three specimens, which may be picked ones or not, it is impossible to give any idea of the salary that might be commanded.

SILVER PRINTS.—E. MOORE asks: "Would you kindly give me the address of a reliable firm who supply silver prints for crystoleum printing? Is the silver process a difficult one to work? Would you kindly state how it is worked?" In reply: This is a rather curious query, inasmuch as all prints, except carbon and platinum, are silver prints. As, however, our querist mentions "crystoleum," we assume that he refers to prints on albumenized paper. These most professional photographers will supply. If he wishes to produce them himself, we should advise him to purchase a cheap elementary manual on photography.

COPYING IN BLACK AND WHITE.—"JUNIOR PHOTOGRAPHER" says

"I have a lot of black and white copying to do, and will thank you to give me a formula for a developer that will give great contrast. Hard white and black either for negatives or lantern slides. The formulas in the 'Year Book' are fairly good, but will not give density enough." In reply: For this class of work you should employ plates, such as are specially made for it, say, such as Mawson and Swan's photo-mechanical plates. If you use such plates, with the formula for developer supplied with them, you will have no difficulty in obtaining all the density desired. In future please write on paper instead of a post-card.

NON-RETURN OF NEGATIVE.—"NEGATIVE" writes: "I shall be obliged if you will kindly advise me on the following. Sometime ago I sent a 12 x 10 negative, of a large group, to a firm to have a bromide enlargement made from same, telling the Company to keep neg. for a few days, as I might want more, but I did not. So I sent my neg. to be returned, enclosing six stamps for postage. They wrote me that they did not know which my neg. was, so I sent them a print from same. Still no neg. came. I wrote several times, and at last they wrote saying it had been sent some time ago. I wrote again asking which way they sent it, if by post or rail, so that I might make inquiries about same, but cannot get an answer. I have lost £3 or £4 over it, as I have had a lot of repeat orders. In reply The only suggestion we can offer is that you sue the firm in the County Court for the value of the negative. Indeed, that seems the only course open to you.

ORNATE Mounting Cards are not Artistic.—The more ornate the card, the more it divides the attention with the picture. Scrolls, fancy cut-outs, and all manner of ornamental (?) double printing, is monkey business that detracts from the value of the real work—"Camera Craft."

The annual field day in connection with the Northumberland and Durham Federation of Photographic Societies took place on White Monday, when Bishop Auckland was visited. About 200 members and friends attended, and excellent arrangements had been made by the Bishop Auckland Society. By kind permission of the Lord Bishop of Durham, Auckland Castle and chapel were open for inspection. Various places of interest were also visited, and conductors for different places were appointed by the local society. Tea was provided at the Edgar Memorial Hall, and afterwards the annual meeting was held. Mr. J. T. Proud, president of the Bishop Auckland Society, occupied the chair, and the Bishop of Durham attended and delivered an interesting address. In welcoming the members of the Federation to Bishop Auckland, he said it had been a great pleasure to him to think that the house and garden and park of which he was the temporary occupant and trustee afforded the visitors considerable attraction. On the motion of Mr. Cowley (South Shields), a hearty vote of thanks was accorded the Bishop. The annual report of the Federation was submitted by Mr. Arthur Payne, and was adopted. Other votes of thanks concluded the proceedings.

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A PREFATORY NOTE.

I HAVE to thank the many able photographic writers who, in response to my invitation, have come forward on this unique occasion to join me in celebrating the Jubilee of THE BRITISH JOURNAL OF PHOTOGRAPHY. The size of the present number may suggest to the imaginative reader "what might have been" if I had accepted all the offers of assistance that were generously tendered to me, and my excellent friends, the Publishers, had complacently given me *carte-blanche* in the matter of paper and type. A Midsummer "ALMANAC" (without the advertisements) would have resulted!

A glance through the list of the contributors will show that many of them have been identified with the JOURNAL for twenty, thirty, and even forty years. But writers of the more modern school also assert themselves—in fact, they may be said to predominate. The aim kept in view in the compilation of this Jubilee Number has been to produce a publication which, when placed in the hands of an intelligent photographer who has not hitherto been a reader of photographic journals, shall so far attract him in some branch of his subject that he will become a permanently interested reader. In order to secure the suffrages of our undoubtedly great public not catered for by existing photographic periodicals, many thousand extra copies of this number of the JOURNAL are being printed. We shall signalise the possession of an inexhaustible fund of Jubilee energy and strenuousness by sparing no effort to bring the "B. J." before the notice of amateur and professional photographers in all parts of the world.

I trust that the articles and the number generally will secure widespread appreciation, and that an immediate result will be the enrolment under the banner of the "B. J." of several thousands of new readers and supporters. The history of the paper, which forms a feature of the number, is fairly complete, but of many of those identified with it in the long ago no trace or record now exists, and were it not that Nature has endowed the present Editor with a phenomenally good memory, even this story, brief and scanty as it is, could not have been written. Still, with all its shortcomings, I trust my readers will treasure it as a souvenir of the dear old paper, in association with which some of the happiest years of my life have been spent.

Well, now, in conclusion, just a little of the "personal touch," or "note," to impart the much sought and desiderated human interest to this brief chat between Editor and reader. I had for a long time set my heart on a Jubilee Number of the "B. J." and all promised well until a month ago, when a joint attack of influenza and septic poisoning prostrated me, and rendered me quite helpless. For weeks I was in a pleasing state of doubt as to whether I was to participate in the pleasure of seeing the Jubilee Number through the press. But a skilful doctor finally pulled me through—and so here is our number. "The Story of the BRITISH JOURNAL" was actually written in bed, and I think the pleasure of the work materially hastened my recovery.

I trust all readers of this Jubilee Number will become permanent supporters of THE BRITISH JOURNAL OF PHOTOGRAPHY.

THOMAS BEDDING,

Editor.

June 8, 1904

Entomological Photo-Micrography.

NO matter what part of the world we may find ourselves travelling through, and no matter if the temperature be above or below zero, we are sure to meet some denizens of the insect world. As we go northward into unknown Arctic regions, over the desolate wild "tundras," millions of gnats of many species dance at our lonely camp fires and torment us and the faithful animals that are carrying us through those wild regions. While we rest, almost gasping for breath, in the palpitating noontide heat of the tropics, we see innumerable insects flying, running, jumping, and crawling about, quite indifferent to the heat which saps our strength. But if we have a mind to study insect life, we need travel no greater distance than into our own garden or the nearest field, lane, or wood. Each has its own little world of insect life, peopled by those insects to which that particular environment is most suitable.

The changes, or metamorphoses which insects pass through from egg to perfect insect are most wonderful and varied. There is a romance to be found in the life of the most common and familiar insect which is food for thought and consideration, while to make a photographic record of that life history will be found to be a most fascinating and interesting piece of work. As well as the photograph of the living insect at various stages of its existence, a record should be made, by means of a series of photo-micrographs, of the remarkable anatomical changes which take place, and of the general microscopic structure of the insect under observation. It is with this section of insect photography—what may be termed Entomological photo-micrography—that I propose dealing in the space at my command.

The really keen photo-micrographer will find that Entomology will supply him with a vast number of interesting, beautiful, and instructive subjects, and none requiring a very elaborate outfit or a very high magnification. The magnification will range from about five diameters to two hundred and fifty diameters, and the latter will probably not be very often employed. The eggs of insects form particularly interesting and beautiful subjects for medium-power photo-micrography—from fifteen to twenty-five diameters generally yielding the best results. They must be treated as opaque objects and photographed with "dark ground" illuminations; either a spot lens or two lamps and "bull's-eye" condensers being used, but the latter will give the most satisfactory result, the eggs standing out from the dead black background in greater contrast and more evenly illuminated than with the spot lens. A wooden slide covered with dead black

paper will be found very useful as a mount and background, and to it the eggs attached to the twig, or whatever they have been deposited on, can be fastened with the aid of a pin. It is most undesirable to remove the eggs from their natural support, as, should the little germ within die, the egg will shrivel and greatly change in appearance. The lamps (two ordinary circular-wicked paraffin lamps will do admirably) should be placed one on each side at a slight distance from the stage of the microscope, and the "bull's-eye" condensers so arranged as to concentrate the light evenly over the subject, so that the eggs stand out in bold relief and free from heavy shadows. Both lamps and condensers will probably have to be shifted and fidgeted about a bit the first time this work

is attempted, but it is well worth while taking a good deal of trouble, the final result well repaying for it. Once the best position for lamps and condensers has been found, their exact position on the board should be carefully and clearly marked, so that they can be replaced on any future occasion without loss of time.

The preparation of the internal organs of insects for photo-micrography is delicate and interesting work, in which a deep half-plate developing dish will be found very useful. A thin sheet of cork, weighted to keep it from floating, is placed at the bottom of the dish, and the dish filled with water. To the sheet of cork the insect, previously killed with chloroform, should be fastened, on the ventral surface for the nervous system and on its back for the abdominal or thoracic viscera. The cork and insect placed in the dish filled with water, the skin is cut through on each side of the abdomen with a pair of fine-pointed scissors. With a little care the organs can be removed, washed in distilled water, stained with borax carmine for five to fifteen minutes, washed in several changes

of methylated spirits, finally in acidulated alcohol (about 1 in 10), thoroughly dehydrated in alcohol, cleared in clove oil, and mounted in Canada balsam. In this way very beautiful permanent preparations may be made. To obtain the gizzards of beetles and the salivary glands of cockroaches (the common so-called "black-beetle"), the freshly killed specimen is placed in a jar of water and left for a few days, until it begins to smell somewhat unpleasant, the contents meantime having been protected from dust by a cover of some sort. If the specimen is then removed, washed in clear water, and gently held between the fingers, it will be quite easy, with a pair of forceps, to pull off the head, which will generally bring away with it the oesophagus, salivary glands, and stomach, which can then be washed, stained, and mounted. It would



MARTIN DUNCAN.

Has successfully applied the cinematograph to the study of the movements of the lower organisms.

be out of place here to enter fully into all the details of the various methods of preparing parts of insects and entire insects for microscopic examination and photo-micrographing, but the reader who is wishful to gain more information on the subject will find it very carefully dealt with in the latest edition

plates, as I have invariably found them most carefully prepared and colour-sensitised and of first-rate keeping quality. In most cases the negative should be strongly built up, so as to give rather a hard contrasty appearance, but care must be taken not to over-develop and choke the fine detail. For



Fig. 1.—Proboscis of Blowfly.

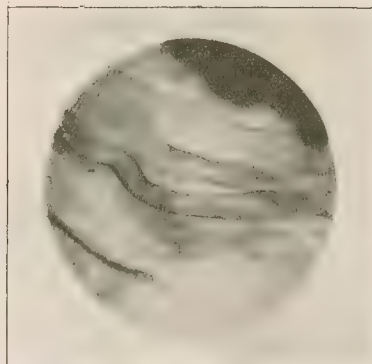


Fig. 3.—Trachea of Blowfly.

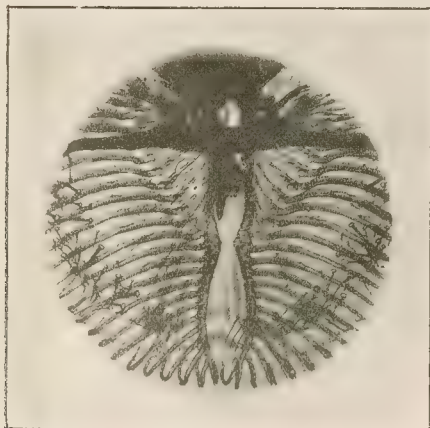


Fig 2.—Portion of Proboscis of Blowfly greatly magnified to show structure.

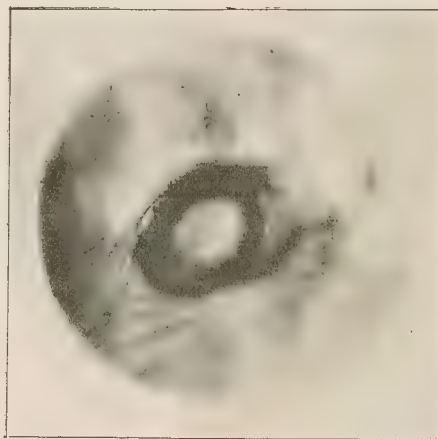


Fig. 4.—Spiracle of Blowfly.

of "Modern Microscopy," by M. T. Coles and M. J. Cross. In Entomological photo-micrography, it is most desirable to use a suitably colour-sensitised plate for each subject, in conjunction with a screen, if the very best results are desired. Personally, I always use Lumière's series of orthochromatic

this reason, hydrokinone alone should be used with caution, as it tends to extreme hardness and blocking of delicate detail. One of the amidol group—Dianol, for instance—will be found to yield the desired result more easily.

F. MARTIN DUNCAN.

Journalistic Photography.

ALTHOUGH the close relation which now exists between the camera and the printing press was established little more than twenty years ago, it is noteworthy that photo-engraving formed the subject of experiment by Niepce some years before the first daguerreotype was given to a wondering world. In Niepce's process a metal plate covered with bitumen was exposed under an engraving, or in the camera obscura, and was afterwards treated with oil of lavender so as to make a resist, and the plate was subsequently etched with acid. It is quite evident from letters written by Niepce that this desire to produce engraved pictures by the action of light was uppermost in his mind when experimenting with the camera. Later on, Poitevin endeavoured to produce printing plates from daguerreotypes, and as early as 1852 our own Fox Talbot patented a process which he called phototypy. It is interesting to note that in this early process the English inventor employed what he termed a photographic veil - which is the prototype of the modern ruled screen. His "veil" consisted of a piece of folded gauze, and its object was to produce the effect of engraved lines or of uniform shading.

Other inventors improved upon Talbot's idea of a network screen, but none of them produced work sufficiently good to cause any uneasiness to the wood-engravers. But in France M. Gilot produced etched line blocks of such excellence that he encountered much opposition from those who saw in them a rival method of producing pictures from the Press, and the examples which he was able to show, and which brought him honourable mention at the Exhibition of 1855, were beautiful specimens of pen-and-ink, or line work. The original drawings were either made on the zinc, or transferred to the metal from paper; the photographic image direct on to the zinc plate did not come for many years afterwards.

We thus see that many were at work on the problem of producing a printing surface automatically without the use of the graver or the etching needle, but even those best qualified to judge never guessed that they were within measurable distance of a revolution in methods of illustration which would be entirely due to the use of the camera. About twenty-five years ago, even such an astute man as the late W. L. Thomas, one of the old school of wood-engravers, formed a school of wood-engraving as a feeder for the "Graphic" soon after that paper was started.

If we hark back for a moment to consider the method of producing a printing block which was in vogue up to the year 1866 or thereabouts, we shall be better able to appreciate the vast change which photography has brought about. The artist had to draw his picture on a boxwood block, and used a looking-glass in doing so, for the design had to be reversed. The drawing was executed either in line or wash, and, when in the latter, it was the engraver's duty to translate wash into "tint" or line. It thus came about that the engraver in the act of cutting the block destroyed the original by the artist, and much beautiful work was in this way utterly lost.



T. C. HEPWORTH, F.C.S.

Has had a very wide and varied experience of Press, lecturing, and photographic work.

Then came the first great change due to photography, and one which was welcomed by all. It became possible to transfer a photograph direct to the wood-block. This meant an enormous gain, for the artist could work on paper and in any medium which he preferred, and after the drawing had been photographed, and the photograph transferred to the boxwood block, the original was as good as ever, and represented a valuable asset. In the case of well-known artists, whose pictures could command long prices, the gain was great. If anyone cares to examine some of our back volumes in the period covered by the late sixties and early seventies many recipes will be found for transferring the photographic image to the surface of the wood. Only a few were satisfactory, for it was a necessity that the film should be so imperceptible that it should not flake off under the point of the graver, while at the same time the surface should not be hardened, or softened, or in any other way changed.

Mr. Carl Hentschel, whose name is honourably associated with the history of process work, described a method of transferring the silver image to the

wood-block in a lecture which he gave before the Society of Arts not long ago. The method was invented by his father, and was so ridiculously simple that he did not care to give it away by patenting it, but kept it as a secret process. He took an ordinary albumenised silver print, pasted it face downwards on the wood-block with a special adhesive of his own, and then rubbed away the paper with his finger by moistening it, just as one would do in the crystalum process. Like many other things, this highly useful and simple process was discovered by an accident, a silver print having stuck on a piece of wood, and the effort of detaching it showing how closely it had adhered to the surface. It

eed hardly be said that the delicate albumen film offered no obstacle to the graver, and that this simple and ingenious method of transfer at once gave the necessary reversed image in the wood-block. We may be quite sure that photography was blessed by many for the benefit which it brought to artist, wood-engraver, and to publisher alike in expediting the work of producing an engraving.

And even at this date the celerity with which a block could be produced had been greatly increased since the early days of wood-engraving. The system by which a single boxwood block was made up of a number of pieces bolted together, which could be separated so that each piece could be handed to a different engraver, was at the time of its introduction regarded as a wonderful thing. In Mason Jackson's "Pictorial Press: its Origin and Progress," written in 1885, there is an amusing account of the serious business involved in producing a small wood-cut. "I have heard the late William Harvey relate," he writes, "that when Whittingham, the well-known printer, wanted a new cut for the 'Chiswick Press' series, he would write to Harvey and John Thompson, the engraver, appointing a meeting at Chiswick, when printer, designer, and engraver talked over the matter with as much deliberation as if they were about to produce a costly national monument, and after they had settled all points over a snug supper, the result of their labours was the production, months afterwards, of a small wood-cut measuring perhaps 2 by 3 in." Contrast this leisurely way of conducting the business of producing a block with what Mr. Harry Furniss recently told of his experience in America, when he had to go through "the frightful ordeal of being interviewed at 12 o'clock by the members of the Press, and making a sketch;" and on arriving at the station two and a half hours afterwards he had a newspaper handed to him with his own drawing reproduced in its pages! This was a fine block, and a few years ago the production of such a thing so short a time was regarded almost as a miracle, a half-tone block taking far longer time. But now it is a common thing for a half-tone block to be made on an emergency almost as quickly, but such hurried work is not to be commended if the best results are expected.

The pioneer worker in half-tone work, if we pass over the old attempts of Fox Talbot and others with veils of gauze, etc., was Meisenbach, whose patent bears date 1882. For a long time the term "Meisenbach block" was commonly employed, but now "half-tone" block is generally applied to this method of illustration. The zinc line-block scotched wood-engraving, but the half-tone block absolutely killed it. As an example of the cost of preparing a wood-block for illustration, the present writer is able to draw upon his own experience. Many years back a friend requested him to get a drawing made upon a block which measured 5 by 4 in., and afterwards to get the block engraved, it being understood that the work in both cases was to be of the best. The artist received five guineas, and the engraver a similar sum, so that this small illustration cost exactly ten guineas. A half-tone block this size would cost nowadays less than as many shillings, while the saving of time would be enormous.

This is why the introduction of the half-tone block has been the means of actually creating so many new periodicals. It is a common thing for one of the cheap magazines to boast that it contains upwards of one hundred illustrations. Many of us wish that it didn't, for, truth to tell, ease of production has had the natural result of leading to much rubbish being palmed off upon the public. But there is an idea abroad that a photograph cannot lie, and that its artistic excellence cannot be open to question, and this is a very comfortable state of things to the publishing fraternity who produce cheap illustrated matter. If we would see half-tone work at its very best, we must open some of the American magazines, in which

a good deal of hand work is expended upon the blocks by artists, and where the printing is of the highest excellence. It is sometimes very difficult to tell whether some of these pictures are by process, or are clever examples of wood-engraving, but the use of a magnifying glass quickly sets all doubts at rest by revealing the regularity of the dots, while at the same time the tooling of the block by hand is plainly shown.

In mentioning the introduction of the Meisenbach block, it would not be fair to omit all reference to the work of Mr. F. E. Ives, whose name is generally more nearly associated with photography in colours. Meisenbach used a single-line screen, and reversed it during the exposure so as to secure the requisite effect. Ives used a cross line screen made by cementing two single-line screens together face to face. The name of Max Levy should also be mentioned as that of one who has carried the manufacture of screens, by means of his ruling machine, to the highest pitch of perfection. It may not be generally known that a large screen of this kind of the highest quality is worth not much less than its weight in gold. Credit should also be given to Mr. Ives, as well as to Dr. Eder and others, for elucidating the theory of the formation of the dot in half-tone, which has done so much to make practice efficient.

When the process-block first came into prominence it was loved by the printers as little as it was cared for by the wood-engraver, and, if these worthies could have had their way, they would soon have made an end of process and all its works. And if any of our readers are of that age when it is possible to recall the entry of the half-tone blocks, it will be remembered what a terrible mess the printers made of them. Printers who had been used to the comparatively deep trenches cut by the engraver looked upon these new-fangled blocks, with their delicate network of lines, the depth of which was not to be gauged save by a micrometer, as things impossible, and not to be regarded for one moment by a man with any self-respect. But the blocks were not wrong: it was the printers who were at fault. The ink, the paper, and the presses which would do excellent work under the old system broke down under the new, and, until each was overhauled and improved, the blocks were blamed. Printers, who thought at one time that they were hardly used in being required to deal with these half-tone blocks, will, if they are reasonable men, be the first to admit that their introduction brought great good, for a reform was then commenced which has had a most beneficial influence on the printing industry all round. A printing office, which not long ago was a synonym for all that was dirty, foul, and generally objectionable, is now as clean as any other place where work is carried on, and, if the printer aims at the highest class of work, it must of necessity be kept clean. The common use of the dynamo for driving the machinery, and of type-composing apparatus, naturally conduce towards this end.

Still more necessary is it for the printer to look to the cleanliness of his premises if he has any thought of taking up trichromatic printing, which we may regard as the colour-process of the future. At present, for reasons into which it is impossible to enter here, the photographic process has not superseded chromo-lithography, but we may feel sure that as improvements are introduced the three-colour method will gain ground. We have already seen some book-illustrations copied by this process from water-colour drawings which leave little to be desired; but it must be owned that really good work of the three-colour kind is the exception rather than the rule. The theory of the three-colour print is now thoroughly understood: it is when it is sought to reduce that theory to practice that difficulties crop up at every turn.

In a necessarily brief review of the connection which the past

half-century has brought about between photography and the Press, the names of many who have by their labours helped towards the work have been passed over, not intentionally, but for want of space to do justice to their merits. Collotype, Woodburytype, photogravure, and many processes of lesser note have been associated with Press work, but the zinc line

and the half-tone block have worked the actual evolution in our Press methods of illustration. For the same reason have avoided such details of manipulation as can easily be found in any of the text-books. We have written enough to demonstrate that the Press owes a great debt to photography.

T. C. HEFORTH.

Copying.

HAVING been kindly asked by the Editor for a short contribution to the Jubilee number of THE BRITISH JOURNAL OF PHOTOGRAPHY, I submit the following, which I hope may be of some assistance to the readers of the JOURNAL. Most photographers, both professional and amateur, have at times to make copies of something or other, and numerous devices have been put forward to accomplish this end. I have recently had a lot of copying, etc., to do, and evolved a piece of apparatus, of which the illustration is a photograph, which is at once simple, cheap, and always ready.

The illustration (Fig. 1) almost speaks for itself. The two uprights A are deal, 4 ft. long by 2 in. square; the two boards at top and bottom (B) are 18 in. by 9 in. by $\frac{1}{2}$ in., the top one having a slot in it vertically, 4 in. by $\frac{1}{2}$ in., thus giving an adjustment for the camera of 4 in. up or down; the two feet (C) are 22 in. by 6 in. by 3 in., and into these the uprights are let in with a shoulder. A carpenter supplied the wood, and planed it up for 8s. 10d. The metal part is just ordinary shop window fittings, obtained from Potter, in Aldersgate-street, at the cost of 8s. 4d., making the total cost only 17s. 2d. This consists of two brass-coated rods (D) 4 ft. 6 in. long, let into the base boards and secured at the top with two rings E screwed on to the wooden uprights. The arms F, on which to place the object to be copied, are of brass, 18 in. long, and fitting into sockets G, which can be adjusted to any height by screws, the same height on each side being secured by having the uprights marked in inches, as faintly shown in the illustration.

As shown, the apparatus is arranged for "shadowless photography," the object being placed on a sheet of clean glass, with a white paper reflector beneath it, this being all that is necessary for small objects, but for larger ones, such as that shown in Fig. 2, which is four inches and a half long and three and a quarter thick, it becomes necessary to have a reflector at the back as well, and this can be done by turning the lower

arms backwards, or a third pair of arms may be used if preferred, and using them as a rest for silvered glass, which can lean against the wooden uprights at the desired angle. This was the method adopted in this case, and it will be seen that the illumination is very even all over the large cone. The exposure for this was two min. at f45, bright light, Imperial Ord.

If an engraving, or map, or line drawing has to be copied, of course, the sheet of glass is not required, and the object, whatever it is, is laid on a flat piece of wood, which in

turn rests on the arms. By the kind permission of Messrs. Virtue and Co., proprietors and publishers of the "Art Journal" I am enabled to show a copy of an engraving of one of Turner's works (Fig. 3), "The Grand Canal, Venice," from their book entitled "The Turner Gallery," taken on an Imperial ord. plate at 11-30, 23-4-0, bright light, 1 min. at f. 32.

This last illustration was taken from a large heavy book, the page to be copied being laid quite flat on the board, while the pages beyond it were fastened with a piece of string to the uprights, and they will, I think, sufficiently indicate what can be done with the apparatus, which, when in use, stands in front of a window. By unscrewing and removing the two rings E it can be taken to pieces.

Of course, in copying, like architecture, the lines must be straight, and there must be no distortion, and, I think, it will be found that this is more easily accomplished, by such

an apparatus as I have described than by the perhaps more usual way, i.e., horizontal, and using an easel. At any rate I have found it distinctly better for copying a page from a book, and, comparing results, I find I can get more even illumination by this method than the other, having during this year alone used it for close upon 100 illustrations of various subjects, including black and white diagrams for the lantern. In this case, the diagrams were white on black photo-mechanical plates, lantern size ($3\frac{1}{2}$ by $3\frac{1}{4}$), being employed, the negative being used for the slide.

J. H. BALDOCK, F.C.S.



J. H. BALDOCK, F.C.S.

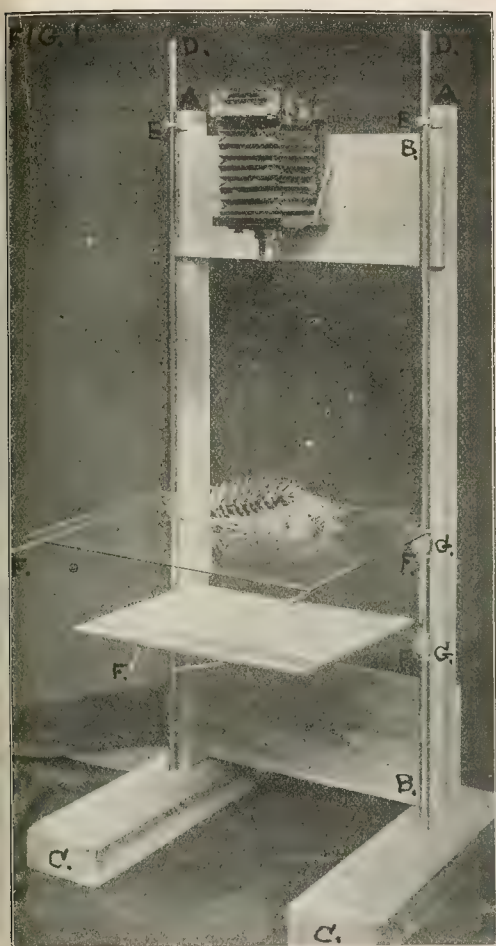


Fig. 1.—Apparatus.

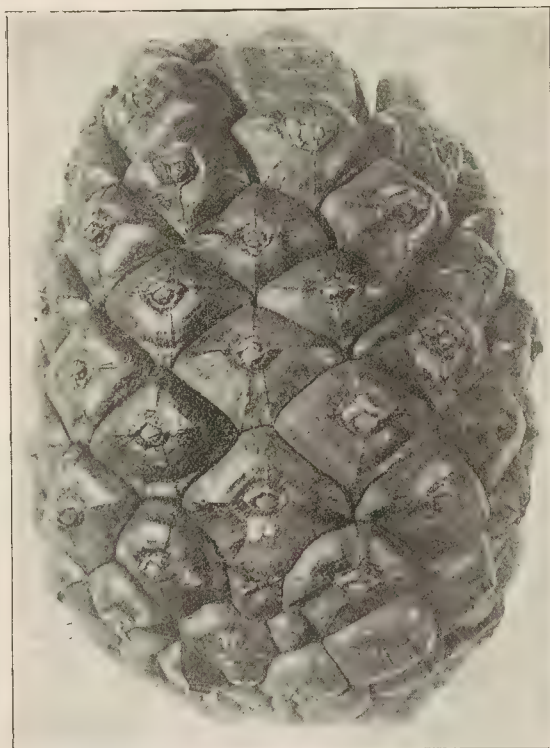


Fig. 2.—Pinus Pinea (natural size), grown in Kew Gardens.



By permission of]

Fig. 3.—Grand Canal, Venice.

[Virtue and Co.

ILLUSTRATIONS TO MR. BALDOCK'S ARTICLE.

Picture Postcards.

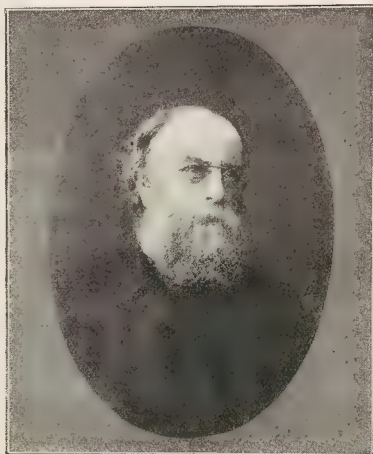
PICTORIAL postcards are in evidence everywhere, scarcely a day passes without the postman dropping one into the letter-box, the children of every household have their postcard albums, the windows of the stationers in the remotest and smallest county towns show little else but postcards, plain or coloured; nay, the village shop has added them to its former stock in trade, which a year ago consisted only of needles, pins, reels of cotton, Quaker oats, penny packets of stationery, ink, and bulls-eyes. A new industry, in fact, has arisen just when it was wanted to give an impetus to flagging trade; can we not trace the recent rise in the price of securities on the Stock Exchange to the pictorial postcard? What further need is there of Tariff Reform, for has not photography and its latest offspring, the picture postcard solved the whole difficulty?

But I wish to treat the subject seriously and from a photographic point of view. The advent of the card is a boon to the idle snap-shotter and his friends. He can now print his negatives on cards and send them through the post instead of carrying his prints in a pocket-book. Who does not know the pocket-book, with its score or two of untrimmed, unmounted, highly-polished prints with a tendency to curl, which is, in season and out of season, brought out for the benefit (?) of friends? The photographer may also thank the postcard for the introduction of a new size of plate and camera. The plate, $5\frac{1}{2}$ by $3\frac{1}{2}$, differs little in area from the 5 by 4, a small size, which, though it has some advantages over the quarter-plate, has never become popular in this country, no doubt on account of its awkward shape. The new size does not suffer from this drawback. Its proportions differ little from those of the $7\frac{1}{2}$ by 5 plate, which, though still used, is generally said to be preferable in shape to the half-plate.

Of course existing negatives may often be used for printing postcards, as the shape and size of the picture need not be the same as that of the card, a suitable mask being used to protect the surface not occupied by the print; but there can be no doubt that the best results are obtained when the negative is taken with a view to its ultimate use. I think the ideal card should show a narrow white margin of, say, $\frac{1}{8}$ in. at the top and sides and 3-16 in. at the bottom; no space for writing on need be provided at the back, now that the Post Office allow half of the front to be used for the "communication." If the cards are preserved in albums, written matter by the side of the picture detracts from the appearance, and the commonplace and trivial communication is generally of little interest to any one. Thus it is best to occupy the greater part of the back of the card with the picture, though, of course, there is no objection to a wider margin than the one I have suggested. If the photographer does not possess a $5\frac{1}{2}$ by $3\frac{1}{2}$ camera, but only a half-plate one, he can easily buy or make of wood or stout cardboard carriers to hold these plates. Many plate-makers now

issue this size. In order to facilitate composing the view the focussing screen, a mask having a central aperture of $3\frac{1}{2}$ by $3\frac{1}{2}$ should be fastened to the ground glass; this is far better than ruling lines on it to indicate the limits of the plate to be used.

When the negative is finished there are many ways in which the printed card may be produced. It will, however, if prints are to be made by any direct photographic method, be necessary to mask the edges. I have found loose masks most troublesome to use, so I take lantern-slide binders and stick them down by their gummed surface to the film-side round the edges of the negative; by this means the print can, so to say, be trimmed, two strips if necessary being used if a wide margin is desired. If the strips project, say 1-16 in. beyond the edges of the plate, when frames other than those specifically made are used, there will be no difficulty in correctly placing the sensitive cards on the negatives, and no risk of light reaching the margins and discolouring them. If a large, or fast



REV. T. PERKINS, M.A.,
Has devoted great attention to the study and photography
of architecture.

large, number of prints is required, bromide cards, printed in artificial light, will be found convenient, and when once the correct exposure for any negative has been found, if the printing frame is always placed at the same distance from the light for each exposure, the prints are developed by plunging them into a tray of more of developer, giving uniformity in the prints. The prints are then secured, and the development is very rapidly finished. But if only a few prints are wanted from the same negative, some printing process will be more convenient. Self-toning cards, with little trouble, give pleasing results. There is yet another way of printing, and that is to use a process-block made from a negative, and the cards are printed in ink. The artistic process block-making has not reached such a high standard that if the printing is carefully done on good card, the results leave scarcely anything to be desired. The cost of a block of excellent quality is about £1 a guinea, and that of printing about 5s. to 7s. 6d. per thousand. The cards, ready for printing, are made in sheets, so that four, six, or more blocks can be printed at once, and the cards cut afterwards. It is evidently cheaper to print a number of blocks together than to print each block singly, as the time and labour required to print a sheet of four or more is greater than to print a single card. There is money to be made by photographers, whether professional or amateur, who care to turn their attention to pictorial postcard work. Publishing firms will buy negatives from which to print in bromide or silver prints with sole right to produce in half-tone in the form of cards, the photographer retaining the negative and copyright for all other purposes. Or the photographer may make blocks and have them printed to sell direct or through stationers. Of course to secure success the photographs must be good, and also of taking subjects.

T. PERKINS

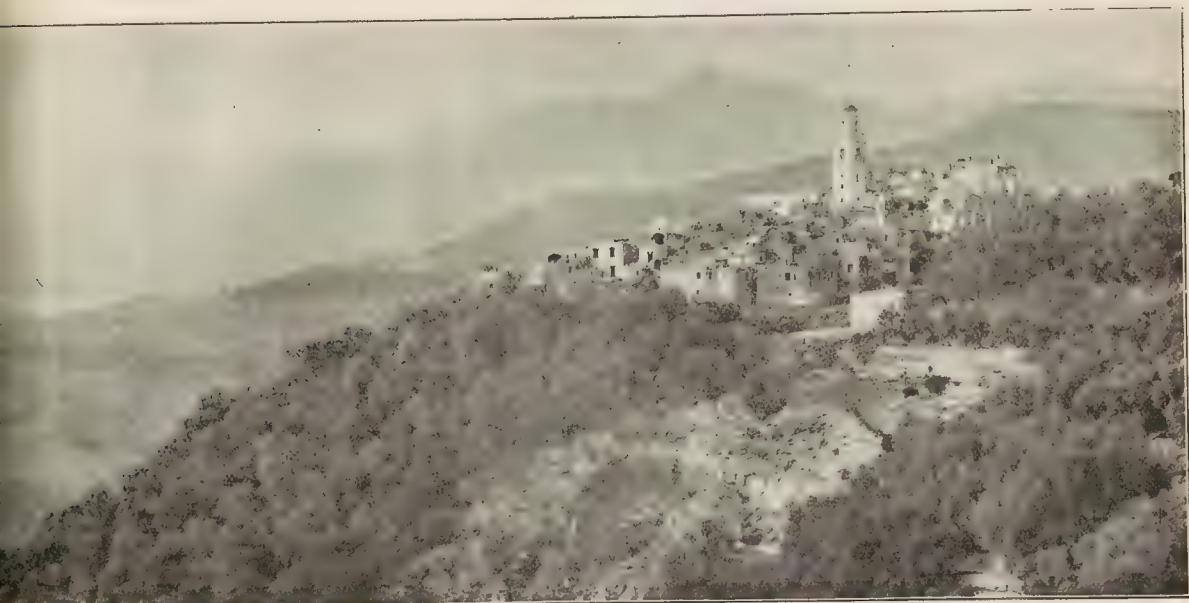
Some Notes on the Telephoto Lens and its Use.

TELEPHOTOGRAPHIC lenses now play such an important part in both outdoor and indoor photography, that a short account of the development of the telephoto idea, accompanied by a few practical hints on the use of teleobjectives, will perhaps interest those who already possess such lenses, as well as those whose present interest in them is still purely speculative.

The parent of all telephoto lenses was the "Barlow" lens, which was presented before the Royal Society in 1834 by Peter Barlow as an appliance whereby the power of a telescope could be modified by altering the position of the magnifying lens without removing the eye or losing sight of the object. As no practical photographic process then existed, the Barlow lens did not immediately develop into a telephoto lens, and it was not until 1851 that the Italian scientist Porro photographed the eclipse of the sun in July of that year with the aid of Barlow's

working independently on the subject, Duboscq in France, Dr. Miethe in Germany, and Thomas R. Dallmeyer in England. The latter was the first to place a practical instrument in the hands of photographers, the formal announcement being made in a paper read before the Camera Club, London, on December 10, 1891, although previous notices had appeared as early as October 16 of the same year in the photographic Press. It must here be mentioned that in 1890 Steinheil constructed a telephotographic instrument for the German Government, but the fact was not published till later.

This first telephoto lens was composed of two cemented combinations, and somewhat resembled in external form the widely known Adon lens of to-day, but it had various defects, and, although the type is still adhered to by some celebrated makers, Mr. Dallmeyer realised that it was capable of vast improvement. Therefore, he took a rapid non-distorting photographic



Example of Low-power Telephotography (reproduced by permission of Colonel R. W. Shipway).

system, that telephotography became an accomplished fact, although a speedily forgotten one, for it is only within the last few years that the distinguished optician, Dr. Von Rohr, re-announced his discovery of it. The first clear reference to terrestrial telephotography is to be found in the pages of THE BRITISH JOURNAL OF PHOTOGRAPHY for 1873, when Mr. J. Traill Taylor, who then occupied the editorial chair, recommended the use of an ordinary opera glass for producing an image upon the ground glass, which was larger in proportion to the camera extension employed, than could be obtained with a positive lens of the ordinary type. The opera glass not being corrected for photographic work, caused the temporary abandonment of the idea, and nothing practical came before the photographic world until 1891, in the latter part of which year patents were applied for by three opticians who had been

lens for his positive and fitted it with a non-distorting negative, thus producing the telephotographic lens as we know it to-day.*

A curious error on the part of all the pioneers in telephotography was an idea that high magnifications were essential, and consequently the use of the telephoto lens was limited, both choice of subjects and loss of speed reducing the opportunities for its use. Early telephotographers never considered their lens as an aid to artistic expression, and limited their work either to mountains at twenty miles, or a weathercock whose image should fill the plate at one hundred yards. We know better nowadays, and it is the man who magnifies the image of his ordinary lens to three, four, or at

* For the earliest history of the telephoto idea the reader is referred to the interesting and valuable papers read before the R.P.S. by Major General Waterhouse

most five times its linear dimensions who is making the best use of the new power. Every day sees new applications of the telephoto lens—flower studies in natural size, portraits, surgical records, and, last but by no means least, illustrations of natural history make us query whether in the future the "ordinary" lens will go the way of the "ordinary" bicycle and give way to the telephoto lens as the old bicycle has given way to the "safety."

Regarding the practical working of the telephotographic lens, it must be pointed out that it is nothing more than an ordinary lens with an equivalent focal length far greater than what is commonly called its "back" focal length. Apart from this distinctive feature, a tele-objective does not differ materially from the lenses we have long been familiar with. It is rather in the unusual class of *subjects* which are attempted that any actual difficulty lies. We have not been accustomed to photographing subjects whose nearest shadows are from 200 yards to 20 miles' distance, and in many cases fail to appreciate the different conditions required for exposure and development. The different method of focussing also gives the novice an opportunity of going astray, as it is difficult for an operator, whose only practice in focussing has been obtained while working with a positive lens of comparatively short focal length, to immediately appreciate the enormous difference in sharpness which results from the slightest touch of the pinion controlling the separation of the elements of a telephoto lens.

It may be well to deal with the various operations of telephotography in succession, briefly pointing out where errors may creep in, and how they should be avoided.

Focussing.—The principal difficulty in focussing with a telephoto lens is found in want of light, and this difficulty increases as the degree of magnification becomes higher. In some cases it is difficult to pick up the image at all, although it is quite practicable to make a vigorous negative with this same amount of illumination. To make the most of the light there is, we should select the very finest possible ground glass and anoint it with a little vaseline or animal fat, wiping off the surplus until any trace of smeariness has vanished. Vegetable oils should not be used, as they have a tendency to oxidise and form a varnish, which in time discolours and is difficult to remove. The surface of a screen carefully selected and properly greased will be found on examination to be very different from the "loaf sugar" surface of the screens of commerce. A focussing magnifier is almost indispensable to the telephotographer, and it may be of high or moderate magnifying power as the taste, or perhaps rather the eyesight, of the user may suggest. For examination of the ground glass a low magnifying power is to be preferred, and it is very convenient to have it pivoted upon its base so that the edges of the screen may be examined with the eye-piece at an angle with the surface, thus intercepting rays which in the ordinary way would be lost in the tube of the magnifier. Where aerial focussing is practised by means of clear spaces upon the screen, a magnifier of high power should be used, as one of low power has too much "depth," and will show an object in focus at a distance from the desired plane. This method of focussing is of great value for rapidly obtaining an approximate focus, afterwards getting the greatest possible sharpness upon the ground glass in the ordinary way. Beware of hurried focussing. The slightest movement of the focussing pinion has an appreciable effect, and you may pass and repass the point of sharpness, simply through undue haste.

When long camera extensions have to be used, it is frequently necessary to have some mechanical appliance to operate the focussing pinion while the operator is using the magnifier upon the screen. The double knuckle joint arrangement at the end of a long rod, known as "Hooke's Universal Joint," and well known to users of astronomical instruments, is decidedly

the best appliance of its class, but it has the drawback being somewhat costly. Failing an efficient mechanical method, recourse may be had to an assistant who will gently turn the pinion backward or forward as he is directed. Many workers use the rack of the camera as a fine adjustment, moving it inch or so either backward or forward to ascertain whether best focus has been obtained. The writer has not, however, found any advantage in this method, preferring the very decided "jump" into sharpness of the "lens" method of focussing to the very gradual loss or gain of sharpness by the "camera" method. When taking a new tele-objective into use, it is desirable to test it for its chromatic correction. Many high-price lenses have an amount of chromatic aberration which does not affect their use per se, but which is fatal when they are used as positives in telephoto combinations. An ordinary new view and a low magnification afford a ready means of testing. Focus an easily recognisable object as sharply as possible and note whether it is as clearly rendered upon the negative. If any other object be found sharper, it indicates chromatic error which must be allowed for or eliminated.

In the earlier days of telephotography it was believed to be necessary to focus with the aperture at which it was desired to expose, but practice has shown that this precaution is unnecessary and that focussing may be done with the full aperture of the lens, such stopping down as may be necessary being done afterwards. When a colour screen or light filter is used, the image should be examined for sharpness after placing it in position.

Magnification and Working Aperture.—Obtaining these data has been one of the most common stumbling-blocks in the way of the beginner, and yet the process is a very simple one. To arrive at the degree of magnification given by a known camera extension, we have only to divide such distance by the focal length of the negative lens, and add one to the result. Thus when working with 10 in. camera extension (measured from the back of the negative lens to the plate) and a $2\frac{1}{2}$ in. attachment, we get a magnification of 5 diameters: $10 \div 2\frac{1}{2} = 4 + 1 = 5$. The focal length of the positive lens has nothing to do with the degree of magnification, but of course controls the actual size of the image. For example, with the extension given above, and still using a $2\frac{1}{2}$ in. negative attachment, if the positive lens had a focal length of 5 in., we should have an equivalent focal length of 25 in.; but with a positive with a focal length of 10 in., the equivalent focal length would be 50 in., or, in other words, we should have an image twice the length, although in each case the degree of magnification remains the same. To obtain any desired degree of magnification we have only to extend the bellows to a length corresponding to the number of times we desire to magnify multiplied by the focus of the negative lens, and to subtract once its focal length; thus with our $2\frac{1}{2}$ in. negative we wish to obtain a magnification of 8 diameters, and proceed thus: $2\frac{1}{2} \times 8 = 20 - 2\frac{1}{2} = 17\frac{1}{2}$ in. The intensity or working aperture of the combination is nothing more than the F value of the aperture of the positive lens multiplied by the magnification; thus F.11 with a magnification of 4 diameters becomes F.44, and so on with all other openings.

Exposure.—After having obtained the F value of the diaphragm in use for any particular magnification, over-exposure must be avoided. Every photographer should carry in his head or his pocket-book Howard Farmer's table, which begins with one second at 10 ft. and ends at thirtieth at a quarter of a mile and over, subject, aperture, light, and plate being the same. Isochromatic screens are almost indispensable in telephotography, and the same screen will affect the exposure with different plates in a different ratio. It is advisable to test a screen with the brand of plates it is to be used with, and a convenient way of doing this is to stop an ordinary lens

own to its smallest aperture, and, without using the screen, give an exposure which is decidedly on the side of under-exposure. Then, after placing the screen in position, expose plate in strips by drawing out the slide an inch at a time, giving exposures which are multiples of that given to the plate without the colour screen. The two plates should be developed in the same dish, as the first appearance of the image affords valuable information. Do not rely upon exposure meter tests with a colour screen, even if you are using ordinary plates, as the writer has found this method to be altogether untrustworthy.

Development.—As a rule, negatives taken with a telephoto lens, especially when the magnification is considerable, appear

flat and over-exposed almost from the commencement of development. The temptation to stop development on seeing the image cloud over should be resisted, and development should be continued until the negative appears very dense. On fixing, a bright image should appear, plus a slight veil which may be removed if desired with the ferricyanide reducer, or allowed to remain if rapidity of printing be of little moment.

In conclusion, it may be said that sharp images and soft ones may be produced at will, that hardness or flatness, and all intermediate stages may be secured with a telephoto lens provided that a little study is given to the conditions of lighting and exposure.

EDGAR CLIFTON, F.R.P.S.

Photographic Lenses of the Past Half Century.

FIFTY years have passed since the foundation of this JOURNAL, and a sketch of the progress in lens construction during that period may interest many of its readers.

When compared with the great advance in the sensitive-

ness of the plate, it may appear to some persons that the optician has not less progressive than other workers in the photographic world. A closer examination will show that the material at his command is more restricted and its nature more intractable. To this must also be added the mathematical difficulties with which the optician has had to contend. Few of the early lenses have survived, and the generation which used them is now almost of the past. The modern photographer has not had any experience of the drawbacks attached to those early lenses, and he has been spared the failures which would have made him more appreciative of recent progress. It is consequently desirable to draw attention to the lenses used fifty years ago and then to describe briefly the more important lenses, which have since been invented. In the early days of this journal the lenses in general use were the Petzval portrait and two varieties of achromatised single lenses. The latter were formed of a double convex crown, cemented to a plano concave, and a double concave flint. The rapidity of the portrait lens, then as now, was about f. 4, but it did not work to focus. In other words, the light which affected the plate was focused in a different plane from that of the image seen on the reversing screen. It was not till 1858 or 1859 that this defect of the portrait lens was remedied. Other defects also existed in the lens, the area of good definition was very small, there was much astigmatism, and the field was round. This last defect, however, must be regarded from the standpoint of the work to be

done. For portraiture the photographer knows how to take advantage of it, to add to the charm of the picture, but for copying is most detrimental. As the other two lenses were single landscape combinations, it will be understood at what disadvantage the photographer was placed in copying. But notwith-

standing its defects, the portrait lens of Petzval was a brilliant optical achievement. Slow photographic processes then prevailed, and made the use of rapid lenses imperative. Petzval's invention at one stroke reduced exposure to less than a sixteenth of the time necessary with a landscape lens. For bust portraits the quality of the image of the portrait lens is very pleasing, and it is therefore not surprising it has withstood keen competition for over sixty years and that it is still preferred by a large number of professional photographers. The portrait lens, however, was not Petzval's only lens. He conceived the idea of the Orthoscopic for landscape purposes about the same time, and after the regrettable quarrel between him and F. Voigtländer, again took the lens in hand and introduced it in 1857. The aperture was about f. 8, but the lens suffered from want of rectilinearity. It found many friends, nevertheless. One point in the construction is deserving of special note. The lens has a positive front and a negative back combination, and it works at a much shorter back focus than would a single lens giving an image of the same size. The Orthoscopic is, in fact, a telephoto combination deprived of variable focus through fixed dis-

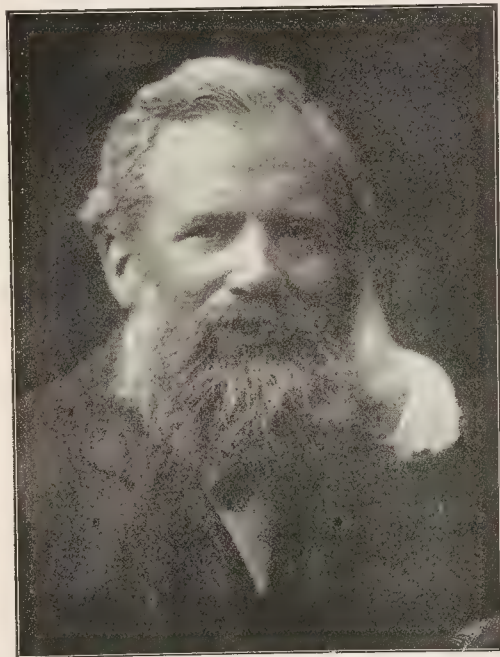


Photo by]

PHILIP EVERITT

[Furley Lenses.

Has in recent years devoted great attention to the subject of photographic optics.

tance of separation of the lenses. A just estimate of the work of J. Petzval, as a theoretical and constructive optician, should assign to him a very high position in photographic optics. In 1860, J. H. Dallmeyer introduced the triplet bearing his name. It was a successful attempt to solve the problem of adding recti-

tance of separation of the lenses. A just estimate of the work of J. Petzval, as a theoretical and constructive optician, should assign to him a very high position in photographic optics. In 1860, J. H. Dallmeyer introduced the triplet bearing his name. It was a successful attempt to solve the problem of adding recti-

linearity of image to the other properties opticians had combined in the photographic lens. The objective was a commercial success, and seems to have spurred Thomas Ross to the improvement of the Collen lens, brought out by his father. The Collen principle was retained in the Actinic Doublet, but the two achromatised meniscuses received more curvature and were placed closer together to include a wide angle of view. About the same time J. H. Dallmeyer introduced his rapid landscape lens, a single cemented combination, formed of two crown meniscuses enclosing the flint. The constructor was brought into controversy with Thomas Grubb by the claim for superiority of the new lens. Thomas Grubb, in 1858, had introduced the applanatic landscape lens, which was much appreciated by photographers, and with so good a lens it is not surprising that he should have disputed J. H. Dallmeyer's claims. In 1865 the first of the Steinheil photographic lenses made its appearance. This was the Periscope, a combination formed of two unachromatised meniscus lenses. It covered a very wide angle, and gave an image of highly satisfactory rectilinearity; desiderata which the photographer much appreciated. In the following year an actinically corrected achromatised series, called the Aplanat, was introduced. This lens, whether as the Aplanat, the Rectilinear, the Symmetrical, the Euryscope, or any of the other names manufacturers have given to it, bids fair to enjoy as long a life as Petzval's portrait combination. Some thought the fate of the Aplanats was sealed when the anastigmats were invented, but time has shown that they are sufficient for a large portion of the work the photographer may have to do.

The gradual advance of German opticians to the front rank is no doubt due to their patient, scientific work in calculating lenses, instead of trusting to the empirical methods which prevailed here. The valuable contributions to photographic optics by the late Professor L. von Seidel, a very able mathematician, were undertaken at the instigation of the firm of Steinheil, and we are indebted to the late Dr. Adolf Steinheil for a number of lenses of great merit, some of which are of striking originality. All these lenses were the result of calculation. It seems certain that Adolf Steinheil had full knowledge of the conditions necessary to the construction of the anastigmat. The antiplanatic lenses are proof of this. Notwithstanding the want of suitable glass, he succeeded, by an ingenious device, in applying those principles and though the result left much to be desired, a distinct improvement in the correction of astigmatism was realised in these lenses. If the rectilinear landscape lens of T. R. Dallmeyer be added to the list, we may say this ends the period of construction with the old crown and flint glasses.

Some reference should here be made to the events which were taking place at Jena. In 1846 Carl Zeiss founded an optical business in this old university town, and after some years made it his chief aim to perfect the microscope. He saw it was necessary for the purpose that he should secure the co-operation of a first-rate mathematician, and, after one unsuccessful trial, had the good fortune to secure the help of Professor Abbe. The important progress in the microscope, since Professor Abbe devoted his energies to it, is generally known. Abbe was forced to the conclusion that further progress in optical instruments depended upon the production of suitable varieties of glass, a conclusion also foreseen by Petzval and von Seidel. With the assistance of Dr. Schott, the son of a glass manufacturer, experiments were made. These were of such promise that a small factory was established at Jena. The Prussian Government, by granting a subsidy, supported it during a short period, and in 1888 a number of new kinds of glass were placed at the disposal of lens makers. The late Dr. Hugo Schroeder was the first photographic optician to make practical use of the new material by employing one of these varieties for the construction of the now obsolete Concentric lens. Its flatness of

field and freedom from astigmatism, recommended the lens to photographers for a short period, but it had no chance of prolonged success in competition with the more rapid Protar which soon followed. The firm of Carl Zeiss, after applying new varieties of glass to the microscope, turned its attention to photographic lenses. At first Professor Abbe sought to better these instruments by making them apochromatic, but it was soon found that the cure of astigmatism was of much greater importance, and Dr. Rudolph worked in that direction. In 1890 the first of the Carl Zeiss anastigmats was introduced, and it marked the beginning of a new period in photographic optics. These lenses are now known as the Protars. They cover a large field of view, which is flat and well corrected for astigmatism as well as the other errors which are compensated in the Aplanats. Although none of the series have the rapidity of the Petzval portrait lens, the excellence of their performance, added to the rapidity of the modern dry plate, brings them almost to the standard of a universal lens. The Protars may be looked upon as forming one group of anastigmats with a common feature of construction. They are unsymmetrical doublets with cemented surfaces performing different functions in each combination. Both halves are positive achromats, but the glasses and their form are such, that spherical aberration is corrected by the front combination, and astigmatism by the back. In the series with the back combination formed of three elements the correction is more perfect, but the underlying principle of construction is the same. The Double Protars must be regarded primarily as a series of single lenses. They are corrected similarly, but in uniting the two combinations of the simple Protar to form a single lens, the front half has been turned round and cemented behind the back. These single lenses may be used separately or combined to form doublets. When used in the latter form, they may be looked upon as connecting link between the Protars and the cemented symmetrical anastigmats, which comprise the Goerz Double Anastigmat, Steinheil's Orthostigmat (Type II.), and the Holostigmat recently introduced by Messrs. Watson and Sons. Here we have a striking instance of the similarity of direction inventors' minds may take when a given problem has to be solved. The lens, known as the Goerz Double Anastigmat, was the independent invention of at least three opticians—Emil von Hoegh, Dr. Steinheil, and Dr. Rudolph. In applying for the patent Emil von Hoegh secured priority. The three lenses depend upon the same principle of correction that is used in the Protars, but instead of curing spherical aberration in one combination and astigmatism in another, both corrections are effected in a single combination of three elements, the middle one of which combines suitably with the other two. The opposition of two of these compound lenses to form a doublet corrects distortion as well as residual errors. Messrs. Ross, Limited, manufacture the Zeiss and Goerz lenses under licence, and Messrs. R. and J. Beck, Limited, the Steinheil Orthostigmats (Type II.) It should be mentioned that a similar instance of concurrent invention happened in the case of the Orthostigmat (Type II.). Dr. Kaempfer, at Messrs. Voigtlander and Son's, was also calculating this lens, but Dr. Rudolf Steinheil anticipated him and obtained the patent. The right to manufacture was, however, granted to Messrs. Voigtlander by Dr. R. Steinheil, and the lens is made by them and known as the Collinear. Passing from this group, another, in which air spaces are introduced in the combinations, claims special attention. I am inclined to think that a feature in the lens, invented by our countryman, Mr. Dennis Taylor, may have been instrumental in directing the attention of German opticians to air spaces as elements of construction. The Cooke lens is primarily a triplet, and unlike other lenses of that class, there is no perceptible flare or ghost. This fact removed to some extent the prejudice against lenses with more than four reflecting surfaces. The Cooke lens became

very popular, notwithstanding its limitations, and brought the inventor much praise from Continental opticians, because of the principle of construction upon which it rests—that of giving the lenses a form which dispenses with diaphragm corrections.

In 1897 the Planar was introduced by the firm of Carl Zeiss. This was the first of the anastigmatic doublets, in the construction of which air spaces were used. Dr. Rudolph's object was to apply the Gauss principle of correction to photographic lenses. Another feature of the lens should also be noted. The two cemented elements in the combinations are hyperchromatic. The cemented contacts have scarcely any effect beyond altering the dispersion. A compound lens may be thus obtained of the refractive power it would possess, if made of either material, but the dispersive power is different. The Planar, in its freedom from spherical aberration and astigmatism, is a very perfect lens, and its construction appears to have suggested two others to Dr. Rudolph—the Unar and the Tessar. In the Unar construction, spherical correction, as in the Planar, is combined with astigmatic correction, as in the Protar. The combinations are formed of uncemented elements, and the lens is unsymmetrical. The Tessar resembles the Unar in having an uncemented negative front combination, but differs from it in having a cemented back combination like that of the simple Protar. Various other anastigmats, in which air spaces are used, have also been invented. Four may be instanced to give some idea of the many possibilities of combination. The homocentric, recently introduced here by Messrs. Ross, is a double combination corrected on the Gauss principle. The Busch Anastigmat resembles it in construction, but instead of abnormal pairs of glasses for the combinations, normal pairs are used. In this respect the latter lens resembles one constructed by Alvan Clark. The firm of C. P. Goerz has introduced a lens resembling the Orthostigmat (Type II.), but differing from it by the substitution of an air space for the middle-glass element in both combinations. The Unofocal, invented by Dr. Rudolf Steinheil, might at first sight be taken for the same construction, but it involves different principles. The glasses used, both crown and flint, are of the same refraction, and their foci are also the same. In the Goerz lens an abnormal pair of glasses is used, but in the Steinheil lens it may be said that neither a normal, nor an abnormal pair is used. This is a new departure.

It has been shown that the cemented anastigmats may be subdivided into two groups, the symmetrical and the unsymmetrical, and the same may be said of the uncemented anastigmats. But besides doublets, we now have triplets, for Messrs. Voigtländer, under the direction of Dr. Harting, have introduced two constructions of this kind under the names Heliar and Dynar.

Although the work of Mr. H. L. Aldis has been reserved until

that of subsequent inventors has been described, it is equally deserving of notice. This optician became known through the Stigmatic lens, which he calculated for the firm of J. H. Dallmeyer, Limited, and it has enjoyed considerable popularity. The construction is rather complicated, but a new lens bearing his name, which has been issued since his departure from that old-established house, shows that his work has been in the right direction, that of simplification. It should be remembered that the modern lens requires great exactitude of workmanship, more especially when air spaces are used in the scheme of construction. It is therefore of much importance, not only with regard to cost, but also for freedom from error, that the lens should be as simple as it can be. The lens recently introduced by Mr. Aldis has three elements only, two of which are cemented together. For simplicity of construction this surpasses even the Cooke lens. Yet simplicity should be subservient to correction.

It would be hardly right to close this outline of the history of photographic lenses during the past fifty years without mentioning the telephoto combination. Such a lens may be formed by uniting two positives, or a positive with a negative. There is no doubt that Porro was the first to use the combination for photographic purposes, the type adopted by him being a positive united to a negative lens. This was in 1851. The late editor of this journal, J. Traill Taylor, prevented the combination from being forgotten, and when Mr. T. R. Dallmeyer, at the suggestion of Dr. P. H. Emerson, revived it, the discussion as to priority of invention between him and Dr. Miethe, who was then with Messrs. Voigtländer, disclosed the fact that Dr. Hugo Schroeder and Dr. Adolf Steinheil had made telephoto lenses some time before. The slowness of the wet plate process probably stood in the way of the Porro lens, but the rapidity of the dry plate was favourable to the revival of the combination, and a growing sphere of usefulness now seems to be open to it. Some very charming portraits have been produced with the lens, and it is even gaining ground as an adjunct to the hand camera.

All the lens combinations which have been invented during the last half-century have not been mentioned in this sketch, but I trust that those I have selected will give the photographer an idea of what has been accomplished, and make it clear how great is the debt we owe to the few men who have made photographic optics their study. The interest the successive editors of the BRITISH JOURNAL OF PHOTOGRAPHY have hitherto shown in regard to the lens makes the paper a valuable record of the progress in photographic optics, and in sending you my best wishes for continued prosperity, I hope that interest will remain an important feature.

P. EVERITT.

Some Experiences with Celluloid Films.

It would, perhaps, be difficult to indicate a more striking instance of the remarkable popularity to which the practice of photography has attained during the last year or two than is to be found in the use of celluloid films, and the compact and perfect cameras now so readily obtainable and which render their manipulation so easy to the uninitiated.

But this excessive simplification of photography—if I may be allowed to use such a phrase—has, it seems to me, created quite a distinct type of amateur, who personally contributes nothing to the production of the photograph beyond the mere "pressing the button," to use that which has now become a popular phrase in everyone's mouth.

Indications, however, are not wanting that the more serious class of amateur workers, and those to whom the title is more properly applicable, have been, and are, attracted by the many obvious

advantages of film photography to adopt that method of working in preference to the use of glass plates; and, as this tendency has recently considerably increased, due in part doubtless to improvements in the manufacture of the films themselves, some hints and suggestions, gleaned from the practical experience of two years' experimental and practical working, may be of interest to some readers of the Jubilee Number of THE BRITISH JOURNAL OF PHOTOGRAPHY.

Now, the first question that is not unnaturally put by those seeking for information upon the subject is: Are films as reliable as plates? My answer is that if good films are procured, and reasonable precautions observed, films are as trustworthy as glass. Obviously, on the first head, it is impossible for me to give any useful information without running the risk of an action for libel; but the purchase of a few packets

or spools of film of different makes, and a careful comparison of the resultant negatives, will go far to remove any doubts on this score. It is a fact, however, that although a very great general improvement has taken place in the manufacture of films, some makes are still of superior quality to others.

I would warn the intended exponent of film photography not to be discouraged by the mysterious shortcomings and defects sometimes alleged against films, many of which have no foundation in fact, and would, indeed, apply with equal force to plates, and are, in truth, due to want of skill and experience on the part of their users. This is, of course, no matter of surprise when it is remembered that so many commence the practice of photography with films, and necessarily lack the technical knowledge that would enable them to avoid many of the defects of which they complain, and which they regard as inherent in the films themselves.

Films are not faultless, nor are plates, but the former are often far more rigidly criticised for failings than are the latter. As an instance of this I found last summer a batch of films exhibiting curious irregular markings which at the moment I could not account for. In the course of my investigations I exposed some rapid plates under as nearly as possible similar conditions, and developed them with the same developer, metol-hydroquinone, and met with precisely the same defects. After further experiment I found the cause to be two-fold: (1) The employment of an inferior sample of sulphite of soda; and (2) allowing the films to remain stationary in the developer. I may say at once that although widely recommended, I do not regard metol-hydroquinone as a suitable developer for celluloid films. Apart from the production of markings, which not infrequently occur, it also tends to produce a coarse, granular image, and the negatives lack that roundness and gradation which are obtained with comparative ease with the pyro-soda developer, which I regard as emphatically the best all-round

developer for film work. In making up the solutions, whatever be the developer employed, the anhydrous form of the sulphite salt should invariably be employed. It is somewhat more expensive, but as only half the quantity of the ordinary variety is needed, the pocket is not seriously affected.

It is necessary to refer to one very serious charge which is frequently alleged against films, and that is their supposed lack of keeping qualities. But here, again, a good deal of misapprehension appears to exist in the minds of those who use plates, and who rely for their information upon what they are told by others. It is not an unknown thing for plates to deteriorate under improper or unsuitable conditions, nor are films immune from such disabilities. But given proper precautions as regards the obtaining of fresh films, and their subsequent careful storage, no apprehension on this score need deter the careful and conscientious worker from adopting them. Some films appear to possess superior keeping qualities to others; but

with all special precautions must be taken to preserve them from the deteriorating influences of damp, and the fumes produced by the burning of gas. This is best secured by storing them in an air-tight box, or tin, constructed on the platinum paper, calcium storage-tube principle. There is no extra difficulty, and very little expense, in adopting this plan; for either at home, or when travelling, some provision must be made for storage, and the adoption of this method will prove an effective safeguard against the deteriorating influence of damp. Care should, of course, be taken when purchasing to see that the films are fresh, and have not been kept in a shop under unsuitable conditions for a longer or shorter period. Most manufacturers assist the consumer in this respect by printing the date of issue on the packet or spool; and, as regards the second danger, I make it an invariable practice to order films direct from the makers, and even should I run short whilst on tour

I get a fresh supply mailed rather than run any risk of getting stale material from a local source.

I think it an advantage, in all events with roll films, to develop as soon after exposure as possible, as the films then seem to be more susceptible to any possible deteriorating influences. Roll films, by this way, would appear to be less likely to be so affected than flat films, as the tight winding and protective influence of the backing paper must afford a greater degree of protection than is possible in the storage and packing of cut films. The development of roll film when all the exposures have been approximately uniform is a simple and expeditious operation; but to find it an easier matter, when the films are quarter-plate, or larger, to cut the spool into two and develop each half separately. The practice, often advocated of developing several films superimposed in one dish should be studiously avoided, as it is the cause of many failures, including uneven development, spots, patches, and markings of all kinds due to the unequal action of the developer.



JOHN A. HODGES,
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Society of Great Britain.

I am aware that the plan is recommended by the film makers in their instructions, but they would, in their own interests, be well advised to entirely delete it. The system, as a time-saving device, is, of course, very attractive, and, because of that fact, I have given it a considerable trial; but the experience so gained compels me to condemn it in the interests of film photography in the strongest possible terms.

In the space at my disposal it is impossible to say much about development; but I have found that most of the published formulae give a softer and better type of negative if diluted with at least a third more water than the amount stated in the directions. But on two points with regard to the after-treatment of films usually advised, I desire to give a word of warning. The glycerine bath in which it is recommended to soak the films after fixation, although undoubtedly effecting the object of reducing the tendency to curl, at the same time so greatly increases the hygroscopic condition of the

as to induce a condition of things far more serious and detrimental to the life of the negative than the evil which is intended to remove. The curling of rollable film, although somewhat perplexing at first, is a matter which soon ceases to be annoyance, and one that may be reduced to a minimum by pinning the films by the four corners to a blotting-board, allowing them to dry, and then immediately placing them under pressure.

Another point in which, in my experience, heterodoxy seems to have the advantage of orthodoxy is in omitting the customary alum bath after fixing. If fixation has been, as it should be, thorough (and films always require more careful treatment in the fixing-bath than plates, owing to their tendency to float and rise above the surface of the solution), and the washing is complete, the necessity for the alum bath does not arise, and on occasions serious disadvantages, very often causing the film to split and leave its celluloid support.

Of the advantages of films, and particularly the rollable variety, it is almost unnecessary to write, for they are self-evident. Speaking personally, I have found them the greatest boon in lightness and portability, making that which was formerly a labour a pleasure. Much of my photographic work consists in photographing a district or tract of country with a view of securing a pictorial itinerary to be afterwards used for lecturing purposes, and when the district selected happens to be, as is frequently the case, of a mountainous or rugged character, the fatigue involved in carrying even a quarter-

plate camera, with half-a-dozen slides, and the usual necessary impedimenta, is considerable, and the substitution of rollable film for glass plates on such occasions has, as I have already said, converted that which was formerly a toil into a pleasure.

Speaking of the results, which, after all, to the serious photographer is the main consideration, whilst I have had many failures, due for the most part to my own want of care, or lack of special experience, I cannot find any material difference in the quality of the slides produced from my film negatives and those made on glass plates; and in order that you, my readers, may form your own judgment on this point, I am submitting to the Editor with this article several prints from roll-film negatives, which I hope he will find room for, by way of illustration to this article.

In case I may have been misunderstood in what I have said about the keeping qualities of celluloid films, more especially as *THE BRITISH JOURNAL* has so wide a circulation abroad, it is perhaps necessary to add that my observations refer solely to the use of films in the British Islands, to which latitudes my experience is confined. Of their keeping qualities under more severe climatic conditions I cannot speak personally; but from what I learn from those who have used them abroad it would seem that a dry heat has no deleterious effect, but danger is to be apprehended when a high temperature and a humid atmosphere are encountered; but it must not be forgotten that very few glass plates pass unscathed through such adverse conditions.

JOHN A. HODGES, F.R.P.S.

Some Notes on the Past, Present, and Future of Stereoscopic Photography.

TO the gifted Editor of this JOURNAL I owe the encouragement which first led to my taking an active interest in the subject of stereoscopy. Himself a past master in this branch of the photographic art, his teaching and example fostered my enthusiasm, and ultimately gave me confidence to undertake a journey through Egypt, Palestine, Syria, Turkey, Greece, and Italy, for the sole purpose of collecting stereoscopic illustrations of some "regions of old renown," and of the life of their present inhabitants.

I trust this explanation will make my offer of the following notes to his Jubilee Number appear less an act of presumption than venturing upon ground already traversed by my friend than grateful acknowledgement of my indebtedness to his able guidance.

We find on looking back into history that binocular (or stereoscopic) vision is no new thing. About 2,000 years ago Aristotle studied and wrote on binocular vision, as also did Galen, and 1,500 years ago treated the subject even more fully than Leonardo da Vinci (1452-1520) is stated by some authorities to have been the first to suggest the principles of binocular vision, but it was also known by other painters and physicists. Photography not being then in use, geometric diagrams were made as "slides," and continued to be used until the time photography came and enabled workers to make a larger variety of more pleasing pictures.

Professor Charles Wheatstone, in 1838, devised the first stereoscope, and described it in "*Philosophical Transactions*." Wheatstone's theory was that if two plane pictures were made of an object from the positions as seen by each eye separately, and the two pictures were superimposed, they should appear to the eyes to give the same relief or solidity as the object itself.

He constructed an instrument in which two mirrors are mounted at right angles in the centre of the stand, at each end are carriers to take prints, and the positions of these can be adjusted by means of screws at the base. By placing one of the pictures in each carrier they can be adjusted so that their reflections from the mirrors pass through the two openings (sometimes fitted with lenses to magnify the picture) in front where the eyes are placed, and these reflections coalesce or blend apparently behind the mirrors.

Prior to this we find no trace of the stereoscope itself. None probably were used, for proper stereoscopic effect may be obtained from a print without the aid of a stereoscope, as described by the Editor in a paper read by him at the Gloucester Convention in 1899, and reprinted in these pages.

Taking events chronologically, we find that, simultaneously with Wheatstone's invention came Daguerre's discovery of photography; but there were no Daguerreotypes made for the stereoscope until 1845. When the Daguerreotype was first applied to the stereoscope it became all the rage, and when opening the great London Exhibition of 1851 the late Queen Victoria showed her appreciation of the two inventions by sitting for a three minutes' exposure; with her Majesty were also the Prince Consort, Napoleon the Third, and Empress Eugenie.

About a year previous to this event, however, Sir David Brewster suggested lenses instead of mirrors for combining the two pictures, and he made the well-known and old-fashioned simple box-pattern, with lenses at one end, a place to slide the pictures in at the other, and an opening at the top to let in the light. The lenses thus used slightly magnify the picture, and produce the desired result by refraction instead of reflection. Brewster, who died on February 10, 1868, at the age of eighty-seven years, probably did more than anybody else

to popularise the stereoscope, and his book on the subject is as well—if not better—known than his "Life of Newton" and "More Worlds than One."

At the time of the exhibition mentioned above stereoscopic photography began to make headway. Duboscq, of Paris, took up the work, and made the slides commercially and exhibited them there; he also made a stereo-microscope. The French have always been ahead of us in stereoscopic matters, and others who took up the process were Ferrier, Soullier, and Clousard, all of whom in the end joined forces and turned out work of the finest quality, and obtained prices ranging from 12s. 6d. to 21s. each for their transparencies by the albumen process. They also came to photograph the interiors of Buckingham Palace just before the death of Prince Consort, and gave as much as three days' exposure for some of the rooms.

About five years before the first issue of *THE BRITISH JOURNAL* (under its old name) appeared, stereoscopic portraits began to be the craze, and some of the best-known men—T. R. Williams and A. Claudet—charged as much as two and a-half guineas for their stereo-Daguerreotypes, with extra for tinting. At the end of the fifties most photographers were doing stereo portraits on paper and getting fancy prices for them. This went on and on, with the result that in 1862 stereoscopic photography was at the zenith of its popularity, and for many years held its own. Stereoscopes were to be found in almost every drawing-room.

William England, one of our greatest authorities and ablest of stereo workers, has said that at the Exhibition of 1862 stereoscopic pictures were the most popular form of souvenir, and the sales ran into six figures. He further states that "ninety-five per cent. of the views sold were for the stereoscope, and of the many popular subjects I myself produced from ten to fifty stereoscopic negatives of each, which were always kept printing." Of two favourite pieces of statuary it is on record that he had a hundred negatives of each.

Unnecessary costly, and clumsy into the bargain, the hand form of the instrument was gradually superseded by the much more convenient cabinet pattern, with facilities for the ready mounting and changing of fifty slides or upwards on an endless revolving band, each slide being brought into position by simply turning a knob. But even this improvement did not long avail to save the stereoscope from practical desuetude. Its relegation to the limbo of discarded trivialities was probably due to two main causes, at the latter of which it may be instructive to cast a retrospective glance.

"The first, but minor, cause was the costliness of both instruments and slides. Our own first hand stereoscope, box-pattern, represented an outlay of exactly two guineas; our last cost one shilling and sixpence. We prefer to use the latter, though we exhibit the former.

"The prices charged for slides, as we previously stated, were

also high; but costliness alone would not have proved a deterrent to the continued vogue of the stereoscope.

"The second, and principal, factor in its overthrow was inferiority and indecency of the slides, due, undoubtedly to rapacity and unscrupulousness of the ordinary 'professional dealer' of days gone by. It was all in his hands, and had been content with a fair margin of profit that would still have enabled him to supply the work of able and conscientious practitioners, all would have gone well. But let us examine carefully any old collection of slides, and what do we find? When not vulgar, replicas from the same negative are not infrequent, while slipshod adjustments and slovenly mounting are the rule. Even when artistic taste or knowledge had any part in the selection of subjects (which was frequently the case), the work itself appears to have been shockingly scamped. Insufficient attention to washing and

the purity of materials are abundantly evident from the usual results. Meanwhile, instruction in drawing and other branches of graphic art is becoming universal, and published results of various pictorial reproductive processes were combining with the influences of increasingly frequent exhibitions of painting and sculpture to raise the general standard of taste, and educate the rising generation to some of the essentials of art. No wonder that the wretched productions we have spoken of found little favour with the higher intelligence of a later day."—J. Ashby, in the "Photographic News," August 16, 1901.

There is danger looking ahead again now, for only a week we saw exhibited in a well-known dealer's stereoscopic pictures of a very dubious character. This sort of thing is not to be encouraged, or it will certainly prevent the stereoscope again becoming popular in the best society.

We must not be understood as condemning indiscriminately professional workers of the past. We have alluded to honourable exception, and the names of Cooper, Wilson, Bedford

England, Goode, and Blanchard claim distinction as those pioneers and honest enthusiasts in stereoscopic work, and many others might be mentioned who were distinguished well for artistic taste as for thoroughness in their method of production. But for one who worked conscientiously for love of his art there were hundreds who had no higher aim than to utilise a popular fancy for the turning of the nickel shilling.

Let us now hark back a little and see what progress has been made in cameras during this time. In the very issue of this journal we find several references to stereoscopic photography. At a meeting of the Liverpool Photographic Society, held on January 3, 1854, a camera, invented in Paris for taking binocular pictures, was described by Mr. Burges. It carried two lenses so as to take two pictures at the same time. It was called a "Quintoscope." This is actually



P. R. SALMON, F.R.G.S.,
Editor of the "Photographic News."

reference I can find to two lenses being used at one time. S. F. Mascher's camera, having one lens only, which could be moved from one side to the other, is in the same issue described to be the most perfect camera on the market, and another method in the same issue is that of converting an ordinary half-plate camera by means of a sliding front, and a clumsy zinc arrangement in the dark slide for exposing the plate one half time.

Other cameras mentioned are by Cartwright, Abraham, and the moveable bar method of Latimer Clark, which has been often described in these pages and in the almanacs. The "single-camera" method is largely in use even to-day, and a number of adapters for using single cameras for making stereoscopic pictures are on the market.

Although the first "instantaneous" photograph was taken in the early fifties, some considerable time elapsed before instantaneous stereoscopic pictures could be taken, chiefly because of the necessity of moving the position of the single cameras, and it was not until the "side-by-side" cameras came into use that instantaneous work became possible. I may here remark in parenthesis that in Robert Hunt's "Handbook of Photography for 1851" I can find no mention of stereoscopic photography, but in the 1853 edition "it is thought advisable to devote a short chapter to some notice of it." What he does say is interesting, and I regret the space at my disposal will not allow me to make extracts.

The neat folding pocket stereoscopes of to-day are not so new as they may believe they are, for early in 1855 Mr. S. F. Mascher, Philadelphia, took out a patent for a locket containing two lenses and supplementary lids for pictures. The lenses were hinged on one side and the lids on the other of a frame like a watch-case, and they shut up one within the other like a locket.

The first number of the "Almanac" was issued in the year 1853, and stereoscopic photography was at the height of its popularity; it is interesting to note that the editor states stereoscopic pictures should not be vignettised, but be sharp up to the edges, and mounted at 2½ ins. distance between corresponding points of the pair, and upon black or stone-coloured card.

Black cards for mounting do not seem to have caught on, and if workers knew how very effective they were I am sure they would be used. They have been strongly advocated quite recently by Mr. H. Underhill, of Oxford. In the advertisement pages of the 1862 volume will be found a picture and description of Hare's portable stereo camera, which weighed 12 lbs., and measured 8½ in. by 6 in. by 5½ in. From that year onwards the subject of stereo-photography—in some form or other—has rarely, if ever, been missing from the pages of that annual.

What is the present position of stereoscopic photography? Making generally, it is in a better position now than it has been for a quarter of a century. The manufacturers are catering for the stereo workers in every possible way, and there is really a dealer's catalogue but what has something in the stereoscopic line. It is not coming to the front in leaps and bounds, as many thought it would, but in a slow and steady manner. One little drawback to a beginner is, I think, the light confusion which exists in the matter of sizes. Roughly speaking, there are three: The real stereo size, 6½ by 3½, double size, 6½ by 4½, and the half-plate adapted for stereo work. After many years' continuous working with one or other of the sizes, I unhesitatingly give my verdict in favour of the "double size" (6½ by 4½). The majority of cameras on the market do not give pictures large enough for judicious trimming. I must, however, I strongly advocate the "double quarter" size. I do not wish to insinuate that good work cannot be done with the narrower plates, for I have seen and done excellent work on them; but they need—especially if it be a hand camera—a good worker to manipulate them, and, what is most

important, a good view-finder. This, however, is not intended to be a technical article, but a general survey, so I must proceed.

Stereoscopic postcards are on the market, and are selling well, and stereoscopic slides in half-tone may be had for about one penny each, and sometimes even less. The screen effect, however, is very irritating to the eyes, and I am now carrying out some experiments with a view to obviating the defect.

There is a lot yet to be done in the stereoscopic line. Old methods which have not been a real success might be revived and improved upon. At the present time, for example, there promises to be a revival of the old method of two-colour stereoscopic effect obtained by printing the two elements of the picture in complimentary colours on the same piece of paper or card, and viewing with similarly-coloured spectacles, so that each eye only sees its appropriate element of the stereogram. Hundreds of specimens made abroad have recently been put on the English market, and Messrs. Boots, of Fleet Lane, have sent us some of their productions, which they call bi-photo prints on cards about 4 in. square.

The desirability of stereo projection would naturally occur to the very earliest worker, and De la Blanchère, in 1853, seems to have been the first to attempt this, his idea being to project one picture through blue glass and the other through yellow, and provide the spectator with a pair of eyeglasses also provided with the same coloured glasses, that for the right eye being of the same colour as the glass through which the right-handed picture was shown, and the left eyeglass corresponding to the left-hand picture, thus apportioning each picture to the correct eye. The positives were of the ordinary type, and not themselves coloured, and the yellow and blue lights mixed gave white. The same idea was utilised by D'Almeida in 1858 only with green and red glasses, and later by Molteni, Schobbens, and Freshwater.

Anderton used polarised light, and each spectator was provided with prism eyeglasses, the screen being in this case covered with silver foil to obviate loss of light. Stroh utilised the phenomenon of persistence of vision, the pictures being alternately and rapidly thrown on the screen and eclipsed, an idea that has also been suggested for cinematograph work. Up to the present, however, there is no satisfactory method of stereo projection.

The last stereoscopic competition, held by the paper I have the honour of editing, opened the eyes of some of our critics, who, at the initiation of the competition, forecasted a failure, and said we were whipping a dead dog. The results were extremely satisfactory, the competitors running into many hundreds. The results afforded a welcome assurance that the revival of interest in this branch of photography, predicted a few years ago as follows by a former editor, Mr. E. J. Wall, may be regarded as fairly established:—

"It is undoubtedly the most perfect of every branch of photography, giving as it does an appearance of relief and solidity to the objects which is extremely realistic. It has for many years fallen into disuse, and only lately has there been a revival, and that entirely among amateurs. . . . Stereoscopic photography will, I believe, gain steadily in favour, and it ought to; for, as I have said before, the results obtained are unapproached by any other process, and if the main principles are grasped, and all the operations systematically carried out, it is not a difficult department of artistic photography."

In conclusion, let me say that in stereoscopic work it will be found that far greater power of making pretty and interesting pictures out of commonplace material exists than when using an ordinary monocular camera; and whilst the ordinary rules of composition apply it must not be forgotten that the real beauty of a stereoscopic transparency or print lies in its technical excellence and in its semblance of relief, and everything which goes to increase this is, generally speaking, an advantage. A hedgerow, bush, tree, or an uninteresting row of posts

or palings in the near foreground should be utilised, for by so doing the distant planes are thrown back and relief is much enhanced. Distant views without any near object should never be attempted, as, unless the two lenses are very widely separated, the subjects are wanting in relief, and appear uninteresting. I find that a prominent object within 15 ft. to 20 ft. of the camera gives, with ordinary lens separation, the best results. Flowers, statuary, studies of hoar-frost, and other

objects in relief make the best subjects. Fuzzy or so-called naturalistic—Salonic, if you like—pictures will not do for the stereoscope; we do not see such things in Nature. What is wanted is good, clean, honest, and pure photography. Will not some of our so-called leaders in the world of pictorial photography take up the stereoscope?

P. R. SALMON, F.R.P.S.,
Editor of the "Photographic News."

Orthochromatic Prolegomena.

HISTORY repeats itself. Twenty-five or thirty years ago photographers were regarding with the utmost reluctance the advent of the gelatine plate, clinging to the wet plate with one hand and reaching out in a tentative, half-hearted manner towards the dry plate with the other. A similar state of affairs has been repeated in the history of the orthochromatic plate. For at least fifteen years the colour-sensitive plate has been knocking at the photographer's door in almost its present stage of efficiency. Its acceptance has been even more half-hearted and protracted than that of the gelatine plate.

Two noteworthy instances illustrating the misuse of orthochromatic plates recently came under my notice. In one a tourist going abroad bought a supply of orthochromatic plates, and had his hand camera fitted with a filter; the majority of his exposures were made with the filter in position, and were of the usual "snapshot" character. It is hardly necessary to say that the resulting negatives were scarcely the "things of beauty and joys for ever" he intended them to be, and he rightly says that he gets on much better with the ordinary plate. In the other case a tourist took with him orthochromatic plates but no filter, and complains that he can see no advantage



Fig. 1.—View taken without a filter.

Within the last two years or so manufacturers and dealers have conspired to force orthochromatic plates and spectrum filters upon an apparently unwilling photographic public, and now on all sides orthochromatic plates and filters are used and misused with a generosity that contrasts strongly with the years of neglect they have suffered.

In many instances no effort seems to be made by the users of orthochromatic plates and filters to understand the principles that govern their application; it seems to be sufficient for most that they have light filters and orthochromatic plates, and are in a position to say that such and such a view was taken by their aid.

in them over the ordinary plate. A very little study of what for them, was quite a new departure in photography, would have obviated the subsequent disappointment, and have enabled them to realise the superior translation given by the orthochromatic plate.

At the risk of being elementary, and restating much that has been already many times and better said, I propose a review for the benefit of the uninitiated in orthochromatic photography the main points in its application to outdoor work, and I may, perhaps, be allowed to hazard the hope that the summary of orthochromatic procedure will not be inappropriate to the Jubilee Number of the BRITISH JOURNAL OF PHOTOGRAPHY.

PHY, a paper that in itself is a history of progressive photography.

It is a matter of common knowledge, even among beginners in photography, that some colours photograph "badly." Blue produces too light, while, on the other hand, yellows and reds are much too dark. The explanation of the difficulty lies in the fact that silver salts, as ordinarily used, are far more sensitive to the violet and blue region of the spectrum than they are to the yellow and red. As a consequence, blue becomes fully exposed before the yellows and reds of a subject have commenced to have any action on the plate, owing to its low sensitiveness to these colours. It must not be imagined, however, that silver bromide, of which gelatine dry-plates mainly consist, is insensitive physically to the yellow and red of the spectrum; a prolonged exposure would result in these colours impressing the plate to a considerable extent; but the exposures necessary to do so belong more to the domain of experimental photography than to the everyday work of the photographer.

Photographic physicists, quite early in the history of photography, found that it was possible to considerably modify the sensitiveness of the silver salts towards the different parts of the spectrum, by adding various substances to the sensitive silver salts; and Ives, in 1879, showed how collodio-bromide plates might be made colour-sensitive by treating them with a solution of chlorophyll. A few years later H. W. Vogel considerably advanced colour-sensitive photography, if, indeed, he did not lay the foundation of orthochromatic photography, as we of the present day know it.

It was readily seen that in spite of the advanced sensitiveness to the yellow and red rays conferred on the silver salts by dyeing the films or emulsion with eosine, etc., the general sensitiveness of the plate to the violet and blue was still far in advance of its sensitiveness to the less refrangible rays, so the source was had to checking the activity of the blue rays by interposing between the object and the plate a yellow screen, which filtered out some portion of the too active blue rays, while the yellow and red were allowed to pass with their energy undiminished. Orthochromatic photography, then, consists of dyeing the ordinary silver salts to increase their sensitiveness to the yellows and reds; but as this alone is not sufficient to secure correct visual interpretation, owing to the relatively greater sensitiveness of the plate to the blue, a portion of this colour is filtered out by the use of a spectrum filter.

Some few workers contend that by using an undyed plate with a yellow filter similar results are obtained as when using an orthochromatic plate. It is true that the yellow filter would depress the activity of the blue rays, and so a truer result would be had, but the exposure with an ordinary plate would be enormously protracted, in addition to which the sensitiveness of the ordinary plate to such yellow and red rays as passed through the filter would be infinitely less than in the case of the orthochromatic plate specially sensitised for these rays.

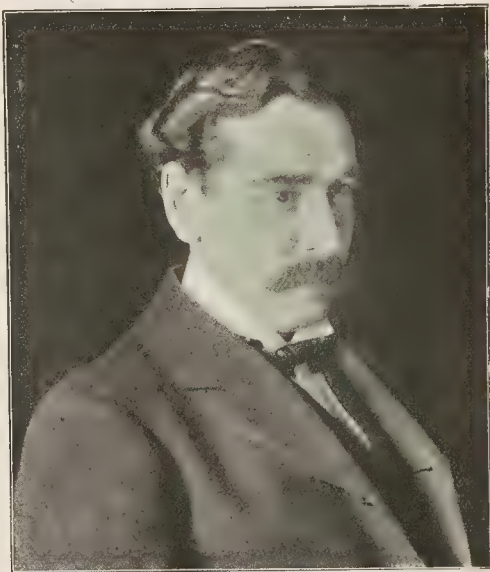
The beginner in orthochromatic photography, who elected to

make a comparative test in the field between an orthochromatic plate without the filter and an ordinary plate, would probably be much disappointed. If the test took place on an average subject in a good summer light, probably no difference would be observable between the two negatives; the blue sensitiveness of each plate is so great that the colour translation would be about equal. But if the yellow filter is used with the orthochromatic plate a very marked difference is at once seen; the blue of the sky is reduced in activity, so that in the negative the white clouds stand out against a dark background. The extreme distance is very much better rendered in the negative taken through the filter, for, as it is principally composed of blue rays, it receives much less exposure with the filter than without. In point of fact, unless the filter is used in conjunction with the orthochromatic plate, there is not much reason for employing the orthochromatic plate in average landscape work under ordinary conditions.

On the other hand—and this is a point to be insisted on—there is no disadvantage in always using orthochromatic plates.

Under certain conditions, for instance, when working late in the evening or on dull days, they do give better results without a filter than the ordinary plate; but the main reason for constantly employing them is that they are always available for use with a filter should it be desirable to use one. Looking back through my exposure books of the last fifteen years, the time during which I have employed orthochromatic plates and filters, I find the proportion of exposures with a filter shows a gradual increase, until now about seventy-five per cent. of them are made with the filter.

To enable the beginner to fully realise the importance of using a carefully-selected filter, I would direct his attention to the comparative test illustrated in Figs. 1 and 2. The subject is a forest glade of birch trees, taken towards the end of October, at four o'clock in the afternoon. The colouring was singularly vivid, the birch trees being a brilliant yellow,



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One of our foremost technical photographers.

backed by a bright blue sky, which was broken up with white clouds and dark patches of storm-drift. In the foreground were masses of dead brown bracken, and the shadows from the sun, only a few degrees above the horizon, stretched right across the glade. Fig. 1 was taken on a colour-sensitive plate without a filter, Fig. 2 being taken on a colour-sensitive plate with a filter, which increased the normal exposure three times.

It will be noticed that in the one taken without the filter the sky and clouds are completely lost, and that there is a roundness and suggestion of colour in the birch trees, the bright yellow being rendered many degrees too low for visual intensity in that taken without a filter. The one, in fact, is a mere photograph; the other brings back to me, who saw the original scene, instantly all its vivid colour and breadth of lighting. Quite early in my use of orthochromatic plates I noticed that months afterwards prints from those negatives taken with a filter recalled most satisfactorily the original scene, and this because the visual translation was truer and more in accordance with what the eye saw.

The tyro in orthochromatic work may think that any filter, so long as it is yellow, will give good results. This, however, is scarcely so; many of the yellow glass filters on the market would never give highly satisfactory results, as they remove so little of the blue. To be useful, the colour must be a bright lemon yellow, a colour rarely seen in glass, which is usually brownish yellow. The filter used with the illustrations here given was an ammonium picrate, similar to the one originally described by me in the *BRITISH JOURNAL Almanac* for 1893, and I think it would be difficult to beat it for all-round landscape work.

Much has been said about adjusting the filter to the colour-sensitiveness of the plate, and, of course, this is a necessity in such exact work as three-colour printing necessitates; but with landscape work less exactitude is permissible, and so long as the filter is of such colour and density that the activity of the blue rays is sufficiently checked, the work will be satisfactory enough for general requirements. Let the beginner be advised against using in his early work one of the filters of amber-coloured glass not infrequently sold for landscape

white clouds or a distance composed largely of blue atmosphere a filter will always be desirable. Again, when photographing on dull days, the greens of a landscape will be improved very much by using a filter. Late in the evening, when the proportion of blue rays has considerably diminished, the filter is less necessary, and I have frequently noticed the superior usefulness of the orthochromatic plate on evenings in the late autumn when towards sunset the atmosphere becomes suffused with yellow light. Used on such occasions without a filter the orthochromatic plate scores heavily over the ordinary. It must be remembered that in dealing with Nature there will always be a large amount of blue in the landscape, and unless this is modified by a filter the best results will not be obtained. It is worthy of note that there is less tendency to halation when using a filter, a fact not difficult to understand.

I know for a fact that many have been prevented from using orthochromatic plates by getting an impression that they must be developed in total darkness. Such a proceeding is quite unnecessary; all that is required is a good safe light and plenty of it. My own light is a paraffin lamp, with a single thick



Fig. 2 —View taken with Filter.

work. These increase exposure from eight to ten or twelve times, and nearly always give over-correction from the blue being too completely removed, as a consequence of which the green of trees and grass appears many shades too light in a print. Deep filters occasionally are of extreme usefulness, but their application requires great care if a false result is to be escaped.

Under-exposure must be carefully avoided when using a filter if a satisfactory translation is to be obtained. It is quite astonishing what an amount of apparent over-exposure an orthochromatic plate with a filter will stand. The plate during development may seem wholly devoid of unconverted bromide, and yet the fixed negative prove to be full of fine gradation. If the negative has to be forced during development, from slight under-exposure, the result will be untrue as regards its translation of the visual intensities.

The beginner's principal difficulty will be that of knowing when to use the filter. When a large amount of blue enters into the colour of the landscape, either as blue sky with

ness of good ruby glass and another of canary medium. The plate is flooded with the developer and the tray covered, being looked at occasionally until development is completed. There need be no fear of fog even with the most sensitive orthochromatic plates if care is taken not to unduly expose them to the dark-room light.

It may not be out of place to make some reference to orthochromatic plates themselves. All plates of this kind issued commercially are certainly coated with orthochromatic emulsion, as "dipped" plates would not keep sufficiently well for commercial purposes. At the same time it is questionable whether dipped plates do not give the best orthochromatic effect; they certainly impress me as being more sensitive to the lower part of the spectrum than when the emulsion is prepared orthochromatically. For flower studies, indoors, I have frequently employed ordinary plates, dipping them just before use, and exposing in a damp condition. The results certainly left nothing to be desired from an orthochromatic point of view.

Development of orthochromatic plates need present no diffi-

culty to the beginner. Any developer that suits the plate can be used, except hydrokinone, which is unsuitable, as it gives too steep a gradation to allow of the best translation of the original tones. Density is gained very quickly with most colour-sensitive plates, and some care is necessary to avoid obtaining a negative too hard for the best representation of the original tones.

Space does not allow me to traverse the whole ground of the applications of filters and orthochromatic plates in landscape practice; much might be written of the great usefulness of deep-coloured filters in mountain regions, where for days together the worker is confronted by provoking haze. The

experienced worker is not often caught without a filter or series of filters.

I make no pretence in these notes on elementary orthochromatic work, of suggesting that more artistic work can be done by the aid of filters and colour-sensitive plates than could be accomplished with ordinary plates. I should say, judging from a good deal of the artistic work shown, that the ordinary plate is eminently suited to its production; what I have no hesitation in saying is, that if anyone desires a transcript of some scene which pleases him, and desires to recall it as he saw it, then orthochromatic plates and filters will help him as nothing else will.

G. T. HARRIS, F.R.P.S.

Half a Century of Ceramic Photography.

THE above title may surprise some of the young photographers who have never seen or heard of a genuine enamel. I say genuine to distinguish them from collodion and other glazed photographs or imitations, which are often misnamed enamel photographs. I am much surprised that the genuine article is not more popular, seeing that processes published are not difficult or expensive; the plates are the most costly part after the furnace. About fifty years ago Count Lafon d'Camersac

process, which from an original negative gives extreme fineness of grain, even when enlarged.

During the fifty years many experimenters entered the field with varying success, but from some unexplained cause they did not persevere; I daresay, believing that the difficulties were too great. I remember on more than one occasion would-be enamellers sending for a couple of plates. I could tell some strange and funny stories, but will reserve them for another occasion. One idea seems to have taken hold, that the difficulty lies in the firing. I never found the smallest difficulty with a



Photo by]

[S. J. Beckett.

A. L. HENDERSON,

A veteran photographer, experimentalist,
and traveller.

astonished the world by producing the first good vitrified photographs. I have an example done by that gentleman which would be difficult to beat. His method, as far as I know, has never been published. Suffice to say I believe it was a dusting-on process; the one he produced for me was from a transparency. As a rule, the dusting process gives great latitude in colour, but necessitates a good deal of working-up. Then there is the so-called substitution (a misnomer)

properly-prepared image; it is almost impossible to send it up the chimney (a trade expression). My initiation into this art is now a story of the past. It came about by the late J. T. Taylor challenging me to produce enamels. My process has been published and demonstrated so many times that a recapitulation is unnecessary. I am not aware of a more interesting or lucrative branch than enamelling. It will "catch on" some day.

A. L. HENDERSON.

Then and Now.

IN contrasting the practice of photography as it was, and as it is, a slight sketch of the trials and troubles of a photographer of the old days may not be out of place as a contribution to this issue of the *BRITISH JOURNAL OF PHOTOGRAPHY*.

Then, indicating the sixties, a day's satisfactory outing with the camera was an undertaking not to be lightly entered upon, in marvellous contrast with that of the present day. For the information of those not conversant with wet collodion work in the field, and to emphasise the advantages of the modern methods of working compared with it, I will give a *résumé* of what was needful to obtain a negative in those days. To ensure having all things necessary it was customary to make a list of everything required and attach it permanently to some convenient part of the outfit. By going over this list item by item when packing up trouble was avoided. I will not, however, occupy space by enumerating the various articles, but there were very many things the modern dry-plate photographer has fortunately no occasion to use, but which might have caused great inconvenience if forgotten, even to the stoppage of a day's work. *Imprimis*, there was the tent or portable dark room, a heavy, roomy affair fitted with bottles, bath, etc., a complete photographic laboratory, as all the processes, from sensitising to developing the plate, was carried on in it. The silver bath, a most unstable and irritating solution, was always liable to get out of order at the most awkward times, then it had to be filtered and tested, and gave an unconscionable deal of trouble, having to be remedied on the spot. The plates, too, had to be most carefully handled—the least fingermark or dust causing defects in the negative. Six or eight plates were considered a fair day's work, but extra plates were generally taken. The collodion required special attention, being filtered back into a container, after coating each plate. The tent was constructed so that it formed a box sufficiently large to contain most of the appliances required, supplemented by another box with the chemicals, lenses, etc. As a precautionary measure, the camera was usually taken in a case by itself. Bucket and jugs were also necessary, the whole outfit weighing between one and two hundredweight. (I may say plates, 12 by 10 in size, were used.) Detachable wheels and handles that could be affixed to the box turned the whole thing into a sort of hand-cart on an emergency.

Arrived at our destination, the first thing was to find a spot sheltered as much as possible from sun and wind and near to a water supply, a very important condition, for without water

photography could not have been carried on. Providing the district was unknown, an excursion was made during the time the tent was being set up and generally prepared for working in. All being in readiness, the camera was focussed, the plate prepared, coated in the open and sensitised in the tent, drained and put into the dark slide, resting the corners on blotting paper to absorb any drainings. The plate once put in the slide, care had to be exercised to keep it in the same position until it was taken out to develop, or possibly some of the drainings might run back over the plate and cause defects. In developing, the plate was held in the hand, the developer swilled over it, and the surplus poured off the plate into a cup in which a few drops of nitrate of silver solution had been

introduced. This was to secure density, which was seldom sufficient without this so-called reintensifying. The plate was then freely washed with water and fixed with cyanide solution, washed again, and put into a rack to drain. A very few minutes sufficed for this part of the business, forming a marked contrast to the time occupied in treating a gelatine dry plate. Exposures were very long—counted by minutes instead of seconds—and a two-minutes' exposure might be extended over half an hour or more, caused by frequently capping the lens when the wind was troublesome or moving objects got in the field of view, and a wait had to be made until they had disappeared. When the day's work was over and everything repacked for travelling, the photographer himself required a wash and brush up, with the energetic application of pumice stone and cyanide to his hands, which in the course of the day had acquired a very disreputable appearance. Given a hot, windy day and a bad supply of water, a day's outing in the sixties could scarcely be called a pleasure. In

this year of grace, 1904, what a difference! no bother about tents, and developing plates always ready and will keep any time, no dirt and mess or anything to interfere with an enjoyable stroll—no wonder photographers have increased by the thousand and photographs by the million! But has the improvement in apparatus and material, etc., been matched by improvement in the resulting work? Lighting, composition, and exposure are the chief factors in a good picture, and now that the distractions of a troublesome process have been eliminated, all the attention can be given to the pictorial side, which, I think, should show a more marked improvement in general work than is perhaps to be found in it. Anyway, in this direction only is it possible to make any progress.

EDWARD DUNMORE.



EDWARD DUNMORE,
Formerly Hon. Sec. of The Photographic Club.

Orthochromatic Photography.

It is desirable upon occasions such as we are at present celebrating to pause and consider what advances have been made in a given period of time. More especially is this necessary for those who specialise, as it prevents retrogression, a failing in the photographic world which is far too common. From the first the photographer has been troubled with the fact that the luminosity and sensitiveness of colours are not in concord, and it was Crookes who suggested in 1858 that if a yellow screen were placed in front of the sensitive plate there would be a marked improvement obtained in the rendering of the colour luminosities; the writer by using an artifice of this nature has obtained correct colour rendering upon an ordinary plate of extreme rapidity, but the exposure was very long, and it will be seen that with the slow sensitive medium in use at that time Crookes' yellow screen would not receive much attention.

About 1873 the late H. W. Vogel, when photographing the spectrum upon various kinds of collodion emulsion, observed that upon some plates he had obtained, made by Stuart-Wortley, there was an additional light action obtained in the green, caused, as transpired later, by the action of aurine which had been used to stain the plate in order to prevent halation. Vogel followed up his discovery and ultimately announced to the world that by staining the emulsion with various dyes it is rendered sensitive to the brighter colours of the spectrum.

Many renowned experimentalists attacked this subject, and in 1875 Waterhouse discovered the value of eosin as a colour sensitiser, and in 1879 Ives published the method of orthochromatising collodion bromide emulsion by means of chlorophyll. In 1882-83 Tailfer and Clayton took out a patent for orthochromatising gelatine dry plates by means of eosin and erythrosin used in conjunction with an alkali, and plates prepared under this patent by B. J. Edwards and Co. were placed on the English market in 1884.

It was, and is still, necessary to use a yellow screen, or, as it is now called, a light filter, in order to subdue the action of the blue and violet rays of light and to stop the action of the ultra violet light; but for quite a long period these light filters were selected and used haphazard, except in the case of one or two careful workers, who devoted much time and skill to adjusting the light filter to the plate by means of the spectro-scope in order to obtain correct colour rendering, but it re-

mained for Sir W. Abney to give to the world an instrument which is known as the colour sensitometer, by means of which it is possible to rapidly and accurately adjust the absorption properties of a light filter to the colour sensitiveness of the plate, so as to obtain a true rendering of colour luminosity into monochrome.

To illustrate the advance that has been made in solving this problem of correct colour rendering, it is interesting to note that if an extra-rapid ordinary gelatino-bromide plate and a colour-sensitive plate of equal speed be selected, and have light filters adjusted to them so as to obtain in each case

correct colour rendering, the practical results obtained by these two plates, each used with its own light filter would be identical in colour rendering, but it would be found that the light filter used with the ordinary plate would increase the exposure about 7,000 times, whilst in the case of one of the latest brands of colour sensitive plates the adjusted light filter only increases the exposure about 10 times, so that though the photographs would be similar in character, that which had been taken upon the ordinary plate would require an exposure 700 times as long as one taken upon the colour sensitive plate.

Within the past year there has been introduced a colour sensitising dye known as Orthochrome T., which marks a step in advance, for, unlike most colour sensitisers, not only does it make a plate which has been bathed in its solution colour sensitive, but it also greatly increases the speed of the plate. The writer has found that by bathing an ordinary clean working plate ("Electric") of a speed of about 120

H and D in a weak solution of this dye, the speed of the plate is increased for daylight to about 250 H and D, whilst for yellowish, artificial light the speed reaches the maximum of between 500 and 600 H and D, and when a light filter is adjusted to this bathed plate in order to obtain correct colour rendering, it only increases the exposure about five to six times, so strong and even is the colour sensitiveness conferred upon the plate by means of this dye.

The goal of all experimentalists in this work is to obtain a plate which in itself, and without any screening, gives correct colour rendering and at the same time maintains and increases the present high sensitiveness obtained in modern dry plates.

ARTHUR PAYNE, F.C.S., F.R.P.S.



ARTHUR PAYNE, F.C.S.,

Has devoted special attention to the study of orthochromatic photography.

Collodio-Bromide: Forty Years' Experience

IT is now just forty years since this beautiful process was first introduced in the pages of this JOURNAL by Messrs. Bolton and Sayce. My experience dates from the time of its introduction, and I have worked at it from the commencement. It seems a very long time to look back. I first used it for negative work and transparencies for window decorations, and also for stereoscopic slides. For the latter it is unsurpassed on account of the varied rich tones obtained by it. In the early seventies I was making enlarged negatives up to 24 by 18 in., using it in the wet state. As originally published, the formula was very crude, and also the way of compounding. This was of the unwashed order. Matters have considerably changed since then. M. Carey Lea and others elaborated it.

In or about the year 1880 I devised a plan of reproducing a negative from a negative without having to make a positive. I made the exposure either by contact or in the camera, and the image when developed was a positive; the plate was then well washed, and flooded with a strong solution of iodine in alcohol, and allowed to act until the image was perfectly invisible, again well washed, and then flooded again with the alkaline developer. The positive image again made its appearance, and after a short time this positive image gradually disappeared, a negative image taking its place; development was pushed until the requisite density was obtained, and fixed with cyanide as usual. If the iodine was not allowed to act long enough, the final result was partly negative and positive—a regular mix-up. The iodine fumes were too overpowering to admit of its being used, so I gave it up. I published it at the time.

Colonel Stuart-Wortley in the seventies or early eighties introduced into the emulsion nitrate of uranium, for what purpose I could never understand. He said it was to increase the sensitiveness, but I found it quite the reverse. W. J. Stillman at the time attacked him on the same point as to its uselessness, and said it was no more use in the emulsion than ground bones and sand, which led to some bitter correspondence in the journals. Mr. Leon Warnerke gave some valuable information as to the use of various bromides. The

late Professor Dawson and Henry Cooper were earnest workers on the subject, and lent valuable aid. I remember when the Liverpool Dry Plate Company issued plates under Mr. Peter Mawdsley I experimented with some of the first issued and obtained good results. They were on the market for a long time. This was before the days of washed emulsion. At this time I was also making emulsion for my own use. When the washed emulsion came in, matters were considerably altered. I think it was Mr. W. B. Bolton who introduced washing the emulsion in bulk, at the time we were experimenting together.

Mr. Peter Mawdsley has shifted from Liverpool to Clapham Junction, and issued the washed emulsion. About the same time Henry Cooper's emulsion was put on the market by Messrs. Horne & Thorne, of Newgate St., London.

With the washed emulsion of my own make, I soon recognised its adaptability for lantern slides, and am still using the same system very largely at the present day.

The greatest difficulty that has had to be contended with was a suitable pyroxyline. I seemed next to impossible to make two samples exactly alike in quality. I was determined that it should not master me. I spent an enormous amount of time (years) and a great deal of money. I obtained samples of cotton from all parts of the globe, and it was not until about two years ago that my efforts were crowned with success. I found most of the formulæ published in books were copied from one another. I have not the slightest difficulty now in making any number of batches of pyroxyline exactly alike. The class of pyroxyline that is required is a sample that will make

a fluid collodion and that will adhere to the glass plate, and have a strong organic reaction that will combine with the silver. These qualities I can now obtain at will, and without the slightest difficulty, if I keep within certain prescribed lines. One thing I forgot to mention was that artists' flatted canvas coated with it develops with a beautiful sepia tone, and combines with the oil colour on the canvas. As my work has covered forty out of fifty years, and the process was published in these pages in 1864, I do not think it will be out of place in the year of THE BRITISH JOURNAL OF PHOTOGRAPHY Jubilee Number.



WILLIAM BROOKES,
An authority on collodio-bromide emulsion.

WILLIAM BROOKES.

Photomicrography of Rock Sections.

THIS is one of the most interesting applications of the microscope, and one to which, so far as can be learned, not much attention has been paid in photographic literature. The sections of rocks are so varied in their character that to very few of them can the same mode of lighting and illumination be applied. It may be stated generally that granite and its three components, quartz, felspar, and mica, form the basis of all rocks. Many other chemical substances assist in giving character and variation in a greater or less degree; but the three components of granite are the ruling features in the whole of them. The chief use of the photography of rock sections may be said to be the production of lantern slides for teaching purposes. A good negative when reproduced in this way most materially assists in the illustration of a geological lecture. In fact, to a class, or in a lecture of a more popular form, such assistance has now become indispensable. In the production of negatives from rock sections it is, with few exceptions, only necessary to use low magnifications. Only the other day a section of rock was asked to be photographed, having an elliptical shape, the major axis of which was over an inch in diameter. As no micro low-power objective covers more than five-eighths of an inch, recourse was had to a Zeiss Unar of $4\frac{1}{2}$ in. focus stopped down to f 11, and this gave a very fine sharp negative. The microscope portion of the camera was removed, and a supplementary stage on an improvised suitable rigid easel was used to carry the section. Another method used for a different material may be mentioned, with which very fine results were obtained. If, for instance, one is required to take a negative of some grains of sand to show the character of any particular variety, the procedure may be as follows:—Take an ordinary glass slip 3 in. by 1 in., give it a few strokes with virgin wax (white wax), hold the slip over a Bunsen burner, or spirit lamp, until the wax melts, which may then be spread with the finger, then sprinkle the sand over the melted wax, to which it adheres. The wax will cool at once. The slide is placed on the microscope stage, with a piece of dead black paper behind it, and after focussing by means of a gas jet or lamp, the illumination is made by burning a few inches of magnesium ribbon held behind the objective, and gently waved about. The objective used in such a case may be a 70mm. by Zeiss, and a camera extension of about 18 in.

A great number of rock sections, to enable them to be photographed well, require the use of polarised light to differentiate their structure, and many also as well the use of a depolarising selenite. Some of them show best for photographic purposes when examined with the crossed nicols only without the selenite, while others again absolutely require the selenite to reveal the structure properly. Agate and the various forms of felspar may be mentioned as rendering this illumination necessary; while, on the other hand, the selenite may not be used with many of the forms of granite, as the crystals of granite itself show so much colour that only the crossed nicols are required. No absolute rule can be laid down as to the mode of procedure either as regards the illumination required or the use of polarised light. Every one must just exercise his own discretion and skill in such matters. When a considerable experience with the microscope is possessed by the operator no difficulty will be found in judging what is the best mode of operating to obtain the best results. One thing is essential above all others for success in this work, and this undoubtedly is that the sections must be thin. There is not much difficulty nowadays in getting thin sections compared to those which could be obtained some years ago. Another point is the objectives used must be corrected for the chemical focus. It will not do to attempt this work with any ordinary micro-objectives. Even with the low powers which are, except in certain cases, only required, the results obtained must be sharp and clear. They have to be so, as, when projected by the lantern, defects become so very apparent. The illumination used by the writer is invariably magnesium ribbon. The image is first focussed by an ordinary lamp, which is then removed, and a small piece of brass tube, about three-sixteenths of an inch in diameter, having been previously fixed in a shutter, and placed exactly in line with the optical axis of the microscope, the magnesium ribbon is pushed through the tube and ignited. If more than two or three inches is required the ribbon may be pushed through the tube with the left hand while burning until as much is required as is necessary. In this way the exposures are so short that little time is lost. No instructions, however, will render experience useless. It is only by long practice that any one can hope to succeed in any department of photography.

W. FORGAN.

Dr. Miethe's Methods of Colour Photography.

FOR several years past Dr. Miethe and his staff of the photo-chemical department of the Charlottenburg Technical School have busied themselves with details of the triple or synthetic process of colour photography. While they have not made any one radical departure from existing methods, they have improved the process at a number of points that colour photography as a craft or an amusement is brought much more nearly within the skill of the average individual. Fortunately, Dr. Miethe is not a chemist or a physicist only. He is a photographer as well, and each advance, made in the course of scientific research, has had to withstand the test of practical photography. When I was in Charlottenburg, two years ago,

Dr. Miethe showed me a series of about fifty three-colour exposures made by himself on a holiday trip to test the sensitisers they were then using.

Although the Charlottenburg work has been much talked about in the photographic press, there has been very little technical description of it, but Dr. Miethe has now written a small work on the subject* from which we are able to draw up the following review of what has been done. We can do no more than pick out some salient points. The volume itself should be read by those who wish to possess the most explicit working instructions in tri-colour work which have yet been published.

* Dreifarbenphotographie nach der Natur, by Prof. Dr. A. Miethe, Hon. F.R.P.S. (Halle: Knapp. M.2.50).

The language, though that of a scientific man, is free from learned phraseology, and the frontispiece, a "process" reproduction of one of Dr. Miethe's landscape exposures, is an incentive to colour photography more powerful than words. The subject is "Early Morning in the Dolomites."

Coming now to Dr. Miethe's text:—

The sensitising formula first used for the preparation of a panchromatic plate contained the three dyes, glycin red, chinolin red, and cyanin, a mixture which gave plates of extensive colour sensitiveness and good keeping properties. The dyes, however, could not be incorporated in the emulsion, and in 1901 and 1902 an examination of dyes was commenced which resulted in the now well-known "ethyl red," the first single dye to sensitise the plate to the whole visible spectrum. "Ethyl red" is one of many derivatives of cyanin: which dyes had been previously examined by others without their remarkable properties being noticed, probably because they were not obtained chemically pure and were used in too great concentration. Ethyl red—or ethyl iodo-chinolin chinaldin iso-cyanin, to give it its full name—sensitises into the orange, but its action falls off sharply at the extreme red of the spectrum so that a properly-chosen dark-room filter can be used for the preparation and development of the plates, a point wherein ethyl red differs from a later derivative of cyanin, orthochrome, which sensitises further into the red.

Ethyl-red plates, either with the dye in the emulsion or applied by bathing, keep in good condition for many months. In preparing the bath for the latter method 1 gramme of the dye (as made by Böhringer, Mannheim) is dissolved in 500 ccs. of hot alcohol and the solution filtered. This alcoholic solution with a little ammonia added keeps in the dark for a very long time. It is diluted for use with 100 times its volume of distilled water—i.e., to the concentration of 1:50,000, and 3 to 5 ccs. of strong ammonia added per litre. This bath gives fog if used fresh, but after standing a day or two in the dark loses this defect. The plates are bathed for two minutes and washed for three, this operation being performed in light, filtered as described below, or in total darkness. The plates are then dried as rapidly as possible.

Drying has an important bearing on the resultant plates. Plates slowly dried are less colour-sensitive, do not keep so well, and tend to foggy and flatness. Protracted drying even causes other defects, such as streaks and irregular markings.

For drying plates on a moderate scale a drying cupboard fitted with a 1/16 horse-power electric ventilator is used. The ventilator, which costs from 50s. to 60s. from the Siemens-Schuckert factory, is fixed underneath the cupboard and draws a current of air down through light-trapped canals in the top of the cupboard, the plate rack being covered with a kind of "baffle plate" to cause a uniform stream of air over the plates.

A larger installation has been constructed in which plates can be dried within an hour and a half. For this the air is first cooled by passing through a copper tube externally cooled with water. It is thus reduced to a constant state of moisture, whereas if warmed without this preliminary cooling its drying properties would not always be the same at one given temperature. The dried air is then warmed by passing through gas-heated copper tubes. Its temperature at the entrance to the drying chamber is adjusted to 32-33 deg. C., which is allowed to rise to 35 deg. C. when the plates have been there a quarter of an hour.

Ethyl-red bathed plates have preserved their properties during fifteen months' storage in a damp place, developing at the end of that time free from spots or fog round the edges.

In the matter of a camera, the balance of advantage rests with a simple one-lens apparatus, fitted with an attachment whereby plate and filter drop together by the action of gravity.

The change from red to green and blue filter is thus made in the fraction of a second, and the whole kit weighs only 4 lbs. The total time for the three exposures with a lens at f 19 runs to about 2 seconds—1 second for the red and half a second for the green and blue. As such exposures cannot be accurately given by hand, and as accuracy is a very important factor in the case, a diaphragm shutter is used. One made by Görgen, of Munich, has proved reliable, but doubtless other similar ones can be found.

Preliminary to any regular work we must fix, first, the relative exposures required by the three filters, and secondly the absolute exposure for certain conditions of light and subject. The former is done by the usual method of photographing a white object, varying the exposures until the three negatives are alike. But certain precautions are necessary. A bright day, but one with plenty of clouds in the sky, should be chosen, and the test is best made in a light room with walls of neutral grey, these conditions ensuring an illumination which does not

alter in intensity or colour during the test. A white plaster bust against a grey background is a suitable object. A test is made and the plate developed with 1:30 rodinal or edinol. If all three negatives do not present a completely similar appearance, especially in the half-tones, further sets of exposures are made until they do.

The absolute time of exposure is determined out of doors best in the absence of sunshine and with some openly-situated object as test object. The Wynne meter has proved a reliable basis for determining exposures. A series of preliminary tests are made to ascertain the relation between a certain time of darkening with the Wynne and the exposure required for the ethyl-red plate (blue filter) under certain conditions. A table can be drawn up from these data.

In development a soft clear negative is aimed at, and in arresting the process one goes by the appearance of the red-



MR. GEORGE E. BROWN, F.I.C., F.C.S.,
Associate Editor of "The Photogram."

sensation exposure, disregarding the blue exposure which frequently appears hopelessly under-exposed.

Ordinary ruby light, as used in dark rooms, can be employed with ethyl-red plates, but the worker is strongly advised to provide a safe light by soaking two unexposed, fixed, and washed gelatine plates, one in

Tartrazin (Merck) 20 grms : water, 500 ccs.

The other in

Methylviolet, 5 grms : water, 500 ccs.

The plates are immersed for five minutes, rinsed for ten seconds in clear water, and set aside in an upright position to dry. They are then varnished and bound film to film.

The additive or direct method of building up the three colour records is greatly preferable to the subtractive method in point of being scientifically adjustable, although the latter is of commercially the more importance. The kromskop, if provided with spectroscopically adjusted filters of stained films on glass (not the body coloured glasses used by Ives) is able to give a rigidly accurate and automatic reproduction of the colours of the original.

For projection purposes, a new form of lantern is advanced as an improvement on that of Ives', which permits only a very moderate magnification of the transparency. For the new apparatus the transparency is printed in one piece from the triple negative. Behind each section of the transparency is a small rectangular plano-convex condenser with its own limelight or

Nernst lamp. A projection lens is before each transparency, and the three images are brought into coincidence on the screen by depressing the upper lens and raising the lower one—in each case parallel to the optical axis of the projecting system. The colour filters are introduced just behind the projecting lenses.

A large projection apparatus has been constructed on this same system by the optical firm of C. P. Goerz, but in it the three transparencies are cut and can be adjusted beforehand by means of a special piece of apparatus instead of in the lantern at the time of exhibition. The apparatus consists of three projection systems, each with arc light, heat-filter, light-filter, and projection lens. This instrument permits of projection on the largest scale with perfect registration, and it has been used for the illustration of lectures in the Urania Theatre, Berlin.*

Coming now to the preparation of transparencies or prints by the subtractive method, the powder or dusting-on process has been found very suitable for pictures of large size, although some considerable practice is needed to work it. The gum process is much simpler—in fact, tri-colour gum is no more difficult than the ordinary multiple gum practised by the "pictorial" photographers.

GEORGE E. BROWN, F.I.C.

* The theatre here mentioned by Dr. Miethe is a kind of modern and photographical equivalent of the old Polytechnic in the days when it existed for popular entertainment. On the occasions when I have visited it the lantern illustrations were to the size of about 15 to 20 ft.—G. E. B.

On Stereoscopic Experiments in the Eighteenth Century.

WHEN Ch. Wheatstone* gave his splendid discovery to the scientific world he had tried his utmost to ascertain whether any philosopher had been in this field of investigation before. He came to the conclusion that the only instance of binocular vision of relief which he had found recorded previous to his own investigations was R. Smith's experiment with a pair of compasses. We will cite R. Smith's own words:—

Having opened the points of a pair of compasses somewhat wider than the interval of your eyes, with your arm extended hold the head or joint in the ball of your hand, with the points outward and equidistant from your eyes, and somewhat higher than the joint. Then, fixing your eyes upon any remote object lying in the line that bisects the interval of the points, you will first perceive two pair of compasses (each leg being doubled) with their inner legs crossing each other, not unlike the old shape of the letter W. But by compressing the legs with your hand the two inner points will come nearer to each other, and when they unite (having stopped the compression) the two inner legs will also entirely coincide and bisect the angle under the outward ones, and will appear more vivid, thicker, and longer than they do, so as to reach from your hand to the remotest object in view, even in the horizon itself, if the points be exactly coincident. This appearance will continue the same wheresoever you direct your eyes to any other collateral objects; nor will it vanish by variously inclining the plane of the legs to the horizon, or by any other means than by looking directly at them. The like appearance will happen when two equal round slices of a cork, or any two equal surfaces, are stuck upon the points of the compasses.

In his Remarks (Vol. II., p. 526) R. Smith describes another manner of viewing the compasses (by internal squinting or by directing the axis of the right eye to the left hand of the compasses and the axis of the left eye to the right hand), and

expressly mentions that the united middle leg will decrease in apparent magnitude and approach towards the eyes, if the real legs are more and more opened.

These stereoscopic observations were known to Ch. Wheatstone, and referred to by him in 1838. At the time of his second lecture, 1852, he mentions another instance of R. Smith's observations (Vol. II., rem. 532), that of the observer's face viewed with both eyes in a concave mirror seeming larger, remoter, and more concave than in monocular vision.

R. Smith's first experiment with the compasses caused considerable attention, and it was well remembered even to a time when Ch. Wheatstone's theory was not published. A reference to it we see, for instance, in Gohler's "Physikalisches Wörterbuch" (article Geischt, Vol. IV., p. 1,474, Leipzig, 1828). After the discovery of stereoscopy both experiments with the compasses were treated by Sir David Brewster, and I very well remember a discussion on this subject I had last autumn with Mr. J. F. Cheshire.

Some time ago, having attentively read Ch. Wheatstone's ingenious papers, and having noticed his references to R. Smith's "System of Opticks," I turned to this book in order to acquaint myself more intimately than before with the ideas of this old author. I was much astonished to find that some other experiments of this kind are also published, which seem to have escaped as well Ch. Wheatstone as Sir D. Brewster's attention.

In looking through a binocular telescope—the tubes of which were carefully directed to a distant object—and directing his attention to the circular openings of the diaphragms of the eye-pieces, they appeared to R. Smith (Vol. II., p. 388) larger and remoter:—

These equal rings, by reason of the equal eye-glasses, appear equal and equally remote when seen separately by each eye, the other being shut; but when seen united by both eyes they appear much larger and remoter, too, and the objects seen through them do also

* Charles Wheatstone: "Contributions to the Physiology of Vision." "On some remarkable, and hitherto unobserved, Phenomena of Binocular Vision." I. (Read June 21, 1838) Phil. Trans. 1838, p. 371-394. - II. (Read January 15, 1852) Phil. Trans. 1852, p. 1-17.

† Robert Smith: "A Compleat System of Opticks." Cambridge 1738. 2 Vols.

appear larger, though circumscribed by the united rings in the same places as when seen separately.

A similar appearance by means of a pair of spectacles was described by him in his Remarks (Vol. II., rem. 696) as follows:—

The phenomenon of the enlarged circle of the visible area, explained in these articles, may also be seen very plainly in looking at distant objects through a pair of spectacles, removed from the eyes about as far as the length of the hold-fasts (made for fixing them to the temples), and held steady at that distance. The two innermost of the four apparent rings that hold the glasses will then appear united in one larger and more distant ring than the two outermost, which will be hardly visible unless the spectacles be farther removed.

But far the most striking stereoscopic experiment recorded by R. Smith seems to me to be the following, where the two objects to be united must be drawn on paper.

In altering the second experiment with the compasses, R. Smith employed two lighted candles instead of the compasses' legs, and observed a middle candle lying midway between the real ones, and appearing at the same time smaller. By separation of the real candles it was effected in the same way as the united leg of the compasses in the second experiment. In drawing Fig. 161 in order to explain this candle experiment, R. Smith discovered that a precisely similar effect of a vertical line might be obtained by drawing straight lines on a horizontal plane, or, to follow his own words (Vol. II., rem. 527):—

And, by the way, if the lines *afe bfd* be drawn upon a plane-board a foot or two long, and a pin be stuck upright at their intersection *f*, and the pupils of the eyes be placed near the edge of the



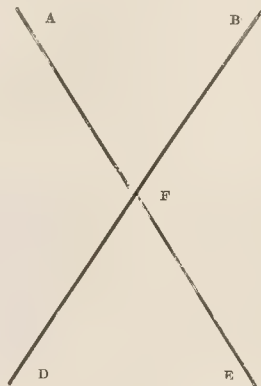
DR. MORITZ VON ROHR, DR. PHIL.,

Is the author of the classic "History of the Photographic Lens."

board at any small height above the points *d e*, while the pin is viewed steadily, the two lines *fa fb* will appear united and upright in the place or by the side of the pin. For in this case they cannot

appear in two different places, and therefore must appear in the common intersection of two planes passing through the lines of *a, bf* and the pupils of the eyes.

If any reader should like to repeat this old experiment, would suggest, in accordance with R. Smith's words, a vertical distance of 30cm. (1') from *f* to *de*; as a middle interocular distance *de* is about 63.5mm. (2½ in.), the convergence at *f* is much less than in R. Smith's figure. If we only draw the



R. Smith's Rough Sketch to the Stereoscopic Experiment.

lines *fa* and *fb*, omitting the parts *fe* and *fd*, we see a vertical line at *f* above the plane of the paper. After completing the lines *ea* and *db* we perceive a vertical line passing through the plane of the paper at *f*.

From the foregoing we see that R. Smith's experiments were three-fold:—

1. The stereoscopic combination of simple geometrical figures, with parallel or nearly parallel axes of the eyes (experiments with binocles, spectacles, and the compasses' legs holding equal surfaces on their points).

2. The stereoscopic combination.

- (a) Of two different real points, together with the perception of their united image, coinciding with a distant object (first compasses' experiment).

- (b) Of two movable points, together with the perception of the alteration in the apparent distance of the united image (second compasses' and the candle experiment).

3. The stereoscopic combination of two different pictures of a simple object (a vertical line on a horizontal plane).

The foregoing will hardly leave room to doubt the excellent faculty of observation exhibited by Dr. R. Smith. At the same time it shows how very difficult it was even for keen observers to develop the theory of the stereoscope. The very circumstance of R. Smith's having produced the first stereoscopic drawing exalts our admiration for Ch. Wheatstone's genius.

M. VON ROHR, Dr. phil.

NEXT week's number of the BRITISH JOURNAL OF PHOTOGRAPHY will contain the first instalment of the BRITISH JOURNAL ENCYCLOPÆDIA OF PHOTOGRAPHY. This compilation of photographic information will form a most reliable guide to all processes in photography, and will be continued week by week until complete. The "B.J." should, therefore, be filed for reference in future. The various subjects treated in the Encyclopædia will be dealt with in alphabetical order.

A Note on the Present Position of Pictorial Photography.

I WAS asked the other day, "Is pictorial photography bankrupt?" and my reply was "No; but the experimental stage is over; pictorial photography is just returning to its legitimate limitations, and the wild eccentricities of the 'would-be original' are becoming offensive to everybody."

As one who as judge has had the bulk of the best recent work passed before him, or seen other work not sent to be judged, it is to me obvious that the various cranks have had their day, and that the tide is flowing strongly back to pure naturalistic photography—the one method of expression by the camera which will weather all storms and last.

The "sharp" pictorial photograph has long been dead—the Vernon-Heath school, if I may so call it. Dead also is the dressed-up outdoor model of the Robinson school; dead is the "all-a-little-out-of-focus" school as advocated by Newton, and best exemplified by the late Mrs. Cameron, whose notable work still remains a landmark of this style. Of the newer experimentalists, the "pure pinhole" is dead, as is the gum bichromate process, though a few of its admirers still persist in what has always been at best an imperfect printing process as compared with the ordinary carbon process; and dearest of all is the "faked print" of the earlier photographer brought to its full sterile seed by the Hinton school. This coarse and unphotographic method was the outcome of the cry of mediocrity against the obvious limitations of the camera, and, curious to relate, their sterility of ideas and ineffectual selection have made them the ugliest, as well as the most pretentious work of the camera. At a recent exhibition, where I had the honour to judge with two artists, one a rising genius, there was but a single example of this pretentious work, and our general verdict was, "How positively ugly, how crude, how lacking in everything that pictorial work requires, and how false!" And yet some ten years ago this very photograph would have received awards all over the country—a fact due to the pernicious influence of the late Gleeson White, a half-educated man and a self-educated dabbler in the arts, whose notoriety was due entirely to art journalism. All these experiments have done a world of good in that they have proved to the hilt the fallacy of various pictorial theories and the inferiority of various methods, and they have given rise to various improved printing papers which lend a variety to our exhibitions.

But it all comes back to what I advocated twenty years ago—that is, the good lens, the good negative, and the printing processes of platinotype, carbon, and photogravure. The bromide print does not, I think, equal any of the above printing processes; there is a lack of quality in the print and a coldness and hardness in many that are unpleasant.

It has been proved undoubtedly that the taking of the negative is a pure science, and the printing, too, for that matter, so that the pictorial photographer is reduced to an elegant selection of subject and focus, and a choice of colour and grain in his papers. I still prefer the best photogravure process to any other, and carbon and platinotype to all other methods.

Pictorial photography is a useful and pleasant liberal art

for those who cannot draw or paint, but all the ever-recurring claims made for it as a fine art are doomed to disappointment, and many even of the most enthusiastic and far-seeing amateurs agree with this verdict—which will be the final verdict



DR. P. H. EMERSON,
The founder of modern pictorial Photography.

of the world, as it has been already of the best artists. And the next Jubilee of THE BRITISH JOURNAL OF PHOTOGRAPHY—that slayer of many of the fads of the day—will find my forecast, I am convinced, correct.

P. H. EMERSON.

New Bruce Telescope at Yerkes Observatory.—Yerkes Observatory has received its new Bruce telescope, and our readers will be interested in a brief description of the instrument which came to us from one of the observatory staff:—"It is a splendid piece of work—as all of Warner and Swasey's is. It is a triple mounted tube, a 10-in. doublet, 50 in. focus, by Brashear. A 64-in. Voightlander doublet of 31 in. focus, and a 5-in. guiding telescope, object glass by Brashear. The mounting is somewhat similar to that of the Potsdam telescope, but a great improvement on that mounting. The pier is bent to form the polar axis, so that the system of the telescope can swing free when crossing the meridian in any declination, so that a continuous exposure can be made from horizon to horizon in any part of the sky. The telescope is placed in a small but handsome observatory made especially for it."

Half a Century of Camera Evolution.

E VOLUTION may be defined as a process in which, by a series of continuous progressive changes, a complex arrangement is developed from rude or simple beginnings, and it is, therefore, a term which may justly describe the genesis of the modern camera.

Fortunately or unfortunately, I cannot recall from personal knowledge every type of camera that has been used during the last fifty years, but a study of such records as are available in



Photo by]

E. J. WALL, F.R.P.S.,

Author of "The Dictionary of Photography."

(Platinotype Co.

the shape of encyclopædic text books, and the most entertaining and instructive portions of the average photographic journal, the advertisement pages, to wit, has led me to endorse the cry of the Preacher of old, "and there is no new thing under the sun." There is no existing camera that has not its prototype in the early days of our science, and from an examination of the evolution of the camera one might construct a chronological table of the advances in photographic knowledge, always bearing in mind that the camera has followed the requirements of the sensitive material, and never the reverse, for in no case that I can recall has a camera been designed and then a sensitive material found for it.

Let it not be thought that I am depreciating in any way the ingenuity which has given us the modern camera, but one cannot ignore the fact that as the replacement of the Daguerreotype plate by paper supports gave an impetus to outdoor work, largely increased as this was by the introduction of the wet and dry collodion processes, so the gelatine plate placed within the reach of the million, photography as a hobby and led to the construction of cameras of a lighter and more portable type, and at prices which may well make some of the old makers turn in their

graves. The hand camera may, at first sight, be said to be the outgrowth of the gelatine plate, but this is not correct, for hand cameras, and fixed focus cameras too, were known as early as 1860. The popularity of the hand camera is alone derivable from the gelatine plate and its reduction in price.

Probably of all types, the studio camera is that which shows the least advance, and necessarily so; it is not required to be light and elegant for transport, but rather of solid construction, combined with elegance of appearance, if you like, for its nomadism, if one may use such a term, is confined to a few feet of floor space in the studio. True, that the modern studio camera is not the wooden box, with either fixed or sliding body, which one naturally associates with Daguerre or other early pioneers, and which one still finds so often as the instrument of the beach and wayside and always associated with that peculiar construction, which has, I believe, been called a rabbit hutch on wheels; but the bellows body cannot be said to be a product of the last half century, for such was known in 1839.

Individual parts of the studio camera have been improved; elaboration of the front and back movements, refinements in methods of focussing, and, above all, increased facilities in working the stand, which must, I think, be considered as an essential of the camera, an integral part of the whole. The double slide and the repeater or multiplying back are, however, products of this last half-century.

The historiographer of the camera is yet to be born, or found. His work would be tedious and ill-requited, but if carefully done it would at least prevent some infatuated inventor patenting a device that was in use probably before he was born, as I noted occurred only a few weeks ago, when some one, no doubt in all honesty, discovered that a mirror placed at an angle of 45 deg. behind the focussing screen would revert the inverted image, a device that is stated to have been used by Daguerre in 1839; and this is not the only instance that I could name, not only in connection with the studio, but every other type of camera, so that one has to ignore minor details and consider main ideas.

The tourist or portable camera shows evidence of far more ingenuity and radical transformation than the studio camera. Here, lightness of construction, combined with elegance and reduction in price, has reached such a stage that one is inclined to doubt whether there is yet any further chance of improvement. The introduction of collodion by Scott Archer in 1851, but three years prior to the commencement of our half-century, at once gave the necessary impetus to lighter construction, but the light tourist cameras of even those days would astonish by their weight and absence of accessory movements the latter-day amateur: the bellows were oblong, and to reverse the picture the whole apparatus had to be turned on its side; the front and back were without movements of any kind. Then came the Kinnear or conical bellows, made first, I believe, by Meagher in 1861, with swing front and swing back and side shift, then the reversing back, the rising and falling front, and finally the turn table, at first solid, as was also the base board, and then finally the cut-out turntable and baseboard still further reducing the weight; the screw-rising front, the plumb indicator, levels, and the long extension, the shifting back and front for very short-focus lenses, are all merely the evolution from the simple and rude box camera; in fact, the adaptation of the instrument to the altered circumstances of the present day.

In one particular only has the camera, or, rather, an appurtenance thereof, remained practically the same for the last fifty years, and that is the dark slide. The exact date of the

double dark slide, which took the place of the single, I have been unable to trace; at any rate, by 1860 they were in common use, and have approximately retained the same form, though there is generally less waste of timber in their construction. Changing or magazine boxes date back at least to 1860, whilst changing tents, if one may include these, are as old, if not older.

Flexible, supports, which, be it noted, please, are not of mushroom growth, naturally turned the inventive mind to special forms of carriers, and a rigid support with an adhesive material for the holding of the flexible sensitive material dates back to 1856. The convenient roll holder was first suggested by Relaudin in 1855, and Melhuish in the following year, Burnett in 1857, Audineau in 1862, and Warnerke in 1875 also devised these instruments, which were all designed for negative paper, as was also the original Eastman roll holder, but it was not till the introduction of celluloid that their use became general, and probably at the present time they have again sunk into somewhat comparative obscurity or are limited to the smaller sizes and used in hand cameras alone.

Finders, certainly of the well-known camera obscura form date from about 1854; the so-called "brilliant" type are of much later date. View meters, or iconometers, again take more or less elaborate forms, but a simple and effective one was suggested by Taupenot in 1855 under the name "chercheur photographique."

Multiplicator, medallion, cameo, and stamp cameras show but little change since Quinet's apparatus of 1854, or Southworth's, of Boston, apparatus, patented in 1855, with which he reckoned to be able to take no less than 50,000 prints in an hour, using ten plates on which were 6,160 negatives. It is needless to add that the pictures did not measure 15 by 12 each.

Panoramic cameras, and I limit this term entirely to instruments in which the image is received on a sensitive surface bent to the arc of a circle, date back to 1854, when Martens, a copper-plate engraver used curved daguerreotype plates, and later Chevalier, Stebbing, and Moessard perfected this type. Under this or similar names many forms of cameras were used for obtaining panoramic views on flat plates, and lately the principle has also been applied to hand cameras with celluloid films.

Of all cameras, I think the one that has shown the least advance is that for stereoscopic work; probably from the well-known neglect of this fascinating branch, manufacturers have been content to rather accept a given type than perfect it. Not that I have for one moment lost sight of the fact that many of the first-class tourist cameras of the present day can be adapted for stereo work, but the stereo camera *per se* is, so far as I know, somewhat antiquated.

With regard to photogrammetric cameras, or photo-theodolites, I can only say that not a year passes hardly but what some improvement is effected. They are special and wonderful instruments for special work; their introduction is decidedly recent, if one may consider anything produced first about twenty-five years ago as recent, and to indulge in a sketch of the improvements effected of late would entail more space and more diagrams than the Editors probably feel inclined to allow me.

Chronophotographic cameras again comprise such a vast field that it is impossible to give any adequate idea of their rise and evolution from Fox Talbot's first suggestion in 1851, through Skaife's pistolgraph (1860), Thomson and Enjalbert's revolvers (1862 and 1882), and Janssen's astronomical gun of 1874, to Marey, Muybridge, Friese-Greene, Edison, and others; the final outcome being that class of camera known by so many names, but which may be generally described as kinematographic.

Other special forms of cameras there are, such as photomicrographic, astronomical, and those for other particular classes of work, such as colour photography. It is enough to mention

them and leave the reader of these lines to fill in a mental picture of the developments of the same.

To the last I have left that class, numerous in type and size, and almost daily increasing both in number and variations, which is known as the hand camera, which is not a product of latter-day photography. In 1860 and 1861 fixed focus hand cameras with wood or metal bodies were made by Bertsch and Ottewill, and a collapsible pocket camera with cloth body was suggested by Edwards in 1855. Sutton suggested in 1860 the reflector principle, though it was rather suggested for stand cameras. A twin-lens camera was used by Disderi in 1864. Magazine boxes and magazine cameras for stand work were known in 1861, but Pumphrey, in 1881, seems to have been one whilst Enjalbert, in 1887, used a lifting lever and leather bag attached to the camera. Bolas, in 1881, described the first hand camera with focussing arrangement, magazine, with twin-lenses and a prism in front of the lens so that the camera need not be pointed at the person who was to be taken; he also used a pneumatic release and invented the term "detective camera."

In the early days of such cameras the main idea seemed to be to devise the externals so that as little notice as possible should be attracted, and the semblance of luncheon baskets, books, brown-paper parcels, etc., was used; small cameras were put in bowler hats and under the waistcoat; but now all that is changed, and the hand camera is openly and without shame flaunted in the face of all.

It was but natural that the introduction of celluloid films should lead to increased use of cameras with roll holders, and I believe that the Eastman Company were the first to introduce that type of camera in which the roll holder was an essential part of the camera, either in the fixed focus box form and later in the folding pocket type with extensible bellows; the former dating back to 1888. That particular type of camera, so much in favour on the Continent, and known generally as the Jumelle, obviously took its rise from the opera glass, and cameras having the actual form of an opera or field glass are yet not unknown, though patented in 1881.

Since 1854 the evolution of the camera has proceeded on regular and well-defined lines—namely, the perfection of detail with corresponding ease of particular movements, or the attainment of given ends and a cheapening in price; what the next half-century has in front of us time alone can show, but at first sight it is not easy to see in what particular direction great improvements or radical changes can be effected, for with the wide spread of photography and consequent great demand, many minds are directed to this subject, and the introduction of machinery has so cheapened production that even in this respect there is little to be hoped for, but if any great advances

E. J. WALL.

THE death has taken place at Oldenburg of Herr R. Schwartz, who claimed to be the inventor of the picture postcard.

WE much regret to learn of the death of Mrs. Staley, the wife of our old friend, Mr. A. E. Staley, of Thavies Inn, Holborn Circus, London. We offer Mr. Staley our sincerest sympathy in his bereavement.

THE Biggest Anastigmat in the World.—During a recent visit to the optical works of Messrs. Ross, Ltd., at Clapham Common, we were shown what is probably the largest anastigmat in the world in course of construction. The focal length of this giant lens is 6 ft. (72 in.). The definition given at full aperture was perfect, and the lens, which is of the well-known Homocentric type patented by Messrs. Ross, will cover a plate 6 ft. square sharp to the corners. The lens, as we saw it in an unfinished condition, weighed over half a hundredweight, and needed as much careful handling as a baby. We presume this colossus among lenses is ultimately intended for process work.

"Reminiscences."

TO-DAY, May 27, 1904, I note the number of the BRITISH JOURNAL OF PHOTOGRAPHY is 2,299, and I can scarcely realise that since I received at my studio, in Bath, the first number of the same, then called "The Liverpool Journal of Photography," and a note from Mr. Henry Greenwood asking me from time to time



H. N. KING,

One of our oldest and most experienced professional photographers.

to contribute to the same, that half-a-century has slipped by, since then what changes; but excellent work was produced in those days. The Daguerreotype and paper negatives were practically ousted by the Collodion process. This, to me, was of intense interest, and I worked hard with experiments and in the manufacture of Collodion was very successful. Many of the present day imagine that the productions of forty or fifty years ago were very poor, a greater mistake was never made. The landscape work produced in the fifties and sixties have never been excelled. Take the 12 by 10 work of such men in those days as Bedford, Vernon Heath (the whole of his landscape negatives 12 by 10 are in my possession), William England (an old schoolfellow), and his statuary, Swiss scenery, etc., and many others also produced work of exceptional brilliancy and marvellous detail, results not excelled by any work of the present day. The carte de visite follows and brings grist to the mill of the photographer; the rage was immense and the whole sale price was 8s. a dozen. My connection with the musical and dramatic profession enabled me to secure an enormous number of celebrities, and tens of thousands of the same were sold. I have before me an order from the firm of Marion and Co., signed F. Bishop, to the late Vernon Heath, dated 11/7/67.

for eleven thousand copies C.V. of the Prince and Princess of Wales, one or two negatives were of little value to meet the demand for copies. I had a camera made 10 by 8, fitted with three Dallmeyer lenses, giving at one exposure three negatives on the half of the plate 8 by 5 raising the back a second exposure varying the position or not gave me half-dozen negatives. With many sitters, such as Sayers, Heenan, Blodin, Livingstone, and others, I secured three or more plates. After exposure and developing the plate washed I coated with glycerine and put aside in boxes till the day's rush was over when the necessary time could be given to proper fixation or intensification if necessary.

The stereoscope at that time was in great demand. You could scarcely enter a house without seeing on the drawing-room table a stereo and slides, the sale being very large. There is a fascination in a stereo slide, the reality of the scene portrayed especially in a glass transparency, which I have for many years tried to make popular. I can only compare my love for the stereoscope to that of a child with a doll, idolised and worshipped as it is in infancy. Later on the sale fell off, and I have not the slightest doubt the results of the indecent slides produced. For years it was a dead letter, and until recently the present generation knew nothing or but very little of the stereoscope. A great revival has again taken place, but I regret there is again the same tendency to produce objectionable slides. I can only hope that the strong arm of the law will put down and punish the producers, otherwise the results of previous years will repeat itself. The same thing, I regret to see, is being introduced in postcards. This branch has caught on immensely and must give employment to thousands. Cannot the stationer, for his own sake and benefit, be persuaded not to purchase anything bordering on the slightest tendency to offend. The very rapid growth of various processes in half-tone collotype colour work, etc., the enormous number of albums of such in packets also of almost every town has, with the postcards, played sad havoc with the sale of legitimate photographs, albumenised and other processes. I do not hesitate to say no publisher of note has one-tenth part the sale of the thousands he may have in stock to that of a few years back; specialities only have a sale. The photographic publisher has now to fall back and keep pace with the requirements of the day. Note now the photo-scenes as advertisements at railway stations and carriages. I claim to be the first to try to introduce photographs in railway carriages. Forty years ago I had interviews with the heads of the Great Western, Midland, South-Western, and other companies, endeavouring to show the attraction of the various views at stations on the line has an inducement to visitors which, I felt sure, would secure to them passengers. The Great Western favoured the idea most, and without binding themselves to carry the scheme out, and granted me two first-class passenger and luggage free for six months—luggage for 12 by 10 wet plates, no joke in those days. I could travel and stay at any station on the railway. I made one tour from London and towns to North Wales, a second one London to Devonshire, obtained a large number of excellent negatives, but the company thought the cost for prints, frames, etc., would not be at that date advisable, but gave me permission to place a frame at any or all stations without charge at the various waiting-rooms. I could not see my way to get a return in this way and had to content myself with the negatives; but the same afterwards yielded a good result. Illustrated papers and magazines bring an addition to the income of the photographer, although at a serious loss on the sale of prints. I well recollect forty-six years ago photographing the planting of the Russian guns in the Victoria Park,

Bath, a copy of this appears in the "Illustrated London News" of September 28, 1858. I had an interview with Mr. Ingram, the founder of the "News." At that date he was not in raptures with photographs for illustration. "Mr. Ingram," I said, "the day will come when the public will not be satisfied with the inaccuracies and incongruities of the artist with the brush. They will demand the reality of the photograph and its truthfulness. This will increase to an enormous extent illustrated papers and magazines." I think there can be no question of doubt that such is the fact, the immense piles of these at the bookstalls tell the tale. In conversation with Sir William Ingram, of the "Illustrated News," I mentioned my interview with his father and asked him had such been the case? He replied, "Mr. King, you are a good prophet; they could not exist without its aid."

Perhaps no better argument can be found respecting the rapid increase of photography than by, as an illustration, the *BRITISH JOURNAL OF PHOTOGRAPHY*. Compare an early number with that of the present day. The immense increase of advertisements in every way and the literary matter. Note, as a curiosity, the first number of the "Almanack," which is before me, and contrast that with the last, forty years later. The one published in 1864 measures 4 inches by $2\frac{1}{2}$, $\frac{1}{4}$ of an inch thick, and 72 pages of matter, weight 7 drams; now take the 1904 (forty years later), size $7\frac{1}{2}$ by 5, thickness 3 inches, weight $3\frac{1}{4}$ lb, pages 1,804. The whole of the forty "Almanacks" I have, and they contain articles of great value, and many as well have the numbers of the *JOURNAL*. Inventions, many of which by a little manipulation are the recent discoveries now brought out, and it is a very difficult matter to find any process or apparatus not dealt with in some shape or form, whether panoramic cameras, pistolgraphs, or snapshots; they contain articles invaluable and interesting. Look again at the enormous increase of photo literature, the publications of Snowdon and Ward, Iliffe, and others on every conceivable subject connected with photography. Hardwicke's

Chemistry and Brewster on the Stereoscope were my earliest treasures.

It is now many years since dry plates were introduced. I think it was 1855 I first used Dr. Hall Norris's dry plates. Then we had the Tannin process of Major Russell, the Collodion Emulsion of Joyce and Bolton. Practically wet collodion held its own until 1881, when gelatine plates took the lead. Since that date they have been vastly improved, and, if I may advise, let the plates you use be orthochromatic. The work in the collodion days was very laborious; that of the present day is very different. I have frequently to make long journeys with 12 by 10 camera and invariably return with a large number of plates, but I have never during the last twenty years, except when working at Windsor Castle, developed a plate away from home, whether my journeys have been England, Ireland, Scotland, or Wales.

Now, looking back with pleasure to early days in the practice of the art, there are times when sadness creeps in. I feel the loss of many eminent men in photography it has been my good fortune to be associated with, exchange ideas, etc.; names amongst them probably unknown to many of the present day: Claudet, Fox Talbot, Mungo Ponton, John Beattie, Sarony, Bedford, Wharton, Simpson, Trail, Taylor, Dr. Thompson, Hughes, Vernon Heath, Mayall, Sutton-Rylander, Robinson, Hardwich, Lake, Price, Glacier, Breeze, W. B. Bolton, Warner, etc.

For a moment a look at the bright side. There has not been during the last fifty years a discovery more useful or interesting than photography. Its productions abound in the palaces and home of the cottager; used alike by the arts and sciences, by the detective to aid the means of justice, by the antiquarian to preserve as mementoes relics of those buildings now fast mouldering away by the hand of slow, wasting time, giving employment to tens of thousands and delight to the same.

HORATIO NELSON KING.

Photography as a Hobby: Does it Pay?

DOES it pay? Probably few amateurs of any standing in photography have escaped the responsibility involved in answering this question. One way of evading it is to ask, "Does any hobby pay? Is it expected of any pursuit adopted as a recreation that it shall 'pay' in the material sense of the term?"

But if satisfied that the query is merely intended to elicit an opinion as to whether photography yields an adequate return in interest and enjoyment for time, labour, and expense devoted to it, one need not hesitate to venture upon an emphatic assent.

The kind of pleasure derived from the pursuit of photography, and whether it tends to the elevation of personal character or the reverse, depends, as in many other cases, upon individual temperament. Consider how various an element is here implied,—that "one man's meat is another man's poison,"—that one is earnest and thorough in all he does, and another but superficial,—that one finds his highest joy in life in posing before his fellows, while another seeks by every means to shun the public eye,—that one finds his whole interest in the scientific principles underlying an avocation, while another delights in its powers of ministry to the gratification of the æsthetic faculty, and so forth,—and when it is recognised that photography has something to offer of pabulum acceptable to all these types of character, it will necessarily appear that the moral product must vary according to the nature of the individual, as has been said.

Yet in most cases the individual will be found to assert that photography has answered his purpose. It has opened a way to easy attainment of that wherein his soul delighteth.

The earnest student will realise that he has entered upon a life work of experimental research of most absorbing interest. The superficial discovers that he has only to "press the button" in order to collect memoranda of all that catches his fleeting fancy. The *poseur* is furnished, by the particular "mutual admiration society" honoured by his membership, with frequent access to a moral or material platform. The retiring of disposition can enjoy the prosecution of his experiments in solitary seclusion. The scientist finds himself confronted with problems, chemical and physical, as fascinating as he has ever encountered. The artist is delighted to discover himself in possession of a new medium of expression, of powers and characteristics unfamiliar, but of special value and of facile application. And so on to the end of the category; and therefore it must be concluded that, as a hobby, photography does "pay," in some acceptable form of *kudos*, the great majority of those who engage in it.

But "there's a deal of human natur' in man"; and, as he cannot be definitely classified according to the foregoing or any other scheme, suppose we limit the scope of our inquiry, and ask what inducements and rewards photography holds out to an ordinary individual possessed of average intelligence and culture?

It is probable that the successful outcome of a first exposure is always productive of a pleasurable mingling of surprise at the facility of the operations by which it has been brought about, and of self-gratulation upon the evidence afforded of some power of judgment by which similar or even better results may be accomplished in future. There is usually encouragement, at



J. T. ASHBY, F.R.P.S.,

A well-known and much esteemed photographic judge and critic.

least, to a second adventure, even though greater care in carrying it out be inculcated by some little slip in the first. And further endeavours, carried through with ever-increasing circumspection, and leading thereby to more pronounced success, conduce to a habit of thoughtful care in every undertaking, together with a wholesome optimism as to the rewards of that homely virtue.

But meanwhile the operator is also acquiring a new faculty, and is unconsciously training himself in its exercise. He is learning to see, to substitute the habit of accurate observation for that of the vague visual exercise which passes for seeing with so many of us, and which leaves only a confused general impression upon the mind. He is beginning to master the niceties of contour and the subtleties of gradation, and to appreciate the endless varieties and the beauty of texture.

And this larger faculty of vision is accompanied by fuller understanding and naturally conduces to the ripening of the selective faculty also.

This is the stage at which the student begins to be conscious of his new powers. He begins to know *why* he does this or that in arranging his subjects or in selecting his point of view.

And now he finds his hobby not merely an education but a source of continual delight, and an "exceeding great reward."

If, at this point, he be so fortunate as to fall under sound guidance, he seizes with avidity upon the principles laid before him. They supply him at once with an explanation of the phenomena he has observed and with a key to their æsthetic significance in pictorial combinations. Left to himself he might be longer in arriving at similar conclusions, but he would probably reach them in the end, if not led astray by the charlatans that beset the way of the amateur at this period of awakening consciousness and sensibility.

The writer would seriously advise all whose experience he has sketched above and who have, however modestly, begun to realise that the practice of photography has awakened some sense of artistic instinct within them, to study some such simple handbook on pictorial composition as Green's "Sketching from Nature" or Harding's "Pencil Drawing," supplemented by either of the handbooks of the late H. P. Robinson bearing upon the same subject. Above all things he would enjoin them to be loyal to the characteristics of their medium, photography; to use no smudgy and gritty process inadequate to the expression of the really fine pictorial qualities of pure photography, but to leave all manipulations that tend to gloom and grime to the purblind charlatans aforesaid.

Encouragement and assistance may often be derived from joining a local photographic society, or from membership of a postal club, always providing that the fraternity be not dominated by faddists. These gentry may usually be known by their pretence to greater æsthetic sensibility than their neighbours possess. They will eulogise painters whose renown is based upon the technique of their art in one breath, and in the next they will denounce photographers who excel in the technique of theirs. Their utterances run either to Velasquez and Whistler (if you have studied these matters note the incongruity! this is only a sample,) or else to "indefinable something" which are to be understood as too exquisitely exquisite for expression in language. They remind one of Æsop's young "mole" who was reprimanded by her "dam" for an affectation of sensibility likely to lead others to suppose her completely destitute of common sense.

Exhibitions, and the competitions conducted by some of the photographic journals offer means of comparison with the progress of other workers. But do not work, compete, or exhibit merely for notoriety. As soon as delight in one's work for its own sake begins to flag,—as soon as the constant stimulus of successful competition or of popular applause becomes necessary to the maintenance of one's interest in a pursuit, that pursuit is beginning to lose its wholesome and legitimate influence as a hobby.

This is incidental to every form of human recreation. Ever racing is said to develop some vague tendency towards the subsidiary excitement of betting, and we have heard that innocent speculation as to the permutations possible in a packet of fifty-two pieces of painted pasteboard may be made contributory to the gratification of the gambling instinct!

Seriously, however, the greater benefits of amateur photography are not to be secured by its exploitation for self-advertisement or for material gain. But so long as it is followed for the sake of that ever-growing delight in the beauties and the wonders of creation to which it ministers, so long will it "pay," and repay a thousand-fold all the outlay of its votaries upon it.

It pays in the mere form of an urgent inducement to physical exercise which might otherwise be neglected. It pays in the educational and elevating influences to which we have directed attention. It pays as a recreation by reason of the absorbing interest it excites and thereby securing many a respite from the cares of our ordinary occupation.

And thus it will continue to reward its followers, unless and until egotism be allowed to step in and obscure the artistic vision.

J. T. ASHBY.

Thos. Bedding, Esq., F.R.P.S.

My Dear Bedding,—To be invited to contribute to the Jubilee Number of your important journal is a distinct honour which I accept with cordial appreciation of the friendly terms in which you tender it.

I fear that neither you nor I are likely to witness the centenary of the BRITISH JOURNAL, but my confidence that there will be such an event, and that it will mark the completion of another fifty years of indispensable service to the world of photography, is based upon the position your labours have established for it.

Your suggestion that I should contribute a picture or two is one that I would willingly comply with, but it only reached me here; and although I am returning to-morrow, I cannot get anything to you before Monday. If, therefore, you are able to use it, it will be a triumph of rapid-reproduction. But I doubt whether even the

marvellous resources at your command will enable you to accomplish that.

This is an earthly paradise, as you know; but the weather—well, consolation is to be found, and I wish you were here to share it with me “to the success of the B.J.!”

In spite of bad weather, I have added considerably to my collection of “bits” lying out of the ken of the ordinary tourist, and my daughter Beryl, who came down “to take care of” me, has found *Trollius Europæus* and a few other rareties blossoming in profusion.

Wishing every success to the Jubilee Number, to the JOURNAL, and to its Editor,—I remain, my dear Bedding, yours sincerely,

J. T. ASHBY.

Glan Aber Hotel, Bettws-y-Coed, North Wales, May 27, 1904.

Handling the Adult Sitter.

THE editor of a photographic journal is naturally a much-photographed man, and during the past twenty-five years I have probably been “took” more frequently than even the most popular professional beauty or the most abandoned criminal. With such opportunities for observing the ways of operators one is able to form an opinion as to whether their methods are improving or not, and as to changes and fashions which may be good or bad. In one particular direction the improvement has been very great. Probably it has been largely unconscious on the part of the operators themselves, and it has taken place at varying rates of speed in different studios and in different districts. In fact, there were some men, twenty-five years ago, whose methods were pretty nearly those of the most advanced men of to-day; and there are still a few operators—very few, I believe—who are working just as they did (or as their employers did) a quarter of a century ago.

The particular phase of operating to which I refer is the posing of the sitter, and its traditions have gone through three principal stages:—

1. The sitter is posed by the operator.
2. The sitter poses himself, knowingly, at the instruction of the operator.
3. The sitter poses himself, unconsciously, at the suggestion of the operator.

The first method flourished in the day when people compared sitting for a portrait to a dental operation, and although this was a libellous comparison, there was, as we now know, an unnecessary amount of pushing and pulling, of wheeling about in castored chairs, of changing accessories and backgrounds, and, finally, of fixing with head-rests, back-rests, body-rests, and even, sometimes, hand-rests and elbow-rests. In this method the head was raised and turned and twisted, the arms and legs, even the hands and separate fingers, were laboriously posed and arranged, until no human sitter could possibly retain an easy attitude or an interested expression.

When it became the fashion to allow the sitter to do most of the posing, at word of command, a very great step had been taken. Of course there are, and always will be, some sitters who cannot do even such a simple thing as “raise the chin just a little,” or “turn the eyes this way without moving the head”; but with most people this sort of thing answers much better than personal handling. By arranging the lighting beforehand, by deciding the position for standing, or placing the chair for the sitting figure, and by selecting a chair of which the height, depth, and especially the positions of the arms properly fit the sitter, and then by a few words suggesting

that the head should be raised, turned to the left, the hand drooped over the chair-arm, and so forth, a sitting may be made very short; the sitter is interested rather than bored, and the pose and expression have a good chance of being satisfactory.

But there is yet a further development of method; a system in which the sitter does the whole of the posing without being asked to do so. It is the most valuable art an operator can acquire, and for its highest development it needs the intelligent co-operation of one assistant, or even of two assistants, with the operator. The art is based upon wide observation of humanity—of both physical and mental characteristics. The fact that familiar attitudes are easily taken, while unfamiliar poses are always stiffly held, is perhaps the most important basis of success. This fact makes it desirable to know something of the sitter's tastes and avocations. A lady who re-



H. SNOWDEN WARD, F.R.P.S.,
Editor-in-Chief of “The Photogram.”

gularly rides horseback will naturally hold her arms and shoulders and head well poised if she is given a rather high seat, with no temptation to lounge, while a man who spends most of his time in writing will always most easily take a

position in which there is some support for his fore-arm, even if it is only on the arm of a chair. The effect of the seat upon the carriage of the whole upper part of the body is important. Many a sitter, if placed in a low chair, especially if it is soft and easy, will at once lounge, curving the spine, dropping the shoulders, and drooping the head; but if seated on a fairly high stool or hard-seated chair, will hold the body, shoulders, and head in a good, but not stiff, position. Further, even with a sitting pose, a change so simple as the placing of a hassock under one foot will cause a slight alteration in the whole pose of the body, bringing up a shoulder that drooped, swinging the body round a little, and changing the poise of the head. These facts, and a thousand-and-one similar, are part of the stock-in-trade of the first-class operator, who needs observation, reflection, and good memory, that he may know how to get the effects he wants without much experimenting on any individual sitter.

For securing a turn of the head or eyes, the discussion of some object (a picture, frame, piece of bric-à-brac, or even the war or weather) is better than a direct request. With sitters who habitually look straight at the person they are talking to an abstract subject is sufficient, but with those who usually avert their eyes, some definite object, not too large, is useful. Such an object should not be introduced until just before the exposure is made; and then, if the exposure is long, an unpleasant stare may be avoided by moving the object a little

nearer to, and further from, the sitter, keeping it in a line with the direction of gaze. Thus the eyes are prevented from moving (without need to tell the sitter to keep still), yet the direction of their axes is changed just sufficiently to prevent stare.

It is never well to let your sitter know that you are dissatisfied or unsuccessful. If the first few dodges fail, instead of continuing for a long time trying change after change, it is well to make (or pretend to make) an exposure, then let the sitter walk around for a moment or two, discuss some object of interest, and begin again. In this way fatigue and stiffness are prevented.

These are pieces of common observation on which the model operator bases his success. Each must make his own rules and methods, and must vary them for every sitter. The development of the "suggested" pose, to replace the pose which was "made" and that which was "requested," is one of the greatest advances made in photographic portraiture during the half-century; and I doubt whether any of the improvements in technique are really so important. The cultivation of the method of posing seems the one thing most desirable for the successful operator, and I believe it will do more than anything else for the introduction of real artistry into our portraiture photography.

H. SNOWDEN WARD, F.R.P.S., Editor of "The Photogram."

Contrasts.

PHOTOGRAPHY enjoys the unique distinction of being the only business everybody seems determined to teach everybody else. But, it was *not* always thus. I cannot go back photographically to the date of the first number the BRITISH JOURNAL is jubilating over,



F. A. BRIDGE,
Hon. Secretary and Treasurer of the Photographic Convention
of the United Kingdom.

but at any rate I can personally testify to the great changes which have taken place during thirty-five years.

Then, amateurs were scarce and books on photography were few; now, amateurs are everywhere and books on photography are as plentiful as the most ardent votary of the camera could desire. Then, the number of reliable books might have been counted on the fingers of one hand, and were written by well-known professional photographers and scientists; now, there are possibly number 250, and have been written by "all sorts and conditions of men." In fact, I cannot help thinking that if the legitimate occupations of many of the authors was made known it would come as a surprise to many people, and there would be a considerable slump in photographic literature.

In the old days, amateurs consisted mainly of a few ardent souls who did not mind staining their fingers. Now, photography numbers among its votaries kings, queens, and princesses, and the very idea of connecting Royalty with stained fingers is too dreadful to contemplate.

Then, all the photographic societies in England and Scotland combined numbered about eight; now, the number in Great Britain and Ireland alone totals up to nearly three hundred. Almost every town at the present time has its photographic society, and when I think of the secretarial labour involved in keeping the meetings going after the novelty has worn off, and the members have exhausted each other, I shudder. Yes, I have had about twenty-five years of this sort of thing in one form or another, and know what it means. If the members, after suggesting subjects, would only come to the meetings and discuss them, it would be all right—but, how many do? Then the poor honorary secretary tries to find attractions in the affiliation slides and trade demonstrations to eke out his season. Even then, his well-earned leisure is encroached upon by the arrival of packets of prospectuses, leaflets, and prize-lists, which manufacturers in their innocence (bless them!) flatter themselves

will at once proceed to distribute to his members, and thank him "in anticipation." But, let us go back to 1870. Then, advertising was confined principally to the two journals, and the advertisements were plain and easy to comprehend. Now, they are sometimes such mythological fairy tales, that it requires a key or "argument" before the beholder can form the slightest idea of their connection with photography. Then, the choice of lenses was practically confined to the portrait, the rectilinear, and the single landscape, and the introduction of any new form by a well-known maker created quite a sensation. Now we have a formidable array of "stigmata," and our good old friend the rapid rectilinear has been re-christened a dozen times over.

By the way, one of the latest "novelties" in the way of lenses comes from America. It is called "The New Century Wonder," and we are told it is so constructed that it will change its focus by a mechanical separation of the lenses during exposure, and produce such a soft and diffused result that retouching is unnecessary. I do not happen to know of what the optical combination of this novelty consists, but a portrait lens on this principle was invented and used by Claudet some forty years ago.

Those who have only taken up photography since the gelatine dry plate period can form but a faint idea of what it was in the wet plate days; particularly in connection with outdoor work. A careful of luggage was a necessity. The plates were prepared and developed in a tent on the spot, and exposure meters were unknown. Cameras were mainly of the box-type and very heavy. Kinnear came to our aid a little in this respect, but that thing of beauty, the modern camera as we see it in our dealers' windows, with its eccentric movements and its reversing back,

had not then been dreamed of, and the word Kodak had not been invented.

Speaking of the reversing back, I am reminded of a meeting of the old South London Photographic Society when a visitor showed an unpolished piece of apparatus, the advantage of which everyone present immediately recognised. It was the reversing back practically as we have it now, and if the inventor had patented it it would have been a gold mine. Another matter might be mentioned here. I do not know who was the first to put the idea into practice, but the suggestion that a piece of opaque paper at each end of a roll of sensitive material would enable it to be changed in daylight, was first made at a meeting of the old S.L.P.S. as far back as 1886.

Five-and-thirty years ago photography was often alluded to as the black art. Then it was called an art-science; now, by many it is regarded as an art (without the science), and in some cases I must admit it comes very near to being so. A few enthusiastic workers in 1875 included it in this category, and made an effort to found a "Photographic Art Union"; one of the originators of the scheme being the present president of the Royal Photographic Society. Then, there was only one exhibition worthy of the name, and that was held annually by the Photographic Society of Great Britain, whose contributors prided themselves on the brilliancy and sharpness of their results. Now, almost every society has its periodical show and—but, no! there is a limit even to the capacity of a jubilee number, so I'll finish my contribution by wishing long life and continued prosperity to the BRITISH JOURNAL OF PHOTOGRAPHY.

F. A. BRIDGE.

The Last Word on Half-Tone.

PRACTICALLY all the history of photo-engraving is comprised in the records of the past fifty years, for though it is ninety years ago that Niepce practised his bitumen process on pewter plates, which was the direct forerunner of all photo-etching processes, and Mungo Ponton discovered the principle of the bichromate processes sixty-six years ago, there was little done towards applying photo-mechanical ideas to commercial work until well into the fifties, whilst it may be truly said that it is only within the last ten years that process work has achieved its most practical developments.

My own acquaintance with photo-mechanical processes dates from 1880, and, looking back, it is interesting, if somewhat saddening, to recollect even in that period the many processes which have run their brief career, the businesses that have been founded and wrecked upon them, and the money which has been spent in attempting to exploit them; whilst, saddest of all, is the passing away of many whose bright intellects were lavishly expended on such processes. Having come into contact either personally or by correspondence with a large number of inventors of new photo-mechanical ideas during the last twenty to twenty-four years, a retrospect brings to mind many interesting reminiscences; but I fear I might be reflecting on the memory of many who are now gone, and possibly hurting the susceptibilities of some who are still living, if I were to write as I at first thought of doing, a gossip account of past processes. And, after all, why rake over the lumber-room of the past for details of these superseded methods? The "living dog is better than the dead lion," and the healthy, vigorous life of process work to-day furnishes theme enough for an article.

I am sometimes asked whether it is possible that the half-tone process can make any further developments. The process seems so perfect in its results, and so precise and simple in its method, that it is difficult to conceive what more can be done. I am far from agreeing, however, that the last word has been said upon it. As a matter of fact, very little experimental work has been done on the half-tone process of late. Those in the trade have been content to let well alone, and, having a hard struggle to make things pay at the low prices now current, they have had little temptation to step out of the beaten track. Those who have had the time and inclination for experimental process work have given their whole attention of late to the three-colour process, confining their efforts, moreover, to the question of colour filters to the neglect of what may be an equally important consideration—viz., the influence of the ruled screen on the colour rendering. Only of late have a few far-sighted workers begun to see that a much more perfect result in three-colour blocks is obtained by a finer ruling, and where 150 lines was formerly in vogue the tendency is now to adopt 175 lines.

There can be no doubt that the scale of gradation is considerably influenced by the ruling. With coarse screens it is well known that hard contrasts are obtained, whilst fine screens tend towards flatness or softness, although holding more detail. The half-tone worker, however, does not mind flatness, because the fine-etcher can readily correct this by re-etching.

With the increasingly good quality of present-day letterpress printing, it is possible to get impressions from blocks which could not have been printed at all a few years ago, and a 400-line screen block is no longer a matter of wonder, though it is certainly not often seen. Process workers and printers

seem too much afraid of fine rulings, and 200 lines is the present limit of their ambition. But my opinion is that the last word will not have been said in half-tone work until screens of 500 lines and more per inch are used, so that the effect of

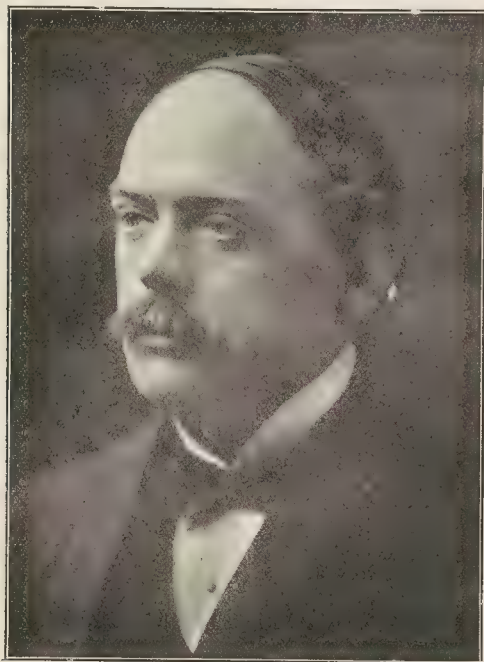


Photo by]

WILLIAM GAMBLE,

[Curley Lewis.

A well-known authority in process engraving.

the screen will have entirely disappeared, and a result equivalent to the continuous tones of the photograph is obtained. The prevalent idea that blocks made with such fine rulings as 400 lines are impossible to print under ordinary conditions is quite erroneous. In several cases which have come under my own observation the blocks have been no more troublesome to print than those from a 175-line screen. I should like to see the experiment tried of using the 400-line screen for three-colour work. If I am not mistaken it would show a marvellous advance on present-day three-colour results.

Concurrent with this tendency towards the use of finer rulings is a strong revival of half-tones from coarse rulings for newspaper work. Screens of 50 to 85 lines are being used, and the results are astonishingly good. This is due no doubt to a more skilful handling of the screen than was given to it some years ago when half-tones for daily newspapers were tried and pronounced a failure. Another reason, perhaps, why the idea is more successful now is that the stereotyping and printing of daily newspapers has much improved. There can be no doubt that we shall see half-tones more and more extensively used in the daily Press in the immediate future. It is the ideal process for the rapid illustration of public events, as the directness with which the negative can be made from the photograph without the intermediate aid of an artist, and the quick etching which results from the shallowness of the half-tone plate, enables blocks to be made very rapidly.

I am inclined to think that more might be done in the way of making the half-tone negative from a transparency made by contact from the original negative instead of from a print

as now. Still more expeditious would be the plan of making a half-tone positive by working with a transparency camera. True, this would give a negative print on the zinc or copper-plate, but this could be converted into a positive by an easy process of reversal, such as is now often done for producing white lettering on black ground. Generally speaking, this consists in developing the lines or dots to clear zinc, then inking or flowing with a varnish all over, after which the ground is removed by a solvent which will not attack the varnish adhering to the previously bare metal. This leaves the ink lines or dots strong on the metal in the parts which had previously developed white. The gain by such a process would be that the newspaper photographer would bring in his plates or films, develop them, and even whilst wet place them in the transparency camera, to be copied as a half-tone positive. No time would thus be lost in drying the negative and making a print, and there would be, moreover, the gain which must always result from the elimination of intermediate processes.

This suggests to me that we might go a step further and do away with the process camera altogether for the sake of rapidity and directness, which is so essential for newspaper work. We can do this by adopting a process suggested so long ago as 1896 by my friend, Mr. J. A. C. Branfill, but which, so far as I know, has never come into use, though Mr. Branfill himself showed me some very good results. It will be easy to understand the arrangement of the apparatus by means of the following diagram:—

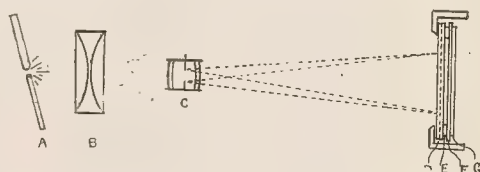


Fig. 1—A—the Arc Lamp. B—Condenser. C—Projecting Lens and Diaphragm. D—Ruled Screen. E—Separation. F—Positive or Negative. G—Sensitised Plate.

The light, condenser, and lens are contained in an ordinary enlarging lantern, and the only difference made from the usual arrangements for enlarging is to put a diaphragm with square aperture in the lens, the square being set at 45 deg. to the screen lines. The apparatus at the right-hand of the diagram is contained in a box-pattern pressure-frame. First, the ruled screen is placed in it; second, strips of cardboard to give separation equivalent to screen distance; third, a thin positive or negative; and fourth, the sensitised surface, which may be either a metal plate, photo-litho transfer paper, or carbon tissue. Of course, the light must be very powerful—in fact, nothing short of the electric arc, unless we use this method only for making the screen negative, which can be done on a process dry-plate.

The principle of this method is exactly the same as that of half-tone negative-making in the camera. The size of the stop, the distance of the lens from the sensitive plate, and the distance of the screen are governed by exactly the same rules, and may be found in the tables of screen distances published for the use of half-tone workers.

The object of the lantern and square diaphragm is to furnish a spot of light, so that every opening in the cross-line screen, each acting as a pinhole lens, may photograph it on to the sensitive surface, where it is developed as an opaque dot. An interesting fact in this connection is that if we increase the number of apertures in the diaphragm, or, in other words, the number of spots of light, we can, provided the spacing of the holes bears a suitable proportion to the spacing of the screen lines, reduce the exposure by one-half for two apertures, by one-third for three apertures, and so on. Of course, a limit

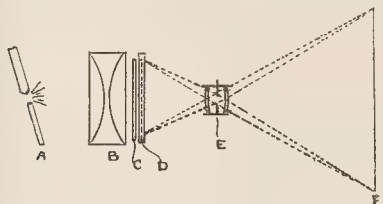
the number of apertures is the area of the lens surface, and if the apertures are made small the exposure is governed by the f value of each individual aperture.

Incidentally I may mention my belief that a process recently patented by Dr. E. Albert, of Munich, for producing half-tones for colour work without the aid of a camera is based on the same principle as Branfill's idea, plus the principle of multiple diaphragms.

This question of multiple diaphragms has really a very important bearing on the future of half-tone; and the only person I know of who has fully grasped the bearing of it is Mr. U. Ray, of Calcutta. He has elaborated it to a mathematical exactness, and it is not improbable that he will shortly publish a treatise on the subject. It is, of course, important, in order to get the maximum effect, that the screen distance should be set very accurately so that the images of each aperture in the multiple diaphragm should coincide on the sensitive surface.

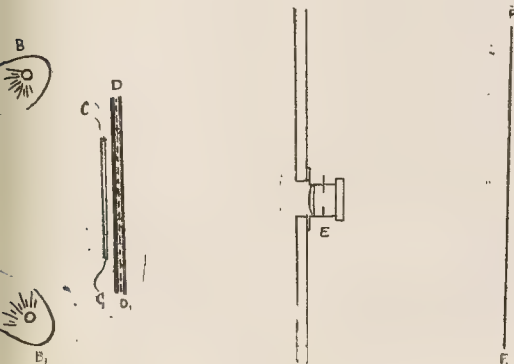
Ray smooths the path of the operator in this respect by using a mechanical screen distance-indicator somewhat like a pantograph, which moves a pointer relatively to the opening and closing of the camera extension.

Another way of using the half-tone screen in conjunction with the enlarging lantern is to place it next the positive in the lantern slide-carrier of the lantern (Fig 2), but with such variation as is demanded by the conditions of screen discing, and to place a square aperture in the lens, then projecting the image in enlarged size on to the sensitive surface. This method is especially applicable to poster work—a field in which there is great scope for the half-tone process.



2.—A—the Arc Lamp. B—Condenser. C—Positive. D—Ruled Screen. E—Projecting Lens and Diaphragm. F—Sensitive Surface.

Another further method of producing posters is to place a cross-lined screen in front of a thin positive, and illuminate the latter by means of reflected light (Fig 3).



3.—AA—a Board Covered with White Paper. BB—Arc Lamps. CC—Positive. DD—Screen. E—Projecting Lens in Wall of Dark Room. FF—is the Sensitive Surface.

An enlarged image can then be projected into a dark room by means of a good camera lens. In this way enlarged wet-plate negatives up to 60 by 40 inches have been, to my knowledge, produced very satisfactorily, and from them most striking lithographic posters obtained. The method is substantially the process of gigantography, which was patented not long ago; but I fail to see how the validity of such a patent could be maintained, for if I mistake not this was just the way Meisenbach made his earliest half-tones, and many others have described similar processes.

Turning to another new phase of the half-tone process, I would remark that it might be supposed the question of the best angle for crossing the screen lines had been settled beyond controversy at the angle of 90 deg., with the lines laid at 45 deg. to the sides of the plate. But this shows how the half-tone worker can get into a rut, and keep in it, by accepting a thing because "everyone says so," or "everyone uses it." A loophole is left for an ingenious experimenter to step in and patent a process of ruling the screen with the lines crossing at 60 deg. (Fig. 4) showing one way of doing it:—



Fig. 4.



Fig. 5.

This idea was first described by Mr. U. Ray; but Mr. Arthur Schulze, of St. Petersburg, forestalled him by obtaining German and British patents on it last year. This screen actually gives a much smoother and more pleasing effect than the screen with 90 deg. crossing, as I can testify from results I have seen. It is a further advantage of this screen that multiple diaphragms work well with it. Part of Schulze's patent consists in the use of a diaphragm with three openings, which may be triangular, square, or round, disposed at the corners of an equilateral triangle (Fig. 5).

Ray claims that with such a screen, and with his method of using multiple diaphragms, it is possible to use only the one screen in one position for three-colour work, and yet not get any of the moiré patterning which usually results from superimposing the prints from three negatives taken with the screen lines at the same angle.

I think it will be gathered from the foregoing brief resumé of potential methods that by no means the last word has yet been said on the half-tone process, and that it has still greater possibilities than it has yet achieved. WILLIAM GAMBLE.

We have heard such a lot about radio-activity lately, says the "Daily Chronicle," that—some of us are getting rather muddled as to what it means. Several medical papers, for instance, on both sides of the Atlantic, imagine that radio-activity means the power of giving off rays. Therefore anything warmer than its surroundings is radio-active, not to mention a candle burning or either end of a telephone, or nearly everything else one can think of. This is no discovery. Radio-activity is the power of giving off certain material particles as the result of atomic evolution. It will take some time to remedy this confusion, however.

Colour Sensitometers.

THE reproduction of coloured objects correctly in hue and luminosity by means of three colours, being greatly hampered by the limitations of the photographic process itself, necessitates the greatest care being taken that the conditions throughout should, as far as possible, be in harmony with each other, other-

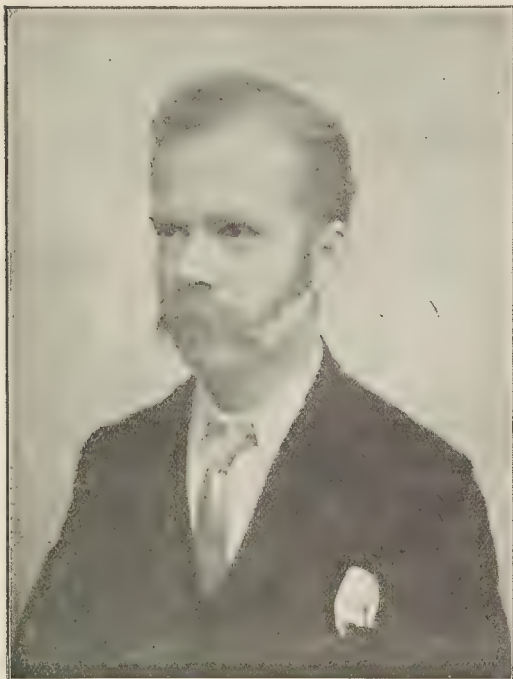


Photo by]

EDGAR SENIOR,

[Violette Cotton.

The well-known experimentalist in Lippmann Colour Photography.

wise differences in colour would be readily detected which in black and white would pass unnoticed. The three-colour process of colour photography is based on the theory that there are three spectrum colours which, when mixed in suitable proportions, will match every other spectrum colour, and consequently that of any coloured object; therefore if a colour record be obtained by analysis of all colours, into three simple spectrum colours, then by subsequent synthesis in these three simple colours, a reproduction to the eye of the sensations of all the original colours will be obtained. The three simple colours found to fulfil the required conditions the best are a red situate near the red lithium line, a green near the E line, and a blue-violet near the blue lithium line. These practically correspond to the colours of the glasses used by Ives in his kromskop, where the results are obtained by the mixing of coloured lights. When, however, the finished picture is to be obtained by the superposition of three coloured images, as in the case of transparencies for the lantern, or prints on paper, then we have it on the greatest authority that the colours should be complementary to these. In order to see what these colours are it is only necessary to project a fairly bright spec-

trum on a screen, and by means of three slits isolate three small portions, one in the red near C, another about the E line, and a third near G, and then alter the intensities of the three issuing

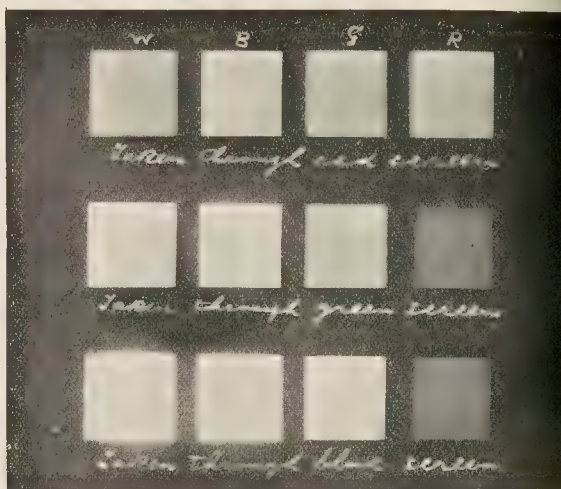


Fig. 2. I.

rays in such a manner that by their mixture white is produced. It is now only necessary to screen off from the mixture each ray in succession to obtain its true complementary. Thus, if the red light is screened off we get a peacock blue, in the case of the green a purple, while if the blue light be intercepted the complementary would be a yellow with a greenish tinge. These then

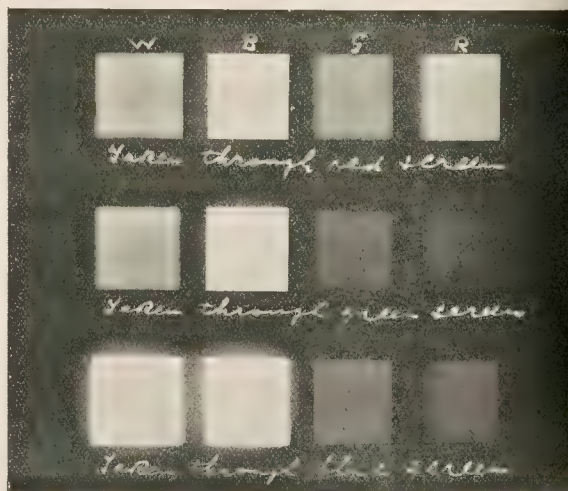


Fig. 2.—II.

appear to be the colours that should be adopted as the standard in three-colour printing. The photographic records, however, which would yield correct results with one method of synthesis

should do so equally well with the other. In order to ascertain when correct records have been obtained it is necessary to employ a suitable test object. If the spectrum be used for the purpose three negatives must be made in each of which photographic action is so distributed that it would be represented graphically

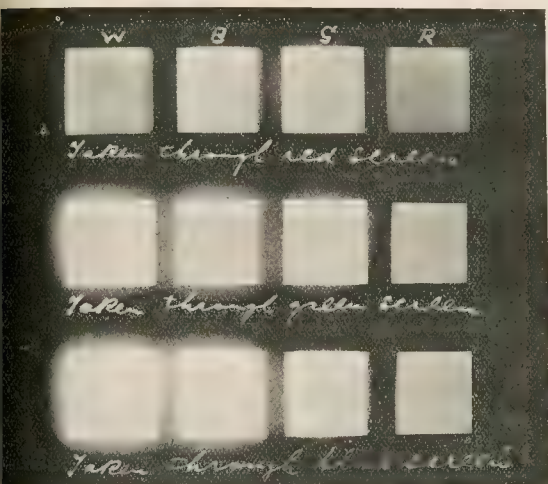


Fig. 2—III.

by curves, such as in Clerk Maxwell's or Sir William Abney's diagrams of colour—mixture curves of the spectrum, the light filters used in taking the negatives being modified until these conditions are fulfilled. Although theoretically the spectrum would be the best test object, in practice, when using plates

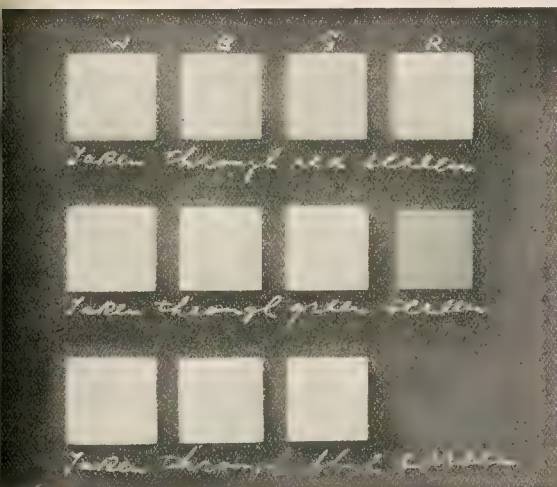


Fig. 2—IV.

rendered orthochromatic by means of dyes, we are troubled with bands or gaps of varying sensitiveness which result in an irregular rendering. And if plain plates are employed in which there is only a gradual fall of sensitiveness from blue to red, without gaps of insensitiveness, the length of exposure required for the green and red, operates against their general use. It,

therefore, appears that the spectrum is not a good test object for orthochromatic plates, and resort must be had to other means, and in that about to be described coloured glasses are used. The selection of the glasses is important, since their colours should be fairly representative of the principal colours of the spectrum.

The first thing to decide is what colours are to be used in the reproduction, and then to find what mixtures of these colours will match those of our glasses. Having done this, we are in a position to reproduce the colours of our test object in hue by means of three negatives from the data thus obtained. It now remains to do so in luminosity. To accomplish this the luminosity of the light coming through the glasses must be measured, and from this the comparative luminosity of the colours which when mixed go to form that of the glasses, obtained by multiplying the components by the respective factors. It now remains to reduce the luminosity of the different glasses to the standard of that of the lowest in each of the constituent colours,

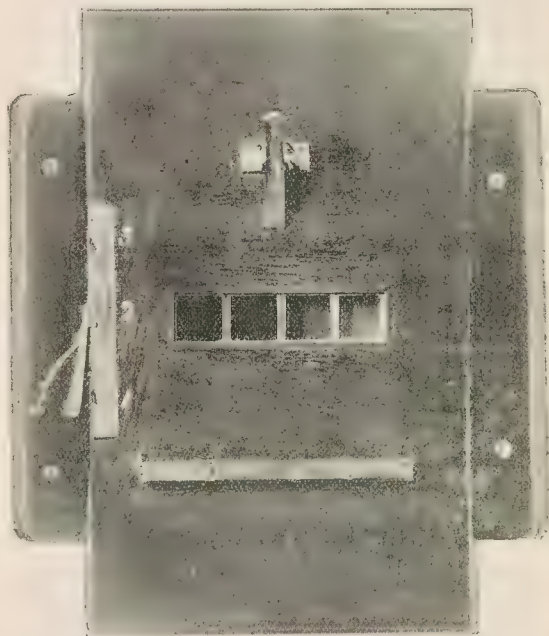


Fig. 1.

when we obtain three sets of colours of modified luminosity which should give equal opacities behind a red, a green, and a blue screen respectively, when the screens are correctly adjusted to the plate, the screens being altered until this result is approximately obtained. A test object of this nature "which constitutes a sensitometer" can be used with any plate, and is directly derived from the colours fixed upon for reproduction, the only conditions being that light of the same nature as that used in making the measurements shall be employed in testing the screens.

The instrument designed for use, "the general appearance of which is shown in Fig. 1," consists of a frame carrying a sliding panel in front, into which are fixed the coloured glasses comprising the sensitometer, and these by a simple movement are able to be brought successively into position over photographically produced densities contained on a plate underneath, for the purpose of reducing their luminosities to the required degree in each case. When the apparatus is to be used the

sliding front is moved until the catch at the side falls into position at No. 1, when the conditions are such as are required for testing the red screen. A sensitive plate having been placed in the holder at the back, and a screen fixed in front of the glasses by means of a spring, the exposure is made. The sliding panel is then moved forward until the catch engages in No. 2 and a green screen substituted for the red one, and a second exposure made, and finally into No. 3 and a blue screen replacing the green. It will be thus seen that the same plate is employed throughout all the tests, and although the colour of the screens will differ with various brands of plates, the point to remember is that the same density, as near as possible, should be produced by development under all the squares, and the absorbing media must be altered until this is attained.

In Fig 2 is shown a series of four tests made upon the same

kind of plate, but with a different set of screens in each case, "the small letters indicating the colour of the glasses forming the sensitometer." It will be noticed how the results vary with the filters employed, those used in taking No. III. and IV. producing perhaps the best in practice. Correct screens having been found, they may be used for photographing the row of coloured glasses in order to see whether they can be reproduced in hue and luminosity by means of the three colours chosen, "the inner part of the instrument being removable for this purpose." In conclusion, we wish to say that no claim to originality is made in the instrument described (beyond whatever may attach to the particular form of the apparatus itself), the idea being simply carried out from the published suggestions of Sir William Abney, and based on the principles involved in his sensitometer for orthochromatic work.

E. SENIOR.

The London and Provincial Photographic Association.

NOTWITHSTANDING many stormy scenes, when the air has been thick with resignations, notwithstanding the general lack of interest in society work, probably caused by the keen struggle for existence of to-day rendering most men prone to seek rest at the end of the day, instead of spending an evening in strenuous discussion at a society meeting, the London and Provincial still

proportion of its members who take enough interest in their society and photography to come down to the meetings.

In a vast city like London, with its huge distances, its many counter-attractions, and the weary anxiety of its daily toil, it is hardly to be expected that meetings can be secured as large as provincial towns can offer, but for an average attendance the meetings of the London and Provincial compare very favourably with any London society, not excluding the "Royal," with its glamour of prestige and its respectability of age.

The reading of the committee and general minute books offers an instructive and amusing evening, and having spent a few hours in this way one cannot help being struck by the similarity of the proceedings in the youthful days with those of to-day, when the association has attained and passed its majority. One finds the same solemn business in committee, the same gentlemen, or their prototypes, inviting all and sundry to tread on the tails of their coats, what time other members are still, as did their forerunners, drawing the delusive red herring across the track. One finds that the vexed question of "Ladies' Nights" was as keenly discussed, supported, and condemned in days of yore as now, and that the very secretaries were from the beginning worried as to non-payment of subscriptions, and as to how to make the evenings more attractive. And we still have a member always ready to open a discussion on "Combined Toning and Fixing." But still the association goes on meeting regularly, despite the fears of hon. secretaries; the subscriptions are paid sooner or later, and evenings still seem attractive enough to keep up the average attendance.

One feels bound to acknowledge the help of those members whose names are to be found in the books of twenty years ago, who were then and are still of importance in photography, who, year in, year out, have attended the meetings in one unbroken sequence. Week after week they are there, ever ready to welcome and assist the new member, and by their loyal affection to the association they have helped to start, are still forwarding its aims and success.

A word to would-be members who have heard, and are scared, by terrible tales of the doings at the London and Provincial. I joined five years ago, a raw novice, and was taken in hand in the most kindly manner. Never a sneer at my inexperience, never a snarl at my "wanting to know"—always a friendly lead and a helpful explanation; and so it is to-day, unless you want to teach those who know better, and then your lot will not be a happy one. I advise everyone whose business or pleasure is



R. J. KINSON,

Hon. Sec. of the London and Provincial Photographic Association.

goes on its way rejoicing, with a sufficient balance in hand, with an ample roll-call, and, what is more important, with a goodly

photography, to join a society, and an established one like the London and Provincial, whose roll of members has included so many of the most revered names in photographic circles, and whose meetings are still as full of interest and vim as they were before many of the societies of to-day were born.

The London and Provincial is not an art association; it does not encourage trade demonstrations, and it is not very keen on lantern nights; so other societies' hon. secretaries will sympathise with their brother of the London and Provincial, who is expected to arrange a programme for 52 evenings in the year, with papers of a high order of merit, and whose only reserve is "Open Nights," which do not look attractive on the programme, but have made the association what it is. These are the evenings to see it at its best, for it is then that a seemingly simple, but in reality an artfully-planned query sets the table in a roar, *pro and con*, or an apparently innocent negative or print calls forth the heavy artillery, and the self-appointed official opposer

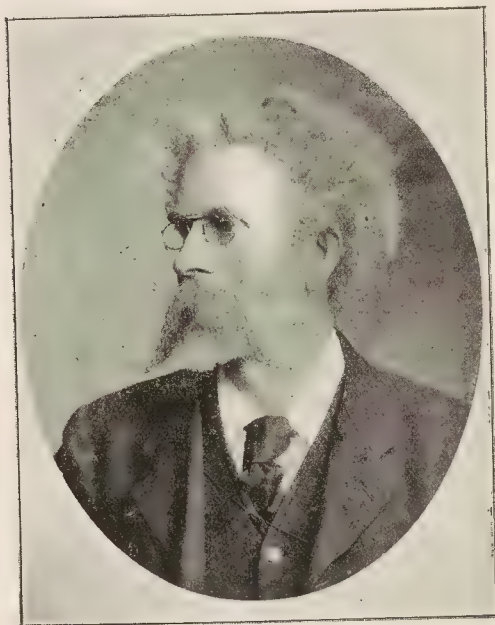
falls foul of the old guard with his experience of thirty years or more, and one's knowledge is enriched by the revealing of useful, but little-known formulæ, chemical, optical, and technical facts, all of which are hotly disputed up to the moment of closing, when the chairman's hammer puts an end to official discussion, and the combatants retire "round the corner" to fight it out or come to an amicable settlement.

And now, hearty congratulations to the BRITISH JOURNAL on reaching its jubilee. The warmest thanks are due to the Editors for the continued support they have accorded all societies. The London and Provincial certainly owes much of its success to the weekly report of its meetings, space for which the BRITISH JOURNAL rarely fails to allot. I trust the time when the London and Provincial's meetings cease to be of sufficient interest is as far distant as the day appears to be when the BRITISH JOURNAL OF PHOTOGRAPHY shall cease to be the "Times" of the photographic Press. R. J. KINDON.

Fifty Years' Reminiscences.

STORY! God bless you! I've none to tell you, Sir." Such were my first thoughts when I received the suggestion to give some of my recollections for half a century back for the Jubilee Number of the "B.J.P."; but, when I remembered that I was within three years of the jubilee of my own introduction to photographic practice, it occurred to me that, after all, I might have a story to tell sufficient to interest the present generation. I well remember my very first photographic experience. It was at a time when, if the pattern on a plaid necktie or the button-holes of a coat showed crisp and clear, attention was first concentrated upon them rather than on the features themselves, and the portrait praised or dispraised accordingly. I had seen my father collodionising plates, and, determined not to waste collodion, though I would practise coating a plate by pouring a pool of water on and off. The result can be imagined. But I did not decide all at once to take up photography in earnest. I suppose I was ambitious. I had taken several medals from South Kensington, was qualified under the "Department" to teach, and, further, was associated with a band of earnest workers with the brush—Luke Fildes, R.A., Harry Woods, R.A., E. Brentnall, members of the Old Water Colour Society, and Warrington Wood, the sculptor, were all fellow students with me at the Art School; but Fate took the matter in hand and I settled down to what, once, was a very lucrative profession. Present-day photographers have little idea of the work of what they would consider such palmy days—no proofs, no retouching. You made your exposure, took a few seconds to develop, and, after fixing, brought the plate out to your sitter, who always was pleased if the positive was clearly taken and properly exposed. It was then dried and varnished at the fire, put in a case and delivered "while you wait"—and—paid for! Or, perhaps, your sitter preferred it "coloured"—ten and six or a guinea, or more extra, according to size, etc., for a few minutes working up with powder colour! Then the case, rarely less than half a guinea, and often much more. In those days—nearly fifty years ago—the name of Mander for cases was supreme; other workers have come and gone, but Manders are still with us, still noted for the highest class of leather cases. When the question of permanency of photographs attracts such attention it is worthy of note that old glass positives of the very earliest period are, when properly varnished, as good this day as when first sent out. I had one, only a short time ago, to re-frame, and I knew the photographer's

style at a glance—Lee, of Liverpool. He used to take his positives on colourless patent plate-glass, and mount them, glass side out, so as to present a non-reversed image. He generally used claret coloured velvet to back them up with. His portraits were unsurpassed—rarely equalled. Their only defect was the liability of the colourless glass to "sweat." After collodion positives had enjoyed popularity for some time a method of whitening them with bichloride of mercury was brought out as a secret process, with a big fee for disclosure of the method of production; process mongers had a great run



G. WATMOUGH WEBSTER, F.I.C., F.C.S.

then. These whitened positives were very effective, and the recipe for compounding the developer was a marvellous con-

section. The term Alabastrine was invented for them. But, as a matter of fact, the whole secret—and to this day this is not well known—lay in the varnish. A spirit varnish was fatal; the beautiful white image, the moment the varnish went on, was converted into a wretched bluey white, which no one would look at. All that was needed was a benzol varnish, which did not alter the state of aggregation of the silver particles comprising the image. My first professional experience was out of doors, a carpet being laid and a background erected, while overhead was an awning to prevent heavy shadows. But photographic portrait taking was looking up, and more pretentious surroundings were expected.

About this time I designed my first studio—8ft. wide and 20ft. long! My father, with whom I was then working, had as friends and correspondents two men whose names will always be associated with the early days of photography and photographic literature—Henry Greenwood and Alexander Forrest, the latter always a most enthusiastic and skilled photographer and still among us, the doyen of photographic experimenters and workers. He will also be remembered by the older generation by the "vignetting glasses" which he introduced and sold by thousands, and by the fluted glass dippers that he introduced, and which were used by all photographers. I am proud to remember that my father devised them and conveyed the idea to Mr. Forrest, whose firm at once took to the invention and produced and sold the dippers in large quantities.

Photographers of a dozen or two years' standing will perhaps be incredulous when I tell them that in the very early days of the art the method of making vignettes was quite a secret. The process and not the man was looked upon as the factor. I can recall a curious incident in this connection. I was busy in the studio when a man of the tout tribe walked in. "Young man," he said, "I'll teach you the fanatt bizniz for a sov." It was some little time before it dawned upon me that he wished to impart the secret of making vignettes!

Those who are conversant with the history of the beginnings of photographic practice will remember that negatives and paper prints therefrom were exceptional productions in a studio. The commonest plan was to take a "positive" and "convert" it—that is to say, whiten with bichloride and blacken with yellow "hydrosulphuret of ammonia," as the liquid was then called. I very soon came to the conclusion that a real negative developed as such at one operation was the proper thing, and, as usual, I set to work to experiment. When we took glass positives the great point was to wash the developer off at the right moment with as much despatch as possible. This at our studio was done by dashing the plate into a large trough of water. When I made my first pyro developed negative I naturally adopted the same method of washing. The trough was in a very dark corner. I dashed my plate in, waved it well to and fro, and brought it into the light to examine. A piece of plain glass only met my gaze! It took some little time to become familiarised with the pleasant little game films used to play when treated with acid pyro. But eventually I adopted the plan of roughening the margin of all the glasses—nothing but patent plate would be looked at then—before coating with celluloid.

When I took my second negative—one had to learn everything by experience at that time; there were no teachers—I could not, as I imagined, get it to "fix" properly. Eventually I discovered that what I imagined to be undissolved iodide was the prized "bloom" which characterised some of the early negatives with iodised collodion. Some time afterwards the method of albumenising glass to prevent the film slipping was introduced, but I never adopted it. I was loath to introduce organic matter into the silver bath which was ready enough to go "wrong" without provocation at any time without this added danger.

As years passed on a new dawn broke—first a tiny ray of light

that eventually broadened and spread, and finally became an all-pervading brilliant light. A little paragraph appeared in the JOURNAL to the effect that a new fashion had made its appearance in Paris. Instead of leaving the usual "pasteboard" fashionable people sent in as their visiting card a tiny full length portrait of themselves, and it was hoped that the fashion might be introduced in this country, and so add slightly to the photographer's income. The *carte de visite*—Anglicised, visiting card—was introduced. It seized the public fancy, it became the rage, and soon was rampant. Modern photography was created as by an enchanter's wand. High and low, rich and poor, all flocked to the photographers' studios, and such a harvest of profit was reaped as to lead to wealth almost "beyond the dreams of avarice." Every household had its album and the first thing a visitor was asked was to present one of his *cartes de visite*—the expression had been at once adopted *en bloc*, though its ordinary signification was quickly lost. Those whose experience of photographic practice is confined to the last ten or twenty years can have no conception of the absolute furor that seized the whole population of this country, indeed, of all Europe. Everyone, whether he was anyone or not, was photographed. From early in the morning to the dusk of the evening reception rooms were packed with sitters waiting their turn, studios reeked with the odour of collodion and acetic acid, orders were months in arrears, salaries ruled high, money was being coined. In the more pretentious studios eight or twelve exposures were made on a plate and printed in sheets; no retouching; full lengths the rule, vignettes the rare exception. A guinea for six *cartes* was common. A guinea a dozen was looked upon as a "cutting price." In Westbourne Grove Camille Silvy—to mention one prominent name—in two or three years acquired a huge fortune from *cartes de visite* at two or three guineas a dozen. Over a hundred sitters every day was not uncommon. There was, as I say, a positive furor. Then came the usual reaction. New studios were started, prices were cut, till the unheard of price of half a guinea a dozen was reached, and photography, in a sense, fell from its high estate, to be galvanised into popularity once more by the introduction and steadily increasing adoption of the "Cabinet" portrait, combined with more artistic methods of posing.

As my name has been so often invoked with regard to studio construction, I will just mention that at the time I am treating of I designed and superintended the erection of another studio, in Liverpool, where I contemplated commencing a new business, though I did not carry out my intentions. It would be about the period I am writing of that the now world-famous "B.J.P." adopted its present garb. Mr. Greenwood first called it the "Photographic Journal," and in its first issue under that name it was stated in the introductory words that the new name had met with general approval, one subscriber only having objected to it. This objector was my father, and the validity of his protest was shown by the ultimate adoption of a title which is now known over the whole civilised world.

Shortly before the advent of the *carte de visite* a great amount of excitement and controversy was aroused over the matter of collodion and its manufacture. A great many photographers made their own collodion. They bought pyroxyline ready made, dissolved it, added the requisite haloids, and thought they knew all about it. A prize—the first example, I think, of photographic competition—was offered for the best collodion competing, a condition being that the mode of manufacture of the winning sample was to be published. Mr. Hardwick was the only competitor, and he was awarded the prize for a collodion the manufacture of which in all stages was described in a masterly treatise he wrote, a monument of patient skill and investigation. He placed the manufacture of pyroxyline on an almost mathematical basis. The conclusions he arrived at have never been upset, nor the results excelled. The manufacture of gun cotton, as it was usually,

ough improperly, termed, is a very delicate operation, but when once entered upon is absolutely fascinating. For a period about two years I spent almost all my spare time in making various kinds and testing them after dissolving into collodion. Eventually I settled upon iodide and bromide of cadmium, which gave a colourless collodion, and I worked it with a neutral to test paper, a most difficult combination, but making the highest sensitiveness to be obtained.

"When the 'carte' was first introduced almost every print out was toned in the old hypo and gold toning and fixing bath. Pure whites were rarely, if ever, obtained, and the prints were almost all very fugitive. Messrs. Davinne and Girard published the results of their epoch-making investigations of the causes of fakings, and the alkaline gold tonings began to be talked about. The profession were very loath to adopt, but the logic of facts was too strong; the work could be got through more quickly and pure whites were the rule. The great fault was mealy prints, and the prints were mealy. I set to work experimenting on them and the various papers on the market. M. L'Abbe Laborde published the acetate of soda formula. This was tested in my laboratory and found to bear the palm. I adopted it, and have used it ever since. I believe an alkaline gold bath equals it for beauty of results, combined with keeping properties. I think Mayall was about the last photographer of eminence to give up the combined bath, and when it is remembered that Marion's (the great publishers of celebrities in those days) gave him an order for a hundred thousand Royalty photographs at once it will be readily imagined how handicapped he would be with the combined bath. In those days Disderi, of Paris, was a name to conjure with, and I mention it here to call attention to the fact that he was perhaps, the first in this country to use the process of "dry collodion." I have seen tens of thousands of prints at the place he then had at Brompton, all ready coated with gum at the black waiting to be mounted. That must be nearly thirty years ago. I might mention that at the time there was a great demand for cartes of the Empress Eugénie, and, to meet it, Disderi printed transparencies on collodion, and transferred them to enamelled paper, thus multiplying the negative's capacity a hundredfold. There was no fomite nor "gaslight" paper in those days.

It will, I think, be interesting to describe a novel use to which I put a camera in 1861. It may be remembered that Crookes discovered the metal thallium in that year, being aided by Bunsen and Kirchhoff's recent invention of the spectroscope. I had virtually the run of Messrs. Roberts, Dale, and Co.'s large laboratories at Manchester and Latchford, Mr. John Dale, F.R.S., being an intimate personal friend. We were fired with the ambition to extract some thallium from its first discovered source—flue-dust—and to test our product with a spectroscope, though there was none on the market. We, however, rigged up a camera, using the lens for a collimator, and an old tint glass prism fixed in the place of the ground glass. A small hand telescope was packed up to receive the refracted rays. We extracted our thallium, and conclusively proved the reality of our product by the presence of the characteristic green line in the spectrum. Just about the same time I had a golden opportunity of copying a wonderful daguerrotype—no less than a portrait of Dalton, the inventor of the atomic theory. It was a most cherished possession of Mr. Dale, senior, as no other was known to be in existence except a duplicate in the possession of Dancer, the optician, of micro-photographic fame. His micro slides of the Lord's Prayer, the size of a small pin-head, had an immense run.

To return to our cartes. Some time after their introduction, and when "vignettes" became the vogue, retouching began to be talked about. Reutlinger, of Paris, published some beautiful heads from neatly-retouched negatives. People used to rave about them, and "the clear air of Paris" that enabled

such results to be obtained; not a word about retouching was heard. But in this country Edge, of Preston and Llandudno, had been silently working on the same lines. All his negatives were retouched, and not with black-lead pencil as now, but with Indian ink. At a very early period I practised retouching till I was fairly expert, and then sent out all my portraits from retouched negatives. I think I was the second in this country to adopt it with every negative, Edge being the first, though I believe Claudet occasionally employed it at that time. Retouching was then a secret art, and its exponents usually worked with locked doors to prevent their methods from being discovered. They obtained fabulous salaries. This was a notable time in other respects; Dallmeyer's newly-designed 2 B. lens for studio work was to be seen in every studio, and Ross's "Actinic Doublet" held the market for outdoor work till the famous Rapid Rectilinear of Dallmeyer and the aplanatic doublet of Steinheil changed their methods and opened out new possibilities, while Ross's symmetricals later on revolutionised every photographer's kit. The old studio I have referred to was far too small for the new photography, so I designed a fresh one on a larger scale, and adopted a system of blinds, which I still find superior to any other I have seen, while being simple and economical; it merely consists of curtains of some dark fabric suspended from pairs of wire stretched taut by a stretching-screw that I had to devise, but one similar to which can now be purchased at any ironmonger's for stretching wire fencing.

About this time I was intimate with that most genial of men, the late Thomas Ross, and most interesting it was to learn first-hand of some of the very earliest experiences of lens-making in connection with photography. There were two famous lens-makers in the world, Andrew Ross and Voigtlander, the latter having been the first maker of a lens which still holds the field for critical sharpness, over a limited area—the Petzval combination, generally known as "the portrait lens."

My recollections have now reached the end of the sixth decade of last century, which marked an epoch in my life's work. About the year 1869 I first had the honour of becoming a contributor to the pages of the "B.J.P.," which started a friendship with Traill Taylor that continued unbroken to the time of his death. I also commenced business in Chester. Of course I built another new studio, a description of which, from the pen of that well-known writer, the late Thos. Sutton, whose acquaintance with photographic optics and processes was profound, quickly found its way into these pages. I had not been long established before my connection with Hawarden and Mr. Gladstone began, and when an interesting incident occurred which I cannot remember if I have ever recorded before or not. It will bear repetition in any case. I had been executing a special commission at Hawarden for Mrs. Gladstone, and I asked her if she would persuade Mr. Gladstone to sit for me. While she was absent on this mission I prepared my plate "on spec"—wet-collodion days. A message was brought to me that Mr. Gladstone would sit; but only on condition that the portrait was published at such a price that it could be retailed at sixpence, as he considered that one shilling, the then price of cartes of public characters, was far too high. No argument would move him. Anxious for the honour of a sitting from him, I unwisely consented to his restrictions. All the time of the discussion my poor wet-plate was getting dried up in the dark slide, and before he actually sat he wrote out an agreement to the above effect for me to sign! I got my negative taken, produced a large number (in Woodburytype), offered them to the publishers (Marion's) and sold—none! No one would touch a sixpenny carte, and it damned me with the trade for trying to cut prices—they would take nothing from me. I wrote to Mr. Gladstone explaining this result of carrying out his wishes, and received a communication—on a post-card, of course—withdrawing his stipulation about price. Too

late for me. Many a time since then was I privileged to have sittings from him, and my last connection with Hawarden and Mr. Gladstone was to make photographic copies of his will after he died. I gave up the negatives, and they were never published, though they would have possessed the highest interest. The will was written in his well-known handwriting in the pages of a little penny memorandum book.

Saving the instrumental improvements I have recorded, which also were associated with the first popular folding bellows camera—the Kinnear—photographic methods had undergone little change after the introduction of the alkaline gold toning bath. But now an invention was made which initiated a change that revolutionised photography, and made it a science of world-wide importance, and was the first step in the decadence of professional photography to the individual. I refer to the improvement in the gelatine emulsion process by an amateur—Bennett—who conferred on it a rapidity many times that of wet colodion. Everyone was at first incredulous; but the invention was of too vast importance to be allowed to lie fallow, and the germs of the present immense trade in dry-plates were sown.

No longer was skill needed to be able to take a photograph; very sensitive plates were quickly purchasable ready made; the price first advertised was so much per square inch of plate, and afterwards 7s. 6d. a dozen for half-plates, and so on. My experiences in studio-building continued; I had built a second studio at my Chester premises, and then had to move. This involved, as every photographer who has to flit knows to his cost, the erection of still another studio, the one I am still occupying, and which is furnished with blinds of the pattern I devised years before as just described.

There will naturally be less interest in my experiences since then, as they will come into line with many contemporary workers, there being few left of those who started contemporaneously with myself. I have had a large measure of fortune in having sittings from eminent people, from the very highest to the very lowest. I well remember the first time His Majesty Edward the Seventh, then Prince of Wales, sat for me. There was, and is, a popular impression that a commoner may not speak direct to Royalty, but must do it through a third person. I shared that belief (the occasion being a group with His Royal Highness and a score or two of titled sitters). I asked the Duchess of Westminster how I must proceed. "Oh, go and speak to him like anybody else," her Grace graciously replied. I got my group all right, but found the Prince was "not to be had" otherwise. The moment the exposure was made he turned his back to the camera—no unauthorised snap-shooting for His Royal Highness! The most interesting photograph of him I possess is perhaps where he appears in a view of the party as travelling in a small railway car on the Duke of Westminster's private railway (which runs over part of his estate in Cheshire) en route for Hawarden Castle, where I had the honour of taking a group which is now almost historical—the Prince and Princess of Wales and Mr. and Mrs. Gladstone. On this occasion Mr. Gladstone seemed actually nervous lest he should seem to be pressing too near Her Royal Highness. I could not get him in a suitable pose till I actually pulled him into position by the lapel of his coat! One of the newspapers, describing the photographing, had the audacity to say of me that they should think the Prince of Wales had never been so "bossed" in all his life! The difficulty of this kind of photographing is that, usually, one has about half a minute of time allowed for the work—no arranging or posing, no focusing. You plant the camera and focus an imaginary sitter where you hope your big gun will come. When he does come you click your shutter, and the procession files away.

The most trying subject I ever had was, perhaps, when I took a negative of Gladstone and Li Hung Chang. I was wait-

ing all day—by permission—the august Chinese having, I believe, overslept himself and missed his train, hence arriving very late. His secretary told me just before lunch there would not be a possible opportunity of taking a photograph; but I held on secure of the good offices of Mrs. Drew, who has always been kindness itself to me. At the close of the afternoon I was rewarded by being able to take a 12-10 for what was one of a very well-known picture.

I had an amusing experience at Hawarden on another occasion. The representative of a leading monthly illustrated magazine asked me to go with him to photograph some special collection of signatures. After we had been in the Castle some time he said: "Mr. Webster, I am going to be taken with Mr. Gladstone turning over the leaves of that book." "I don't think you are," I replied. "Well, you'll see; I suppose you have everything ready?" "Oh, yes." Shortly appeared Mr. Gladstone on the scene. "Oh, Mrs. Gladstone, I thought Mr. Gladstone would just give me a minute to go over the book and show me any specially interesting signatures it would facilitate my work very much," said Mr. —. "Oh, we can do that quite as well as Mr. Gladstone," she replied. First check. Then Mr. Herbert Gladstone came in. "Oh, Mr. Herbert, I thought if Mr. Gladstone," etc. "Would not that be rather invidious?" said Mr. Herbert, and passed on. Second check. Finally, Mrs. Drew appeared. The same old tale. "Oh, Mrs. Drew, I thought if Mr. Gladstone," etc. Mrs. Drew burst into a musical laugh. "Mr. —, you do not know what you are asking; Mr. Gladstone has been looking forward all his life to the time when he should be able to devote himself entirely to his favourite literary work, and every half-hour of his time is mapped out for years to come. You really do not know what you are asking." Checkmate.

I am getting to the end of my egoistic utterances, for it is no use recording any of my doings of late years, which are mainly such as may fall to the lot of any professional. But I may add that I built still another studio at a watering-place on the Dee estuary, West Kirby, and was able to have one which, in the middle of summer, though thoroughly well illuminating the sitters, is perhaps the coolest room in the premises. I commend its design to all intending studio-builders. It has a high-pitched roof, with an extra ridge-piece, still further increasing the apparent pitch, with the result that at no time can the sun ever throw its beams into the room so as to cause it to become close or sultry.

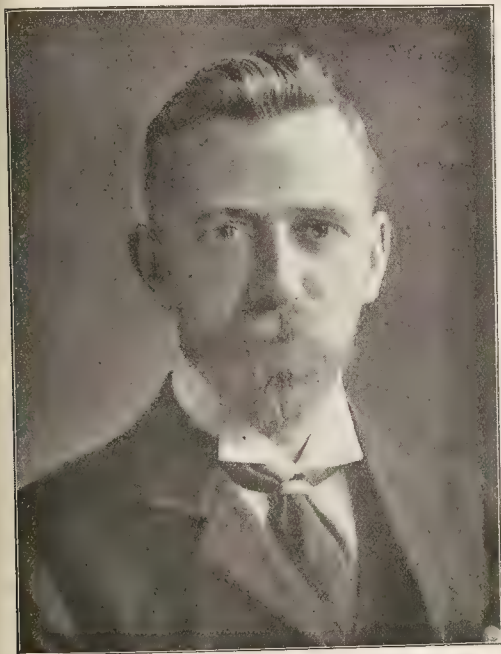
Now I have, in carrying out the editorially-expressed wishes strung this bundle of recollections together, I begin to be afraid that, after all, any possible reader will think that my peroration should coincide with my exordium: "Story? God bless you, I've none to tell, sir!"

G. WATMOUGH WEBSTER, F.C.S., F.R.P.S.

"NEVER take a house on the strength of a photograph," is the warning cry of "Duped" in a recent number of "Tit-Bits." One photograph showed the front of an ideal country house long, two-storied, overgrown with roses and creepers, with a drive and all that kind of thing; and the other pictured an extensive and beautiful garden, with a spreading orchard at the back—acres of it, to all appearance. Well, sir, this house of delight was in North Wales, and I had no time to go so far to inspect it, and as the terms were reasonable I closed with the offer at once. I am in that house now—and I wish I was out of it. Can the camera lie? Sir, it can—it can beat Munchausen. The house is really a small and most inconvenient cottage, not half so big as pictured, the garden so small that you could scarcely swing a cat round in it, and there are just thirty trees in those acres of orchard. The photograph had been taken with a wide-angle lens, which magnified everything beyond recognition. No more photographs for me!"

Photographic Fallacies.

NE of my living ancestors tells of the troops marching to join the Duke of Wellington at Waterloo, and in the brief space of that one life photography has had its genesis and reached its present position as an important handmaid to the arts and sciences. And in photography as in all else the truth of yester-



JAMES A. SINCLAIR, F.R.P.S.,
Three times medallist at the R.P.S. Exhibition.

day becomes but a fallacy to-day. The increase of knowledge causes us to formulate new theories to fit in with our facts.

The Editor asks me to be retrospective and educative. But others can be retrospective better than I. My old friend Mr. Forrest, of Liverpool, remembers the birth of the *BRITISH JOURNAL OF PHOTOGRAPHY*, and, if he has yet strength, can tell of photography from its inception. I am a comparatively new sightseer through the photographic kaleidoscope. In this article, therefore, I think it well to be prospective rather than retrospective, and to deal with details rather than the whole.

When I started photography the hand camera was just beginning to attract attention, and so I may consider myself as contemporary with it. At first looked upon as a toy, it is now rapidly being recognised as the most valuable instrument we have for recording the life of our time. Its rapid development has done more for photography than all the years that preceded it, and it is daily breaking down many of the cherished theories of the old photographers embued with the superstition that it is only a plaything. But this "old school" still have the speaker's eye, or, in other words, they are energetic writers for the Press, where they perpetuate their desired beliefs, while the "new school" are content to smile and work rather than write. Let us examine a few of the statements which, in one garb or another, are being constantly served up for our delectation.

"That the Mental State Attending the Use of a Tripod Camera Conduces to Photographic Efficiency."—The tripod man is usually uncommonly proud of his prowess and achievements. His mental state is akin to that of the early riser, and because he has the strength of body and stubbornness of mind to do something distinctly disagreeable he feels that he and his kind are the elect and salt of the photographic earth. His perspiring exertions may bring their reward, but do not give rise to the humility of spirit we might reasonably expect. The hand-camera men are regarded with his pitying eye, while he lords the earth with his case of care. The demands on his physical nature seem to obscure his intellectual one, for when we try to lead him into more pleasant paths he repeats the fallacy which he has read.

"That the Tripod Camera is Better than the Hand Camera for Serious Pictorial Work."—This statement is repeated by the tripod man in season and out of season, and the delusion is comforting to him. He might with equal reason inform us that coal was better than bread or land better than water. But really he means more than he says, and infers that pictorial work is only possible with a tripod camera. He shuts his eyes to the trend of modern work, and while he talks and writes the hand camera dethrones him from his position. When constructed as the highest class instruments are constructed the hand camera does nearly all that stand cameras will, and also much more, and work of greater moment. It records the actual life of the race with greater ease and efficiency than the tripod camera, and if it is handled with prescient decision I conceive the results will be as pictorial as those produced by the more unwieldy instrument. "We needs must love the highest when we see it," and as I believe the hand camera is the best, I must confess it is good enough for me. Other instruments fail because they are slow in action. To illustrate this I must be pardoned if I relate one or two incidents in my own experience. While walking with two friends in Milan a few years ago they commented on my having made very few exposures. I explained that I had not seen any suitable subjects, to which they suggested I was hypercritical. Just then I caught sight of some scavengers approaching. "Now," said I, "here is a subject which I will send to the exhibition." I had noticed a whitewashed wall a little way back which the scavengers must pass. Rapidly adjusting my focus and setting my shutter, I ran to position, and made the exposure as they went by. The result was duly shown on the walls of the New Gallery, and some may remember this in the R.P.S. loan collection at the same gallery last autumn. Another photograph in the same collection—"Water-carriers, Toledo"—was taken under quite different conditions. The Moorish archway which forms the background had appealed to me because of the beauty of its lines. Here was a perfect setting if I could get suitable figures. I adjusted the rising front on my camera, set the shutter, lit my pipe, and waited. And I waited an hour before I found a jewel for my setting. Then the water-carriers appeared, the camera was raised, and the shutter released at the psychological moment. Here, again, a stand camera would have been useless; the figures would have observed it and looked disastrously conscious, even if the Toledo boys had not stoned both me and it long before the water-carriers appeared.

"That Slow Plates are Better than Fast Ones."—This archaic delusion is constantly being fostered and repeated by writers in the photographic Press, probably because the majority of writers do not work and the majority of workers do not write. In the old days, before the advent of hand cameras, telegraphs, and telephones, people were more leisurely, if not more lethargic, and had not the acuteness to judge rapid exposures correctly, conse-

quently speed was a positive drawback. Taking advantage of the weakness of humanity, plate-makers who could not make rapid plates with certainty, and even now get much wastage in the process, insisted on the merits of the "ordinary" brand. Yet, with all their insisting, they have been constantly experimenting in secret how to obtain speed with certainty.

The old preacher wrote: "The race is not to the swift or to the strong," but we live in other times, and I agree with Mr. Robinson. You may remember the lines:—

"John B. Robinson, he
Said they don't know everything
Down in Judæ."

To-day the race is to the swift, and if he is strong so much the better for him. We live in the "age of speed," the best age the world has seen. We must be thankful in a large measure to the importunities of the hand-camera worker for the speed of plates. The best makes of rapid plates are incomparably superior to slow ones for most classes of work. For general photography, portraiture, architecture, or landscape I prefer the fastest plate I can get. Such plates reduce harsh contrasts and give better shadow gradation. The slow plate has its uses in the studios of the process worker and technical photographer, but are not wanted anywhere else. If asked if I am satisfied with the speed obtained to-day I answer "No." I am nowhere near the realm of content. When I can photograph the interior of Westminster

Abbey in a fraction of a second with *f* 16 stop I shall begin to feel satisfaction. To such times I look forward.

"That Photographers are not Sun Worshipers, and Love Darkness Better than Light."—This delusion is very common amongst those who gain their knowledge of photography through visiting exhibitions and looking at the illustrated photographic Press, and I admit there seems good reason for their error.

With one accord the Brahmins of the art seem to cry aloud: "O Helios! banish thy light from us, or we perish, and our art is no more." And even if Helios hears not they show by their works that any light, twilight, moonlight, starlight, or no light is loved more than sunlight. These high-priests of the art are like troglodytes, whose eyes will not stand the glare of the sun. Each says, with Guinevere:

" . . . I could not breathe in that fine air
That pure severity of perfect light."

But the common people, who form the real stronghold of photography, with a saner mind and broader outlook, welcome the light, and prefer one dewdrop glistening in the sun to all the fogs of a November day. For my part, I think we shall do better by trying to render the most beautiful things beautifully than by showing our beautiful things in an unbeautifully clever way.

THE BRITISH JOURNAL OF PHOTOGRAPHY has in the past been a champion for pure, virile photography, and will, I hope, maintain its record for other jubilees to come.

JAMES A. SINCLAIR.

Detached Thoughts.

IT is discouraging to the professional photographer, when in his aspiring moods, to reflect on the association of the British nation with beef and beer. Beef and beer are such matter-of-fact things, and through them, I suppose, "fact" has wormed itself into the soul of the people. They are quite good enough things in their way, but produce so stolid a result that the photographer who wishes to give the people of his best too frequently finds himself obliged to abandon his hopes in despair.

In May, 1897, Mr. Harold Baker read a paper before the Royal Photographic Society in which he said, "There is but little encouragement of pictorial effect, and one lady somewhat bitterly complained that her portrait was like a picture, and not like a photograph." This leads me to ask, "What is a photograph?" I do not propose to answer the question myself; but I know what the public means by a photograph. It is something clear and sharp and shiny—also cheap. None of these excellencies concerns photography except by common repute handed down to us by our grandmothers, and received by us implicitly. Once upon a time they were, except cheapness, the media of photography, but have long ceased to be so with a process which has shown itself to possess an undreamt-of potential. Photography has been, and is, a constantly advancing and expanding art, yet one to which, at the end of only some fifty years, men would apply the *closure* and say, "Thus far and no further." A portrait in gum-bichromate would draw from them the rebuke, "You must be loyal to the medium of your craft." In these still experimental and developing days of photography such a remark is merely a parrot cry. We must, indeed, be mightily well satisfied with ourselves if we believe that we now know all about it, that we feel ourselves qualified to say, "Photography is so and so, and to-morrow, and next day, and next year it will be the same." We do not know its medium in its completeness, we do not know its limits. We revile a new departure to-day and bless it to-morrow. A science makes far

vaster and more rapid strides than does an art; as a science—a recorder—photography's limits may now, probably, be mathematically determinable; as an art, who can say that it has yet attained its fullest and best means of expression? It is in this line, the departure from the ordinary, that there is money to be made in the studio. It would, indeed, be a very real help to all of us if it could be settled—not stated, but settled—what it is that constitutes the medium of photography. We should then know when a photograph is a photograph and when it is not. It would settle many vexed questions, and might decide the fate of either the Royal or the Salon. Was Mr. Baker disloyal to his craft when he made a picture which was not like a photograph? Was Mr. Crooke disloyal when he made photography give him the qualities and richness of engraving? In a paper (it seems to be dead now, and I won't disturb its ashes by turning it up) read before the Royal Photographic Society about three years ago, some topics cognate to this were alluded to, and though no names were mentioned, we were given to understand what "purblind fatuist" meant. Was Mr. Willis a "P.F." when he introduced platinotype? Yet platinotype was denounced as photography imitating engraving. Photographers made duplicate prints on platinotype and albumen and compared them together for detail, then one of the characteristics of the process. And in like manner, now, with gum-bichromate. The people who denounced platinotype and have lived to extol it now in the same way denounce gum. These departures from the orthodox, from the recognised media, have not outraged photography, but have added to it and enriched it. Use them! Picture photography is an open field to those professional photographers who have the clients to appreciate it. Don't sneer. This only cuts out the cut-price, the Sunday, and the beach photographer. A professional man whom I know made some portraits of a sitter. One of them was selected as being artistically lighted. "Yes," said the photographer, "it is the best; but such as that will

ever bring me a single order." Now, here is the point. That man was wrong. The more educated of the public, a large and paying class, will rise in a quite unexpected way to anything above the style of the ordinary studio portrait. To my personal knowledge, based on inquiries which are made of me pretty frequently, there is a class of people keenly on the look-out for a pictorial portrait. The photographer just referred to has had reason since to pleasingly repent of his pessimism, and will have more reason still in the future. My professional brother may not care to take a hint from me—an amateur. His experience is infinite compared with mine, and infinitely sadder, too, in knowledge of human nature. But all human nature is not based on beef and beer. I humbly suggest to him to discard all cut and dried notions of what photography is, and to let himself go, and by lighting, focussing, and even, if it be not too wild all at once, gum-bichromate, place before the better-class sitter something which, whatever the process may be, is, by arrangement and lighting, a picture. There is reputation and money in it. In practice, I would say expose two plates, and consider them as speculative, on any sitter who looks likely to rise to the occasion, and make them as pictorial as possible. With proofs done in the usual way of business submit one of these, and, if done in gum, at two or three times the price of the others.

I beg to add some tangible recommendations written several years ago for my benefit by Mr. Harold Baker. "Some of the qualities that distinguish a 'pictorial portrait' from the usual thing are, (a) it must be a good likeness, not retouched out of all resemblance to human flesh and blood; (b) the effect should be broad, not broken up into spots of light and dark; (c) the pose must be easy and natural; and (d) there must be no apparent striving after effect, the art of the pose and lighting must conceal itself."

When I speak of art and artistic lighting, I wish it to be understood that the words are not used in any inflated or undesirable sense. If the reader likes to substitute for these the word "pictorial," the definition preferred by Mr. Baker, it will answer my purpose just as well.

Since the above "Thought" was sent to the press, I have received my copy of this journal of Friday last, and am interested to find in this, the organ of the profession, support of the views which I have ventured to put forward. "The public have come to insist on a vastly higher standard of artistic quality, and at the same time have learnt to be willing to pay adequately for good work" (p. 458). "A painting (let us substitute photograph) might be an admirable portrait and a house might be conveniently built, and yet both lack the magic touch of art of which Browning said: 'The little more, how much it is; the little less, what worlds away!'" (p. 461). "The object of a portrait painter" (photographer) "was to scrutinise the character of his sitter" (p. 462). This last is exactly that to which American photographers appear to have been devoting themselves for months past over Mr. Snowden Ward, of which, as G. P. R. James used to say, more anon. The "plain man" (p. 462), is the beef and beer man. He prefers a likeness retouched to the texture of lard; we have nothing here to do with him; he does not want "the little more," and he does not want "character"; the photographer will divine that as soon as the man walks into his studio. But there is a class, larger than most photographers appear to be aware of, which is desirous to have and willing to pay adequately for artistic work. It must, however, be borne in mind that artistic or pictorial portraiture is not arrived at by the royal road of unusual or grotesque lighting, by cutting slices off the head, by cramming the portrait into a corner, or by slabs of white and black. Any of these may be admirable and right in certain circumstances, but none of them is gospel in itself. On p. 447 of the JOURNAL are these valuable words:—"There are certain laws of harmony and composition in the making of a picture,

as there are in the scoring of an overture; and if we outrage them, our work, although it may excite an ephemeral notoriety by reason of its eccentricity, will not last. Those who have made a name in the field of art have done so by hard study of the principles upon which art work is based, and photographers cannot do better than follow their lead."

This, then, fitly concludes my case. Its moral is that we have never done learning, and may never rest on our oars, either in abstract learning or in the concrete form that that learning takes when the principles it has inculcated are embodied in the form of a portrait. And when all this labour has been gone through, when we can do and have done our best, what does the plain man say? I have alluded to a photographer who produced a pictorial portrait of which he said despondingly that it would never bring in any orders. As pointed out, he was mistaken. The "plain man" then had a word. He had known that sitter all his life, and when the

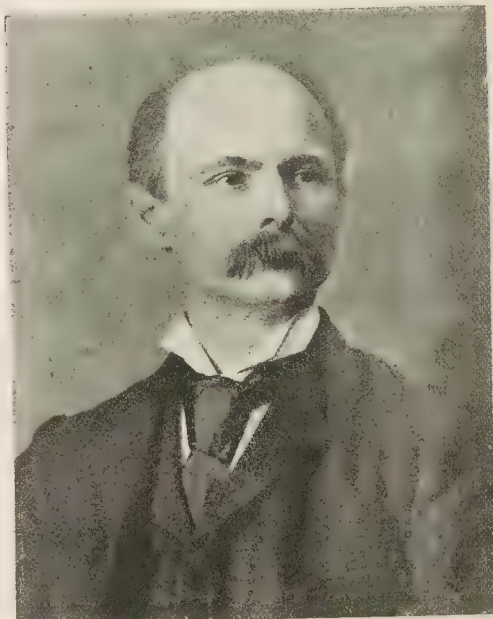


Photo by]

C. Arrow Keene.

W. R. BLAND.

One of our leading pictorial photographers and judges.

portrait, which, to others, was an excellent, and speaking likeness, was shown to him with pride, he said, "Well! I should never have known it was you." But I am not suggesting to the photographer that he should offer this thing to a soul of beef and beer.

Technique is a real stumbling block. It is, to change the metaphor, the rock upon which good work is based, it is the rock on which good work is wrecked. Let us refer again to the JOURNAL, p. 447. A man objects to a portrait of his wife on the ground that it doesn't resemble her a particle. "No," agrees the photographer; "but, my dear sir, the technique, the technique." There is wheat among this chaff. We all go wrong on technique, because it has become a fetish with us and we worship it as a god. We confound technique with the technical methods of photography—that is, we consider it to mean sharp focus, detail, bloom, sparkle, and the rest. Let us obtain these properties and we ask for no more. The work is photographically perfect, and what more than that can anyone

want? A great deal more. Mind, I do not decry these things. I look on the training that must be gone through to ensure their acquirement, when desirable, as a necessity, just as I look on education as a necessity for the child and on the practice of scales for the musician. Some writers despise, or affect to despise, this grounding, this learning how to understand and work. I think it of the first importance to be well grounded in the work we have to do. If not, our efforts are always empirical. We may succeed through using correct technique accidentally, or, more likely, will fail to secure our end and have to take whatever turns up. Our landscape photographed at noon may resolve itself by the time it sees light as a print into one of evening, for anything we can tell beforehand.

As Zoroaster taught, centuries before the birth of Christ, there is no good that has not its own evil. Photography has suffered much from the sound grounding of its experts in technical methods, because with this is coupled the real and often exemplified danger of the methods becoming the end. This means wreck. To the man possessing technical ability there is such real pleasure in feeling himself master of every operation that he loses sight of the true end of his work, and sees only the means. When the excellence of the technical work is the one thing to strike us in a picture something is wrong. I have on my walls a perfect technical print, and it worries me more and more every time I see it. I find myself not looking at it now if I can help it. The technique of its subject has been lost in the attainment of purely photographic technique, and, what there is there, is an excellent advertisement of lens, plate, and paper. The failing is not as rampant to-day as it was. "The public have come to insist on a vastly higher standard of artistic quality." I again quote Mr. Harold Baker from the R.P.S. journal before referred to. I am desirous of quoting Mr. Baker because he is such a well-known man, and therefore my opinions will not read quite so much as being those of an undesirable amateur who is not minding his own business. On p. 266 Mr. Baker says: "I was much interested to see in last year's" (1896) "Royal Photographic Society's exhibition a number of photographs of architecture, which were regarded as entirely perfect by many critics, and technically they were perfect. But to me they were very unsatisfactory. The details in the deepest shadows and the highest lights were all visible, but all the charm of ancient architecture was gone, for there was no mystery in them. All was 'clear' and sharply defined, nothing was left to the imagination. There was no 'subordination of parts,' one of the essentials of a good picture." I had read in the photographic press of these interiors, and that they were perfect specimens of such work. My disappointment when I saw them was great. They seemed to me to render grand and noble architecture in a way that was finicking and small and "pretty." Detail everywhere; atmosphere none. They were work typical of photography. In a cathedral or large church the eye receives impressions, and these impressions do not include all the detail in the heavy shadows, and to allow the lens to record it is a mistake—a blunder. The recording of all detail, to which the public has become accustomed by the indiscriminate use of the marvellous way in which photography accomplishes it, and now demands, must, and is, passing away; at any rate, among the artistic portion of it. Not only must there be fitting suppression of detail (we must be careful not to confound depth with detail), but atmosphere and space must, of necessity, be represented. We must be able to feel that we can breathe there and walk about there, and in the shadows there must be that gloom and glamour and incentive to the imagination which, when we enter such buildings, we find to be among their greatest charms. Pervading the whole rendering there must be "expression." In such rendering there is poetry, there is in it the technique of the subject—the rock

upon which the work is based; in the other there is but "photographic" technique—the rock on which the work is wrecked. I have instanced architectural photography because it lends itself so well to the easy elucidation of the argument, and leave it to the reader to apply the reasoning to other branches of photography.

I have been a reader of this paper long enough to feel that I am almost entitled to sign myself "Constant Reader," as the practice of the man who writes a letter to the Editor asks for something or other on the day that he buys his first copy. We shall all recognise the source of the following quotation: "It is hard for thee to kick against the pricks." It is a useless, and worse than that—it hurts the kicker. Posing the moment as a philosopher, I want to ask the gentlemen of the photographic profession whether the wail over the adverse and wrong-doings of the amateur, which, as a constant reader I have observed in these columns for years, is of the slightest use? I want to ask you, gentlemen, very respectfully and with the most cordial sympathy, whether the whole sum of the lamentations has ever removed a single amateur? If not, will you kick against the pricks? It is a waste of tissue, of time, and of energy. Also, as it can do no possible good, it seems to me again with all respect, a little undignified. The more a man dwells on his grievances—and this cannot be done at all without an expenditure of nervous force—the less able he becomes to combat them. I daresay it may be thought that it is a very well for me to talk like this; it doesn't affect me, and I don't feel the pricks. We all have our particular trials, and I have, I would fain believe, learnt through mine to look at things philosophically. I believe that I really have realised that "What can't be cured must be endured." Turn then, and try to see the brightest side of things. Even the brightest side may be dull, but it will not be as dull as the darkest one. Besides, there is an army of amateurs who are real friends to the professional man. A. may perhaps not benefit by this, but B. may, and things have to be taken, so to speak, in the aggregate. Whether this be so or not, the solid fact remains that the amateur is here to stay; and if regretting it is, your own knowledge, of no use, why not devote your thoughts and time to something that is of use? To do otherwise is merely to upset the liver. The brightest prospect of the future is in the attainment of the objects of the Professional Photographers' Association.

The amateur has his own trials which you, gentlemen, happily know nothing of. (I am now descending into a lighter vein.) Most of them buy their supplies from the photographic dealer (of whom they ask questions), but not one of them who is married and wishes to retain the respect of his wife would ever dream of putting down what they cost him. I never dare to think of what photography has cost me. And it all arose from my boy buying a camera, with lens, focussing screen, dark slide, and printing paper complete at a Christmas bazaar for sixpence. Verily, we do not know the ends to which little things may lead. If a married man ever enters up his photographic expenses, be it ever so private, his wife is sure to see it. He cannot tell the time or the season—but she must see it. It is not that she wants to pry, not even that she thinks much of it, for she knows that her husband must have his hobby to keep him out of the public-house, but—it is FATE. It is not *her* doing, it is not *her* will, it is that she *must*; and neither he nor she can prevent it. And then, if the husband has been such a fool as to so tempt fate, isn't there a jolly row? A friend of mine grew chrysanthemums. He had a large garden, one corner of which was bordered by a wall and the precipitous face of a quarry. He ordered a cartload of the large pots that these plants require, and, knowing that his wife never went into that corner of the garden, had them haul up the precipice and over the wall at that spot before she got

in the morning. That very day she went, as she had never before, to that corner, and it cost the husband a new ess. This illustration is apposite, and the tribulations of the amateur may now, perhaps, draw a sympathetic tear. It has been said that a leading quality in successful portraiture is delineation of character. Those of us who are privileged to know Mr. Snowden Ward, and have observed, month after month, in the "Photogram," the examples of the strenuous labours of American photographers to delineate his character in their portraits of him, coupled with their explanations to where they consider it to lie, will have no doubt of the wisdom of the Home Office in superseding portraiture by fingerprint marks for the detection of habitual criminals. The photographer too often finds even such tangible things as features elude him, while the intangible one of character is as an *amis fatuus*. Hence the monthly disguises of Mr. Ward. Perhaps by the end of the year we may have arrived at the verdict of America. The instalments of character so far even appear to be divided between "quiz" and "inscrutability." To use a colloquial definition, my verdict would be that he's all right when you know him, but you've got to know him first. His claim to immortality is proudly based on the invention or re-introduction of "THE word." I once worried his word out with him, with just as much result as if I had tried to move the Matterhorn. I told him that he had had his advertisement out of it, and that if he would now make it "The photograph," he would lose no subscriber, would get another advertisement, and would secure the support of those, including myself, who strongly objected to the ground of this claim to immortality. A more delusive man than Ward I never met. His smiles and looks pleasant, he puts twinkles in the wrinkles

at the corners of his eyes, appears to defer to you, and all the time his speech is ready to come forth barbed with thunder and lightning. As our poor friend, W. J. Warren, once wrote (it is another instalment of "character"), "The Ward is a man of war." "Yes," he said, slowly and mildly, "we might call it 'The Photograph,' and get Mr. Bland; but I don't think we should get anyone else." I resumed my subscription to the magazine, only to find that "favour" was spelt "favor," and various other "fancy words" (to again quote Warren) of similar build. So I wrote to Mr. Snowden Ward and enlarged on my outraged feelings, and said I was probably old-fashioned, but that I preferred to write "favour" as "favour," "labour" as "labour," and so on. That I might be a crusty conservative (not, in this sense, political), but I preferred things so. He simply replied that one should have some date to fix one's conservatism from, and that *Labor omnia vincit* was older than "labour." I gave in. It seemed useless to contend that one couldn't go back hundreds of years for precedents; that if one must do that there was nothing, logically, to prevent one going right back to the fig-leaf.

America has not arrived at that "character" of his yet. Even your esteemed and late-lamented contributor, "Solomon Sage," was deluded into the conviction that The Ward was anticipating the pleasures of the "King Lud," and it turned out that he was only thinking of Slater's. No! We and America must go back to the fountain head. We must not flatter ourselves that we can know Ward better than he knows himself. He, himself, has laid everything bare before us. All there is to do to secure a triumphant success is to get a beam of light and a towel, put them upon Ward, and declaim, "The Disciple!"

W. R. BLAND.

Photography Fifty Years Ago.

It is not every one who can hark back to the time when the first number of the "Liverpool Photographic Journal" (now the BRITISH JOURNAL OF PHOTOGRAPHY) was published, and speak from personal knowledge of the state that the art was in at that early date. When I was but a lad, yet I was, as an amateur, dabbling in all the processes then in vogue, and with apparatus of my own construction, in which cigar-box wood was largely in evidence, my first lens being the object-glass of a cheap telescope. Still, with these crude appliances I became an enthusiast in photography. But this by the way. My object here is to point out the state the art was in when the "Liverpool Journal" was first issued, now just fifty years ago, as compared with what it is at the present time.

PROCESSES THEN IN VOGUE.

The processes then in use for every-day work were the daguerreotype, calotype, waxpaper, albumen on glass, and the wet collodion processes. The first-named process I worked but little, as my pocket-money was but limited, and the daguerreotype was a very expensive process to work. This will be realised when I mention that a dozen plates of the quarter-plate size, which the user had to clean, polish, and sensitise himself, cost something more than the present-day amateur has to pay for a gross of dry plates, same size, ready for exposure in the camera. But the plates were not the only expense, for the pictures when finished had to be put into cases for their protection, and these cost considerably more than the plates themselves. Hence this process was but little practised by amateurs with limited means. The cost of chemicals was also an item. Hyposulphite of soda could not be bought for less than 1s. 4d. a pound, or 2d.

the ounce. Pyrogallie acid was 16s. an ounce, or 2s. 6d. for sixty grains in a bottle. "Sel d'Or" was 4s. per fifteen-grain bottle, and bromide of potassium was 2s. 6d. an ounce. I have quoted these prices from J. J. Griffin's list of the period. At this time the daguerreotype had reached about the zenith of its perfection, and was the one chiefly employed by professional portraitists, and it continued to be for some years more. The calotype process was also worked for portraits, but only to a limited extent and then mostly for the larger sizes, and for landscapes. The paper, when sensitised, would only keep for a short time, and it had to be used wet, which was a great drawback. Calotype became superseded by the wax-paper process and the albumen process for outdoor work. Wax paper was very much slower than calotype, and exposures of from five minutes to half an hour and upwards were necessary in a fairly good light, with a lens working at *f*/15 or thereabouts. But the advantage of this process was that the sensitive paper would keep for many days without deterioration; also that the grain of the paper showed less in the finished print than was the case with calotype negatives. The development of wax-paper negatives was a long and tedious operation, as if the paper were somewhat under-exposed it was often a matter of many hours.

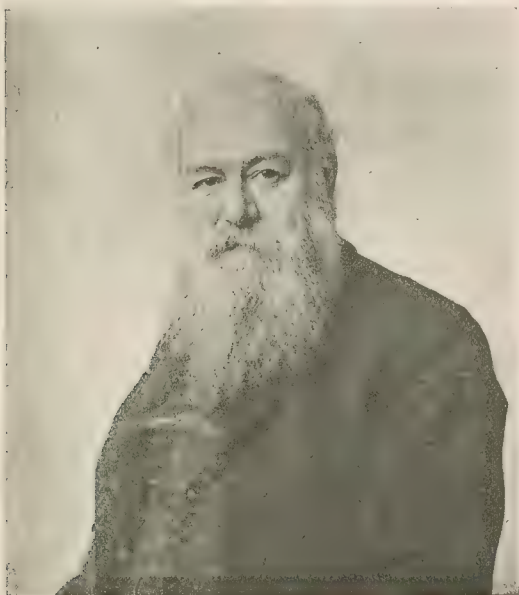
THE ALBUMEN PROCESS.

The first, on glass, was a very beautiful one, but the plates were slow, and, like wax paper, took a very long time to develop. A little later on this process was considerably improved upon by Dr. Taupenot. The plate was first coated with collodion and sensitised in the ordinary silver bath. It was then washed and coated with iodised albumen and dried. Then it was sensitised again in an acidified silver bath, washed, and

dried, when it was ready for exposure. These plates were more sensitive and developed more quickly than the ordinary albumen ones. This process was much used, notwithstanding that the plates were troublesome to prepare. Of course, the user had to prepare them from beginning to end himself.

APPARATUS.

The favourite size with amateurs at that date for outdoor work was 10 x 8, as enlarging from small negatives was not then in vogue. "Snap-shooting" was not even dreamt of then. There were no light bellows cameras then as now; they were mostly of the sliding-box form, and the dark slides were often packed inside, and the tail-board was hinged so as to fold up to protect the focussing screen. I once had a field camera of this size, and when the four double slides, the tripod head, and focussing cloth were packed inside (with the heavy brass binding on the camera) the affair weighed about as much as a solid cube of mahogany the same size would do. What a contrast to the present feather-



E. W. FOXLEE,

One of our greatest authorities on the principles and practice of carbon printing

weight cameras! There was, it is true, a more portable form of camera; its portability consisted in the sides being hinged, so that they collapsed after the manner of the opera hat. It must not be supposed that when paper was used instead of glass the slides were any lighter; they were not, as each slide was fitted with two plates of patent plate glass to keep the paper flat. From this it will be realised the weight the amateur of fifty years ago had to carry in the field, and that he was a real enthusiast in his work, more particularly as he was often subjected to ridicule when out of doors. Photography was then not the fashionable hobby it is to-day. I have often wondered, if such conditions prevailed now, how many amateur photographers we should have. It might be mentioned here that in 1854 two or three forms of roller slides were introduced for wax paper. The sheets of paper were fastened together in one long length and then wound on one roller, and, after exposure, re-wound on another. One form had daylight-changing spools,

similar to the present ones, except that instead of celluloid or black paper wax paper and black calico were used, several plies of the latter being left free at each end to protect the paper from light.

LENSES.

At that time there were only two forms of lenses in existence, the Pelzval portrait lens, about $f4$, and the single lensca lens, the largest aperture of which was approximately $f15$. The majority of the former then in use the optical and actinic focus were not coincident, consequently an alteration had to be made after the image was focussed to obtain it sharp in the negative.

COLLODION PHOTOGRAPHY.

When the "Liverpool Journal" was first published the wet collodion process was in use, but principally for glass positive which were then being made in great perfection, and some of the best obtained with the daguerreotype in quality. Its use for negative was, however, greatly restricted by the action of the late Mr. F. Talbot, who claimed that it infringed his patent for calotypy, which included making positive prints from negatives. Talbot obtained one or more injunctions restraining its use, and finally brought an action in the Court of Common Pleas against a photographer, trading in Oxford Street as "Laroche," for infringement. The case excited great interest amongst professional photographers, and they contributed a large sum towards the cost of the defence. The trial lasted some three days, and in the end Talbot was defeated. Then collodion became the process of the day, and soon replaced the daguerreotype.

PRINTING AND TONING.

The paper at that time employed for prints was mainly plain salted paper, sensitised with ammonio-nitrate of silver. This paper would not keep many hours, and had to be used the day it was sensitised. Albuminised paper was then in use, but it was what would now be termed a matt paper, inasmuch as the albumen employed was always largely diluted with water, the object being mainly to fill up the pores of the paper, and thus keep the image on the surface. The bath then in vogue was combined toning and fixing one, consisting only of hyposulphite of soda, chloride of gold, with usually a little nitrate of silver added.

MODIFICATIONS OF THE WET COLLODION PROCESS.

In the foregoing I have but briefly alluded to the state the art was in when the BRITISH JOURNAL OF PHOTOGRAPHY was born, though not then christened by the name it now possesses. I will now say something about its advancement, which was largely due to the JOURNAL and those immediately connected with it. With the collodion process at that time the plates had to be exposed and developed directly after they were sensitised, hence when working in the field, a dark tent and the requisite chemicals had to be carried in addition to the weighty and cumbersome apparatus. What a contrast with the present-day system with gelatine plates! The serious inconvenience of having to prepare the plates where they were used led to improvements being made so that they would remain moist for a day or more. In May, 1854, Messrs. Spiller and Crookes—two gentlemen who, I am pleased to say, are still with us—the latter, now Sir William Crookes, was at one time the editor of this journal. The method was to apply to the plate, after it was sensitised, deliquescent salt, such as the nitrate of zinc. With this treatment the plates would keep good for several days. About the time these gentlemen published their method the late Mr. George Shadbolt, for some years editor of this journal, published his method of accomplishing the same end. He, after sensitising the plate in the usual way, flowed it over with diluted honey, which retained the film in a moist condition. This was known as the "honey process."

DRY COLLODION.

Moist plates had their inconveniences, not the least of which was that they had a great affinity for dust, and the dust produced spots. Moist plates were soon superseded by dry ones. The plates, after sensitising and washing, were coated with various organic substances, the names of which are legion—nearly everyone had his own particular pet. Thus we had processes known as the raspberry vinegar, oxymel, golden syrup, beer, beer-albumen, tannin, malt tea, coffee, and many others. The last-named was a very favourite one with the late Mr. Traill Taylor, so many years editor of the JOURNAL. All these processes were based upon keeping the pores of the collodion film open with an organic substance so that it would be readily permeated by the developer. Several other modifications were introduced, but they were all more or less dependent upon the same principle. These dry plates were all far less sensitive than the wet plate, but they were used almost exclusively by amateurs, who, of course, had to prepare them for themselves. In or about 1862 the alkaline system of development was introduced, and that is what is now universally employed except for wet collodion plates.

CARBON PRINTING.

It was at a meeting of the London Photographic Society (now the Royal), 1859, that the late Mr. John Pouncy first published the gum-bichromate process as now worked. It was then known as the carbon process, but it met with little favour at the time. A few years ago this old process, as we all know, was unearthed and given its present name, and it is now a favourite process with a certain school of amateur photographers. In 1864 Mr. J. W. Swan, at the same society, published his process, which is the carbon process of to-day.

EMULSION PHOTOGRAPHY.

In 1864 the late Messrs. Sayce and Bolton, in this JOURNAL, published the first emulsion process. This was destined to, and afterwards did, entirely revolutionise photography. In this process, as then published, the plate was first coated with the collodio-bromide emulsion, then washed to get rid of the haloid salts, and afterwards flowed over with an "organifier," such as tannin or the like. It may be mentioned that in 1885, on the day of the twenty-first anniversary of the first publication of the process, the Photographic Club held a dinner to commemorate the coming of age of emulsion photography, at which Messrs. Sayce and Bolton were the invited guests. They had been made honorary members the week before. Inconvenient as was this process as compared with the washed emulsion one, it was very largely employed, particularly by amateurs. In the photographic section of the Victorian Exhibition in 1897, it may be mentioned that an amateur, Mr. Osman R. Green, exhibited some very fine 24 by 18 in. landscapes, taken direct in the field, in 1867, by this process on plates of his own preparation. Mr. Green, at that time, was a prominent member of the Liverpool Society, of which this JOURNAL was the official organ. Few amateurs of the present day, I imagine, would care to repeat Mr. Green's work. Certainly those of the "press the button" type would not.

COLLODIO-CHLORIDE.

Somewhere about the time that Sayce and Bolton published their process, the late Mr. G. Wharton Simpson, then editor of the "Photographic News," published his collodio-chloride emulsion process. The paper was afterwards made commercially in Germany, but it did not take to any great extent with photographers here. Mr. Bruce, of Duns, N.B., however, was an exception, for he used it exclusively in his business for thirty years or more, but he had to draw all his supplies from Germany, where most of this paper still comes from.

WASHED EMULSIONS.

In 1874 the late Mr. W. B. Bolton, for many years editor

of the BRITISH JOURNAL OF PHOTOGRAPHY, published a washed collodio-bromide emulsion process, which in principle is precisely the same as that in the present-day gelatine processes. The collodio-bromide emulsion was poured into a dish and allowed to set. The pellicle was then broken up and washed, to free it from the tabloid salts, and then dried. It was then redissolved in ether and alcohol, when it was ready for use, and largely used it was until it was superseded by the gelatine dry-plate process.

GELATINE PHOTOGRAPHY.

Some three years or so before Bolton published his washed emulsion process the late Dr. R. L. Maddox, in the BRITISH JOURNAL OF PHOTOGRAPHY (see volume for 1871), published a gelatine-bromide process for both plates and paper, and left with the late Mr. Taylor, the then editor, specimens produced by it. This process, after improvements by others, has now practically superseded all others. For some few years after Dr. Maddox's publication the process lay in abeyance until it was taken in hand by Burgess, Kennet, Bennet, and others, including Mr. Bolton. Kennet, I think, was the first to put plates on the market, and later on their manufacture on a more commercial scale was undertaken by Messrs. Wratten and Wainwright, and by Messrs. Mawson and Swan, followed by others. Still, many photographers continued for a time to make their own. It was not till the early eighties that professionals adopted them regularly for their daily work. I need not say anything about what has taken place since that time, as the majority of my readers are perfectly familiar with the later phases of the art.

A RETROSPECT.

In the foregoing I have endeavoured to point out in as concise a way as possible the state of photography at the time of the first issue of this JOURNAL—and for some years afterwards—and the part it has played in its advancement and, more particularly, by those immediately connected with it. Now, looking back, it is a little difficult to find anything done now that was not done in the earlier days of the art. Take an instance. In 1851, at the Royal Institution, Fox Talbot, by a modification of the old slow albumen process, took a picture, which for instantaneity it would be hard to beat now. Some printed matter on a rapidly revolving wheel was illumined by the discharge of a Leyden battery, yet the lettering showed distinctly in the photograph. The moon was successfully photographed by the daguerreotype process. Collodion, albumen, collodio-albumen, and dry collodion negatives were quite equal to modern gelatine ones. About the early sixties the late Mr. England and the late Mr. Valentine Blanchard produced, by the wet collodion process, instantaneous street scenes in Paris and London that have not been surpassed. My friend, Mr. Frank Haes, about that time, or before, took a series of photographs of the animals in the "Zoo" that will hold their own against most modern work of the same subjects. Breaking waves, and on large plates, too, were also taken by many of the older workers, and they will yet compare very favourably with those taken on gelatine plates. But at what trouble, cost, and inconvenience were these results obtained! Cumbersome portrait lenses had to be employed, and then the work could only be done in the best of light. When this is considered these results may be looked upon, successful as they were, very much in the light of *tours de force*. Now the same results are daily obtained with the most portable of apparatus, and with lenses of no very great rapidity. Furthermore, all the plates employed, and the paper for printing, are now to be purchased ready for use. What a contrast! Was such a thing dreamt of—even by the most sanguine photographer—when the BRITISH JOURNAL was first published, just fifty years ago?

E. W. FOXLEE.

The Story of the "British Journal of Photography."

By the Editor.

CHAPTER I.—THE LIVERPOOL JOURNAL.

THE establishment of the "Liverpool Photographic Journal," a facsimile reproduction of the first page of which forms the introductory illustration to this article, was the direct consequence of the great success that attended the institution of the Liverpool Society in the year 1853. The members appear to have been hard workers. I take the following extract from a paper on "Historical Notes of what Liverpool has done in

The Society subscribed £275, and appointed trustees to see laid out in the education of his children. Mr. Thomas Higgin has devoted his efforts to the department of microscopic photography with great ardour and enthusiasm, and produced work of the highest possible merit, which have not been excelled. One member reached such a high state of perfection in the art that Mr. Osmond R. Green. His pictures were large, some twenty-four inches by eighteen inches, and, though taken above twenty years ago, by the collodio-bromide process, they comman-



JAMES ALEXANDER FORREST,
One of the Editing Committee of the "Liverpool Photographic Journal," 1854-1856.

the Art-Science of Photography," which appeared in this journal of February 3, 1888. The author was Mr. Jas. A. Forrest, whose portrait appears above.

"Mr. J. T. Foard did great work in the Society by supplying it with papers of high-class merit. Mr. George Thomas, in 1853, took photographs of the New Brighton fort from the Lancashire shore, three miles distant, using the object glass of a five-foot telescope, the difference between the chemical and visual foci being a quarter of an inch; this illustrated the advantage of photography for military purposes, and it was adopted by the Government during the Crimean war. Mr. John Glover was an indefatigable experimentalist, but, being of a weak constitution, he became a victim to his own ardour.

admiration to the present day. Frank Howard, an artist of considerable celebrity, was also an active member. Mr. John M'Innes, the first and most successful discoverer of the method of coating ships' bottoms with material to withstand the action of plants and barnacles adhering to the iron, rendered great service to the Society on many occasions."

With such a fine spirit of active enthusiasm animating its members, it was no wonder that the Society did good practical work, and that in a very little while it should set up a journal of its own in which its proceedings and transactions could be recorded. So it came to pass that the "Liverpool Photographic Journal" was published. The proprietors were three members of the Society, Mr. James Newlands, the Liverpool Borough

THE
LIVERPOOL PHOTOGRAPHIC JOURNAL.

No. 1.—JANUARY 14, 1854.

ADDRESS.

THE LIVERPOOL PHOTOGRAPHIC SOCIETY; in putting forth a Journal of their own, rest their claims to public support upon the widely extending interest in the several branches of Photographic art—the daily progress that is being made by the practical members of their own Society, and other Photographers elsewhere. The admirers of the art naturally desire to have more particulars, and the practical operators more full and precise records of the suggestions, experiments, and successes in various parts of the world, than can possibly be afforded by a newspaper devoted to general information. The *London Photographic Journal*, though furnished with the Proceedings of the Liverpool Society from the commencement, has not been able to find room for them; a part only of the May Meeting being given in the September number. The Glasgow Photographers obtain their information of our Proceedings through the medium of American newspapers!

An exhibition of Photographs has been proposed to take place during the visit of the British Association to Liverpool. In conjunction with this, the Liverpool Photographic Society have offered premiums for the best specimens of the art produced by their own members. A premium has also been offered by the British Association for the Best Photograph of the Moon—for which it is expected our resident Photographers will compete.

The award of the premium offered by our Society will be influenced, if not decided, by the opinions of the British Association; but it is desirable that public taste should be brought to bear upon it; and to cultivate the true appreciation of the beauties of the Photographic art—the qualities most valuable, most to be admired—the Society propose this publication, in which not only all the Papers read at the meeting will be published, but the discussions upon them, in the course of which individual observations and suggestions occur of the highest importance, though they may not be appreciated at the moment in consequence of some other matter being the absorbing point of interest.

The Liverpool Society have therefore deemed it expedient to have a Journal of their own, commencing with the report of the first meeting in the new year. But that the records preserved may be complete, a *resumé* will be given of what has already been done by the Society, with such Papers as may be considered interesting of those which have been read at previous meetings. The Proceedings of the London Society, and of independent operators at home and abroad will be given, with everything that can be obtained to furnish our readers with a complete account of the state and progress of the art in all its various branches.

Various forms of camera adapted to Photographic operations, have been exhibited by Mr. MACKINLAY, Mr. WOOD, Mr. ATKINSON, and others, members of the Society, of which

Engineer; Mr. Christopher Bell; and Mr. James Alexander Forrest, whose portrait is here given. The editor was Mr. Charles Cory, who appears to have been an able and dignified occupier of the chair. So successful, indeed, was Mr. Cory in his editorial selection that extracts from the "Liverpool

Journal" of 1854, which we reprinted a few weeks ago, aroused widespread interest amongst modern photographers, who hitherto no means of informing themselves of the very advance to which applied photography had advanced half a century ago.

THE LIVERPOOL Photographic Journal.

CONDUCTED BY MEMBERS OF THE LIVERPOOL PHOTOGRAPHIC SOCIETY.

No. 1.]

SATURDAY, JANUARY 14, 1854.

[Price 3d.]

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A. ABRAHAM & CO. announce to Photographists, that they have just completed a **NEW STEREOSCOPIC CAMERA**, adapted for Views and Portraits, by which both pictures are taken on one glass, in less time and with greater facility than by the usual mode, and the possibility of error, in mounting two pictures, avoided.
Price complete, with a double combination of Achromatic Lenses, adjusting by rack & pinion... £3 15
Quarter plate Cameras, complete, with double combination Achromatic Lenses... 4 0
Half plate ditto ditto... 6 10
Quarter Camera, two Meniscus Lenses... 1 5
Half ditto ditto... 2 2
Stereoscopes and Stereoscopic Pictures in great variety.
20, Lord-street, Liverpool.

PHOTOGRAPHIC PORTRAITS.

W. B. BARKER, Chemist, (late of Grange Lane, Birkenhead.) Member of the Pharmaceutical Society of Great Britain, begs to apprise his Patrons and the Public generally, that he has now arranged to devote himself entirely to the art of taking **PHOTOGRAPHIC PORTRAITS**, and that he has succeeded in obtaining one of the most eligible Rooms in Liverpool, for Photographic purposes, at

NORTH CRESCENT, CHAMBERS, 3, LORD-STREET, third door from the top, on the right hand side going up; and that he has now fitted it up in the most artistic manner, for producing perfect Photographic Portraits, both single and in groups.

His extensive experience in Photography for the last two years, and his practical knowledge of Chemistry, have enabled him to introduce many important improvements, which, combined with his increased facilities for producing artistic effect in his new Rooms, will enable him to sustain that *very high character which his Pictures have already acquired*.

Amateurs supplied with Iodised Collodion and Pure Photographic Chemicals.

JOHN H. & SAMUEL JOHNSON, Operative Chemists, 7, Church-street, Liverpool, have always on hand a large Stock of the purest and most carefully prepared **PHOTOGRAPHIC CHEMICALS**, & every other material for the practice of Photography. Spirit Lamps, Mortars and Pestles, Funnels, Scales and Weights, Graduated Measures, Stirring Rods, Beakers, Dippers, Gutta Percha Baths, Trays, &c.

CHEMICAL APPARATUS of every description, and **GUTTA PERCHA** Articles made to any pattern.

Facsimile of Title-Page of No. 1 of the "Liverpool Photographic Journal."

CHAPTER II.—HENRY GREENWOOD.

two years the "Liverpool Journal" pursued a career of photographic wisdom and utility, amusingly varied, now and then, by the exchange of polite compliments with its esteemed London contemporary, the official organ of the London Photographic Society. The origin of the rivalry between London and Liverpool in matters of photographic journalism is, at this distance of time, rather difficult to discover and set forth, even were one persuaded that the game is worth the candle (I do not, myself, think it is); one must therefore simply be content to note the fact and pass on, remarking, by the way, that this rivalry led to a visit to the Law Courts and a final inter-

PHOTOGRAPHY. Greenwood was in many respects a remarkable man. As a printer and stationer he showed great business shrewdness and capacity for work, but it is probable that in his supernumerary position as editor-in-chief of his own journal he shone in the most favourable aspect. A practical printer and journalist, with an attractive, if somewhat ornate, literary style, he often supplemented the work of his editing with interpellated articles of great merit. Chiefly he chose subjects of a personal nature, such as a farewell, a death, etc. As a sub-editor his equal could, perhaps, not be found, and there is no doubt that the JOURNAL owed a vast deal to his



HENRY GREENWOOD,
Proprietor of the BRITISH JOURNAL OF PHOTOGRAPHY, 1857-1884.
Died December, 1884. Aged 66.

ment of the hatchet at the end of 1859. And all over the title of a paper.

Amateur proprietorship and amateur editing not spelling commercial success *in excelsis*, the copyright of the "Liverpool Photographic Journal" passed, about 1857, into the hands of the printer, Mr. Henry Greenwood, of Liverpool.

Until the day of his death, in the year of 1884, Mr. Greenwood kept a firm hold upon the property he had thus acquired. As the reproductions in the next chapter will show, it passed through many evolutionary changes before finally assuming, on January 1, 1860, its permanent title of the BRITISH JOURNAL OF

sleepless vigilance and overlooking during the many years it was under his control. There are many still living who, I am sure, will appreciate this brief sketch of a delightful personality, who made an idol of his paper; who was a strict and honourable man of business, a firm and faithful friend, and a kindly-hearted man. I knew Greenwood between the years 1881-1884, and his memory is one that I cherish with sincerity. He was a fine example of the success of the personal equation in business, and his unwearied devotion to the interests of the JOURNAL supplies one with a lesson without which one would be distinctly the poorer.

CHAPTER III.—THE EVOLUTION OF A TITLE.

THE PHOTOGRAPHIC JOURNAL.

No. 85, Vol. VI.—JANUARY 1, 1859.

We trust that in making our appearance before our readers in a new guise, they may approve of the change that has taken place, and consider it an improvement as well as an alteration. Like the ladies of the present day, we have greatly enlarged our skirts—and like them, of course, must also regard the arrangement—as an embellishment. Least more engaging costumes, however, should have so modified our appearance as to cause some risk of our being mistaken for a stranger, we must retain our readers that we are but "an old friend with a new face," and we hope not only to retain friendships already formed, but to convert acquaintances into friends, and strangers into acquaintances.

It has been a matter of very careful consideration with us how we may become still more useful to our numerous supporters than we have been hitherto—some of our intentions we have already indicated, and we have now further to mention, that we shall commence a series of historical articles; first, for the benefit of those still on the threshold of photographic acquaintance; and second, for more advanced students, of causing history details, descriptive of all the most approved methods of operating, as ascertained up to the present time; for we cannot but feel that photography of to-day is a very different thing from photography as it was a couple of years, or even one year ago—so many labourers are in the field, and so much has been achieved, that it is almost impossible for those not more than commonly interested, to keep pace with all the knowledge that has been acquired in the various ramifications of practical photography.

By this arrangement, it is hoped, that all classes of our readers will find their tastes gratified—the novice and the adept, "the mere man of taste and process, and technically," as we have ourselves been contemptuously styled—the man of science and the man of art—in short, we wish to make our pages like the fountain at which all will find something to quench their thirst; and our aim will be to endeavour to follow the wise steward, and "give all their dues in due season." It has been suggested to us, that the single attention which we have found it requisite to make in our designation, may possibly tend to cause some confusion with, and inconvenience to, the public, by confounding us with *The Journal of THE PHOTOGRAPHIC SOCIETY*. Now, although we do not think there is any fear on this head, the names of the Photographic Society being so very distinctive, and photographers, as a class, are men of discernment, we always having liberto maintained (and we trust ever to do so) most unflinching alliance with the colleagues of the oldest public-spirited devoted exclusively to our avocation, we therefore, unhesitatingly make the present opportunity of disclaiming any intention whatever, of an attempt to assume an attitude of hostility, or to deceive the public in any way. In proof of this assertion, we appeal to the number now before our readers as evidence that nothing in size, style of heading, general aspect, or arrangement of matter, is there any resemblance whatever to the publications of the Photographic Society.

With regard to our Title, we have merely altered the order in which the words were formerly arranged, and added one or two more.

With a hearty wish that our readers may find the coming year prove a prosperous one, both photographically and otherwise, we pass to the "order of the day."

It appears to be a debatable question, whether of the twin, photographic engraving or lithography, will be the first that will be practically applied to book illustration. As regards the former, in addition to the productions of Mr. Fox Talbot, now before the public, we have in another column a communication on the subject from our esteemed correspondent, Mr. Burnett. Now, although photo-lithography, as it has been termed, may, and probably will, eventually become developed into the more important operation of the two, we are strongly of opinion that lithography, even in its present condition, is sufficiently advanced to render efficient service, with a very small amount of assistance from the hand of the draughtsman. At the last meeting of the Photographic Society, Mr. Malone expressed an opinion in accordance with our own; and since then, we have seen produced by an amateur photographer, acquainted with the lithographic art, as his first essay in this direction, a result that not only astonished us, but that requires only a few touches to convert it into an excellent picture. It must be borne in mind, that there is a vast difference between the assistance of a lithographer and that of an engraver—almost any capable of handling a pencil can readily qualify himself for one, whilst that is far from being the case with the other.

It may be objected that we are now addressing the very thing we have formerly condemned, viz.—the "enriching" of photographs; but we by no means assent to such an imputation; the cases are widely different. We object to "touched" photographs when judging of their respective merits; as obtaining credit upon false pretences. We do not advise or commend to any the attempts to impose upon the public profits from the sale of photographic stones that have been submitted to the hand of an artist as pure photographs; but we do approve of the imitable, into the lithographic art. We may have more to say about this in a future number.

We were pleased to notice the other day a very useful signification of photography. At the establishment of an auctioneer, and estate agent of the name of Englebert, in Clement's Lane, London, are a number of paper prints from negatives of various houses, &c., that are to be let or sold by the auctioneer.

No exception, however, merits, can possibly give so good an idea of the appearance presented, as a single glance at these photographs; and we feel convinced, that a general adoption of the Plan would be followed by an immense saving of trouble to the customers, and consequent increase of business to those who render such facilities.

At the meeting of the French Photographic Society, held on the 29th October last, MM. Davanne and Girard presided.

BRITISH JOURNAL OF PHOTOGRAPHY, a title which has known alteration in forty-four years.

For some years the paper, in the same size and shape it at present bears, was issued fortnightly. Subsequently it first published weekly, being successively enlarged from twelve, and from fourteen to sixteen pages. The price reduced in 1859 from threepence to twopence, and in 1901 text portion of the paper was permanently enlarged to two pages. But the general form and style of the paper have varied but little from that of the issue of January 1, 1850, when "B.J." definitely placed itself in the forefront of photographic journalism.

CHAPTER IV. THE ALMANAC.

It is commonly supposed that the first "Almanac" was a large volume, the dimensions of which were such that the book could be easily slipped into the waistcoat, like a card-case in fact. This is an error. The very first "Almanac" took the form of a folding sheet calendar which was presented with the number of the volume of the JOURNAL for 1859. This experiment was not repeated. Something more ambitious was attempted, and so it was that the little pocket-book contained calendar matter, brief articles on photography, and other literary fare was presented gratis to the readers of the JOURNAL. The "Almanac" in this form, size, and style, was so published for four years, and in 1865 it was issued in crown octavo size and bound in green cloth. For forty years the characteristic external features of the book have not been changed.

The illustrations will convey to the reader a good idea of the comparative features of the "Almanac" for 1861 and 1904. The latter weighs between three and four pounds, and numbers over 1,600 pages, which are roughly divisible into 1,000 pages of advertisements and 600 pages of text. Twenty-five thousand

Facsimile of Page 1 of "The Photographic Journal."

EDITED by a committee of the Society, the "Liverpool Photographic Journal" continued its career down to the year 1856. In 1857, probably upon the acquisition of the copyright by Mr. Greenwood, the title was changed to that of the "Liverpool and Manchester Photographic Journal." At this stage, what one may, without intentional disrespect, term "amateur editing" was dispensed with, and the control of the paper placed in professional journalistic hands. The JOURNAL had now reached the first crisis of its commercial fortunes. Not unnaturally desirous of addressing a larger public than that of Manchester and Liverpool combined, Greenwood took the bold course of converting the title of the paper into that of "The Photographic Journal." But the sanguine young proprietor had overlooked the prior claims of the London Photographic Society in the matter, that Society then, as now, having a legal claim to the exclusive use of the title "The Photographic Journal," and so, as the result of some litigation, Greenwood was compelled to climb down. Later in the same year he expressed his intention of styling his paper "The Journal of Photography," but objection being taken by the London Photographic Society to this title, Greenwood again gave way, and on January 1, 1860, headed his paper the

THE BRITISH JOURNAL OF PHOTOGRAPHY.

No. 109, Vol. VII.—JANUARY 1, 1860.

The Title announced in our last not having given entire satisfaction to the Proprietors of the Journal of the Photographic Society, we so far amend their views as to add to our amended title the word "British" as a prefix. The present Number, therefore, appears before the public as THE BRITISH JOURNAL OF PHOTOGRAPHY—a title at once distinctive, and yet bearing the impress of its former existence, as it is, at our understanding with the Proprietors of the London Society's Journal will finally allow.

In order to prevent confusion to our readers, and further to the arrangement of our plans, we have agreed between us that the appearance and general aspect of the Journal will be so altered as to distinguish it from the other contemporary, that hereafter special attention were particularly directed to the point we question whether there are many of our readers who will be so desirous of changing. In this we believe we are acting primarily for the interests of all parties; for there never was a question of dispute relative to any supposed resemblance between this Journal and that of the "Photographic Society," but upon the words of the title only, and this being now completely set at rest, we hope to maintain the relations of unity and goodwill with our older contemporary, that hereafter never been interrupted before the one point of difference now removed. May we both enjoy a long career of usefulness.

We find on looking over our summary of the past year's photographic history that we have inadvertently committed an error in attributing to Mr. Hensch the credit due to Mr. Thomas J. Wanders, the accomplished Secretary to the London Photographic Society, for testing the value, as a photographic agent, of Dr. Schwebel's system of collodion, the value of exposure here the same from our having trusted to our own record of reference, as we did in the case of the paper, which have already appeared in our pages, and from having Mr. Hensch's name so familiarly before our mental vision in connection with other

might by Mr. Hensch's method produce enlarged negatives by the operation direct in the camera; and in this case the increased exposure and chances of failure would be so comparatively little importance. The arrangement we are now proposing is substantially the same as formerly, but there is a slight change in the order of the respective manipulations introduced.

As regards the importance of printing direct from negatives by contact, instead of employing the use of an opaque paper from which, negatives in the end-ergon camera, we were much interested by a remark made by Mr. J. B. Smith, of Bristol, in a conversation which recently took place between us. This gentleman pointed out that artistic effects are much more under control in the former case, especially as regards the high-contrast of portraits.

As a precaution, we imagine not likely to be called in question. The same upon several previous occasions drawn attention to the desirability of refraining with respect to cameras, which, as generally constructed, are too heavy and clumsy, to any thing of sundry other defects which many of them are afflicted with. We have recently examined a novelty in camera of very considerable merit, lately introduced by Mr. A. J. Mahabish, of Birmingham—a camera which first we named as we did not at all anticipate would turn out to be of any great importance, but which we now regard in a very different light. The camera, which is so constructed of metal—viz. brass, electro-plated, or german silver; and the inventor's contrivances, as to this, &c., the probability of constructing it also in silver. The advantages are practically rigidity, cleanliness, lightness, compactness, and freedom from the liability of becoming fogged either by heat or moisture. As yet we have only seen a camera adapted for taking stereoscopic negatives constructed upon this principle, but we see no reason why they should not be equally successful upon a larger scale. It might be objected that the trial is easily kept out of shape—in fact it was one of the first objections that occurred to us, but when we see that

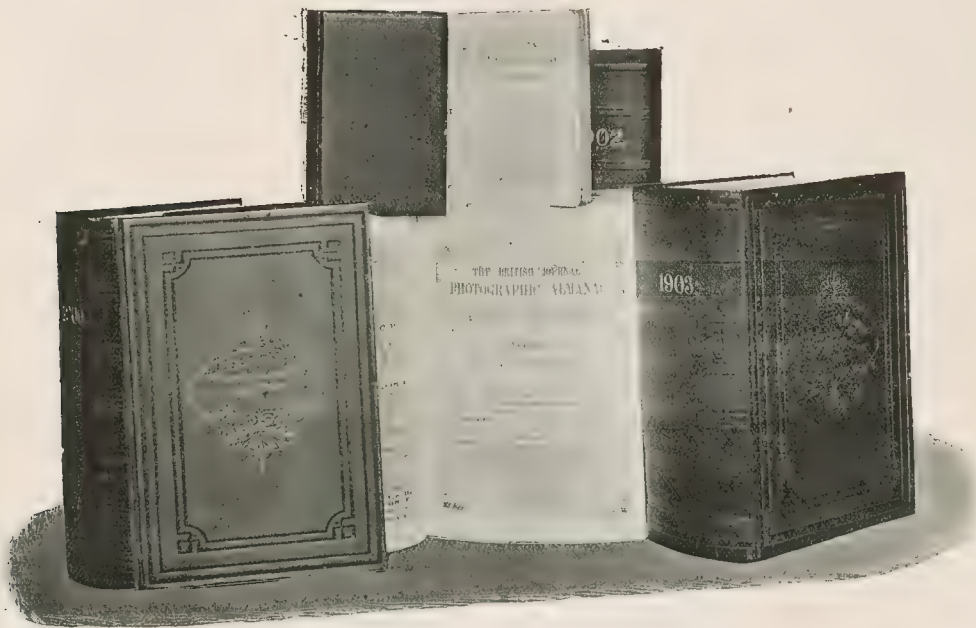
copies of the book are annually sold, usually before the date of publication. The "Almanac" has created for itself quite its own curiously special little public. The book passes into the hands of everybody who is anybody in the photographic world,

the "Almanac," upon the contents of which they contentedly feed for twelve months. There are many hundreds of such photographers; if, indeed, there are not some few thousands.

Probably there is no photographic book published which .ay



The Old Order and the New: The First Four Volumes of the ALMANAC, bound in one Volume (on top) and the Last Four Volumes.



The Old Order and the New: Title Pages of the ALMANAC for 1861 and 1904.

and also into the hands of many of whom the photographic world never hears. These are chiefly English photographers living abroad or in the Colonies, who buy and read no photographic publication all the year through, preferring to wait for

by day, week by week, and month by month, is so frequently consulted by photographers and those interested in photography as THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC, which forms the subject of the illustrations to this chapter.

CHAPTER V.—GEORGE SHADBOLT, GEORGE DAWSON, SAMUEL HIGHLEY.

BETWEEN the years 1857 and 1864 the JOURNAL was fortunate in securing the services of several able men of science to conduct its pages. Of these, perhaps one of the ablest and most scholarly was Mr. George Shadbolt. Mr. Shadbolt occupied the chair for about seven years between 1857 and 1864; and it was only the growth of his private business which necessitated his retirement from photography and its journalism. With Mr. Shadbolt's disappearance the BRITISH JOURNAL OF PHOTOGRAPHY, which had hitherto been issued fortnightly and consisted of eighteen pages, became a twelve-page weekly, and the publishing and editorial offices were removed from Liverpool to London. Mr. Shadbolt, who was one of the founders of the Photographic Society of London, now the Royal, devoted much attention to the optics of photographic lenses and to photo-micrography; and upon those themes his contributions to the JOURNAL during his editorship were valuable and frequent. He is also said to have been the first to take a micro-photograph, and, so far back as 1858, suggested the practicability of a triple lens "consisting of single convex lenses at each end of a short tube corrected by a concave of flint glass in a central diaphragm." He was a Vice-President of the North London Photographic Association before which body we find him reading a paper, in May, 1863, on "Open-air Portraiture."

The pages of the JOURNAL for 1854 testify to the great esteem in which Mr. Shadbolt was held by those with whom he was associated, and some months after his retirement he was the recipient of an elegant silver épergne in recognition of his services to photography. The following gentlemen formed the deputation from the Testimonial Committee at the presentation, which took place in July, 1865: Messrs. Shave, E. W. Foxlee, Melhuish, G. Wharton Simpson, J. Traill Taylor, Hill, H. P. Robinson, and Barnett. An editorial note in the JOURNAL of July 7, 1865, expressed admiration of Mr. Shadbolt's varied acquirements as a scholar and a man of science; sorrow that he should have felt compelled to resign a position the duties of which he filled with dignity and efficiency, and regret at his withdrawal from the field of photographic research, while yet in the

full maturity of his mental powers. There are photographers still living who speak in terms of the highest appreciation of the late Mr. Shadbolt's great ability as an editor and a student of photographic science.

GEORGE DAWSON.

George Dawson, at the time of his death in 1897, was in his seventy-seventh year, and will be remembered by reason of his long association with King's College in the capacity of Professor of Photography. He was formerly one of the Editors of the BRITISH JOURNAL OF PHOTOGRAPHY, and was joint author, with the late Thomas Sutton, of the "Dictionary of Photography." He also edited one of the earlier editions of Hardwick's Photographic Chemistry.

SAMUEL HIGHLEY.

Mr. Samuel Highley, F.C.S., who died at the end of 1900, was, nearly forty years ago, an Assistant Editor of the Journal, and on the title page of the "Almanac" for 1861 his name appears as the Editor. He interested himself in popularising optical projection for scientific purposes, and some of his articles on the subject, written at about the date mentioned, are so admirably expressed that, if reprinted now, they would pass muster as the work of a modern author newly emphasising the value and advantages of the lantern in the lecture room. A full list of Mr. Highley's public contributions to general scientific knowledge lies before us in the form of a printed pamphlet. Besides photography, mineralogy and microscopy appear to have been amongst his subjects. He was a prolific writer and a man of varied tastes and occupations. Mr. Highley, who was seventy-five years old when he died, was secretary of the Photographic Society of Great Britain in the 1857, and in his time held many other scientific and journalistic offices. He passed a varied, busy, and useful life, and his record, if unfamiliar to the present generation, was as creditable as it was full.

CHAPTER VI.—SIR WILLIAM CROOKES.

SIR WILLIAM CROOKES, F.R.S., who, in the early sixties, acted as one of the editors of the BRITISH JOURNAL OF PHOTOGRAPHY, writes, after all these years, in the most pleasant manner of his association with the JOURNAL. I am indebted to him for the appended biographic details and the excellent portrait. Sir William Crookes, F.R.S., P.P.C.S., Past President of the Institution of Electrical Engineers, who was born in London, June 17, 1832. He entered Royal College of Chemistry in 1848 as a pupil of Dr. Hofmann, and gained the Ashburton Scholarship in 1849. In 1850 he became junior, then senior, assistant to Dr. Hofmann, which position he retained till 1854, when he obtained the appointment of Superintendent of the Meteorological Department of the Radcliffe Observatory, Oxford. He was elected a Fellow of the Royal Society in 1863.

Mr. Crookes founded the "Chemical News" in 1859, of which paper he is still the proprietor and editor. In 1861 he announced to the world his discovery of thallium, a new metallic element, and from that date to 1864 he worked almost entirely on the elucidation of the chemical properties of thallium and its compounds, communicating the results of his investigation in several papers to the Royal Society, the Chemical Society, and the "Chemical News." In 1864 he became editor of the "Quarterly Journal of Science." It is stated that Mr. Crookes was the first to apply photography to the investigation of the solar spectrum; but his earlier researches were so numerous

that it is impossible to refer to them all. An authority on sanitary questions, his views have been laid before the public in two pamphlets—"A Solution of the Sewage Question," and "The Profitable Disposal of Sewage." Mr. Crookes, in conjunction with Dr. Odling and the late Dr. Tidy, investigated the sanitary condition of the water supply of London. A long series of original investigations must be credited to Mr. Crookes. These investigations gave us the radiometer, and led to the vacuum experiments so valuable in electrical work. In 1875 the Royal Society bestowed on him the royal medal for his researches on repulsion resulting from radiation, and the discovery of thallium. In 1879 the Royal Society published in its "Philosophical Transactions" records of Mr. Crookes's experiments on "Molecular Physics in High Vacua," comprising "Magnetic Deflection of Molecular Trajectory," "Laws of Magnetic Rotation in High and Low Vacua," and "Phosphorogenic Properties of Molecular Discharge." In the same year appeared a further paper on "Repulsion Resulting from Radiation." The subject of his second Bakerian lecture to the Royal Society was "Illumination of Lines of Molecular Pressure, and the Trajectory of Molecules." In the form of a lecture delivered before the British Association, under the title of "Radiant Matter," he compressed his researches on the electric discharge in high vacua. In 1880 the French Académie des Sciences bestowed on Mr. Crookes an extraordinary prize of 3,000 francs



Sir William Crookes, F.R.S., Editor of the BRITISH JOURNAL OF PHOTOGRAPHY. 1861.

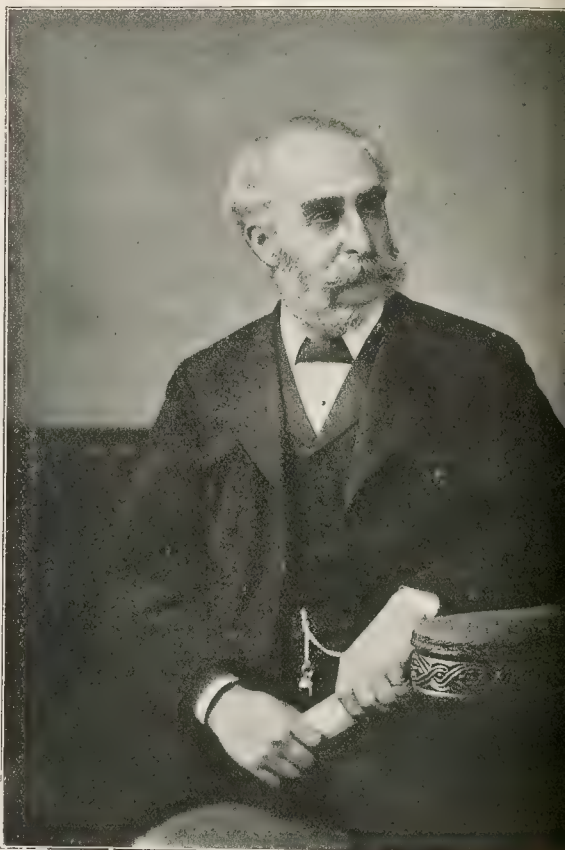
and a gold medal, in recognition of his discoveries in Molecular Physics and Radiant Matter. In 1881 Mr. Crookes acted as a juror at the International Exhibition of Electricity in Paris. In this official position he was not entitled to a medal, but in the official report his fellow jurors, after discussing the merits of four systems of incandescent lamps, declared—"None of them would have succeeded had it not been for these extreme vacua which Mr. Crookes has taught us to manage." It is well known that the value of an incandescent lamp depends greatly upon the perfection of the vacuum obtained; and in his paper before the Royal Society in 1877 Mr. Crookes concluded that the most perfect vacuum then obtained, in which the pressure was only 0.4 millionth of an atmosphere, contains in each cubic centimetre no less than 250,000,000,000,000 molecules of air, as compared with Mr. Johnstone Stoney's estimate of the number of molecules contained in a cubic centimetre of ordinary air, which is 1,000,000,000,000,000,000 (one thousand trillions). Mr. Crookes's house, 7, Kensington Park Gardens, is said to be the first house in England lighted by electricity, his private installation of gas engine, Burgen dynamo, and incandescent lamps of his own make dating from the latter part of the year 1881. In 1883 Mr. Crookes delivered the Bakerian lecture for the third time before the Royal Society, the subject on this occasion being "Radiant Matter Spectroscopy: The Detection and Wide Distribution of Yttrium." In 1885 the Society of Arts awarded him the Ferguson medal for "his improvements in apparatus for the production of high vacua, and for his invention of the radiometer." In 1886 Mr. Crookes was elected President of the Chemical Section of the British Association; and at their Birmingham meeting that year he delivered an address in which he propounded some novel speculations on the probable origin of the chemical elements, showing that the balance of evidence was in favour of the view that our so-called elements have been formed by a process of evolution from one primordial matter. In 1887 he delivered a Friday evening discourse before the members of the Royal Institution, on the "Genesis of the Elements." In his address to the Chemical Society in 1888, on taking the president's chair, Mr. Crookes still further elaborated this theory, bringing forward numerous arguments, many of them based on experiments, to prove that the chemical elements are really compound bodies. These views were again urged, with numerous experimental proofs, in his presidential address to the same Society in 1889, and they are now generally accepted by chemists. In 1888 Mr. Crookes was awarded the Davy Medal of the Royal Society, for his Radiant Matter researches. Mr. Crookes was President for 1891 of the Institution of Electrical Engineers. He received the honour of knighthood in 1897, "in recognition of the eminent services he has rendered to the advance of scientific knowledge during her Majesty's reign." In 1898 he was President of the British Association for the Advancement of Science. In 1899 the Society of Arts awarded him the Albert Medal for "his extensive and laborious researches in Chemistry and Physics; researches which have in many instances developed into useful practical applications in the arts and manufactures."

CHAPTER VII.—JAMES MARTIN.

JAMES MARTIN became Assistant Editor of the "B. J." and Editor of the "Almanac" in 1863. He has written in reply to a request for a personal reminiscence of his connection with the paper: I acknowledge with pleasure your interesting note, recalling as it does my pleasant associations with the BRITISH JOURNAL OF PHOTOGRAPHY, its courteous and alert editor, George Shadbolt, and its genial and enterprising proprietor, Henry Greenwood, whose hospitality it was my privilege to enjoy at his Liverpool residence in the early sixties. It is gratifying to note that the traditions of unwavering courtesy

and cordiality which characterised the intercourse of editor and contributors at that time is continued to the present day, by which I feel encouraged to respond to your invitation. You ask for (1) notes of my experiences and (2) some biographical details.

1. My Experiences.—So far as concerns the present, they are those of most who labour at photography for a livelihood, and can have little special interest for your readers; but the jubilee of the journal awakens memories and suggests contrasts. I recall with admiration such names as Hardwich, Major Russell Manners Gordon, Rev. F. F. Statham, *et sic genus omnes*, enthusiasts who pursued the study of photography regardless of loss and irrespective of gain, and achieved distinction in their un-



JAMES MARTIN,

Assistant Editor of the BRITISH JOURNAL OF PHOTOGRAPHY, and Editor of the "Almanac," 1863.

selfish courses, contrasting most favourably with the present tone of its followers, with whom (so far as my limited acquaintance may permit the judgment) commercial gain is the potent stimulus. I trust I may be pardoned if I am wrong.

2. Biographical Details.—As connected with the BRITISH JOURNAL OF PHOTOGRAPHY, I was privileged in 1863 to edit the Almanac for that year. It was presented, not sold, to the readers of the journal, and I know of no more forcible illustration of the strides made by photography in public appreciation than to contrast the Almanac of 1863 with that of 1903; it is as Lilliput to Brobdingnag!

Yielding to your solicitation, I may further mention that my Alma Mater is the Pharmaceutical Society of Great Britain, of

which institution I am an associate by examination, and where as laboratory assistant I acquired such a knowledge of chemistry as enabled me for the appointment of assistant to the late Professor Woodward, whose memory I cherish with the highest respect and gratitude. A brief engagement with a firm of manufacturing chemists at Worcester* was followed by a longer one with the firm of George Knight and Son, of Foster Lane, where I remember to have sold pyrogallic acid at ten shillings a dram and posulphite of soda at three shillings a pound. By an engagement with Beard and Son, of King William Street, I became an expert in the Daguerreotype process, of which I retain an interesting series of examples.

A voyage round the world and a few years' stay in the Australian goldfields interrupted my connection with our art science, but on resuming I became a constant attendant at the meetings of the three pioneer photographic societies, whose proceedings I reported for the BRITISH JOURNAL OF PHOTOGRAPHY, to the pages

* Whitfield and Son.

of which I also contributed a long series of articles on photographic chemicals and fortnightly translations from the French photographic journals, chiefly "Le Moniteur de la Photographie."

Other literary labours were my revision of the article "Photography" in "Orr's Circle of the Sciences" for Messrs. Houlston and Wright, and my response to the invitation of Messrs. W. and R. Chambers to contribute the articles included in the section "Photography" in their Encyclopædia, which was accomplished to the satisfaction of its distinguished editor, Andrew Findlater, LL.D.

I also had the honour of reading a paper, "On a Self-recording Aneroid Barometer," at the meeting of the British Association for the Advancement of Science at Exeter in 1869.

My four small scientific manuals, the aggregate sale of which exceeds a hundred thousand copies, are fairly well known, and their titles indicate their scope—"The Magic Lantern," "The Model Steam Engine," "The Aneroid Barometer," and "Weather Warnings for Watchers."

CHAPTER VIII. JOHN TRAILL TAYLOR.

In 1864 the publishing and editorial offices of the JOURNAL were removed to York Street, Covent Garden, London, and in these offices, dear and hallowed to many of us by their associations, the paper entered upon a career of prosperity and progress which has known no interruption. It was in this year that Taylor, long valued contributor to its pages, assumed an editorial position in the JOURNAL, which was to continue without a break for fifteen years.

John Traill Taylor was born at Kirkwall, in the Orkneys, on January 23, 1827. As a youth he was attracted to, and practised the Daguerreotype process, and, in the intervals detached from the pursuit of his profession as a watchmaker, developed great aptitude for the study of the chemistry and optics of the then very young art of photography. We have frequently heard him smilingly remark that in those days there were no photographic papers to help a young photographer out of his difficulties, and that of the optics of photography, a field in which he was subsequently destined to gain considerable prominence, it was difficult, if not impossible, to acquire knowledge from others.

A long residence in Edinburgh was the means of bringing Mr. Taylor into contact with Sir David Brewster, Henry Fox Talbot, Mungo Ponton, Piazza Smyth, R. H. Bow, Thomas Davidson (the optician), and other noted workers of forty years ago, by whom he was highly esteemed for his knowledge of photography and his abilities as an experimentalist and writer. For some time he was on the staff of the "Scotsman" and other Scotch newspapers, and dated his first association with photographic journalism from about the year 1856, when he established an ever-circulator magazine devoted to photography, and called the "Photographer," many extracts from which will be found in the earlier volumes of "Photographic Notes," edited by Thomas Sutton, B.A., between whom and our late friend a warm regard subsequently sprang up.

It was in the year 1859 that Mr. Taylor became a regular contributor to this journal, and thus started a connection that was only to terminate with his death. Five years later—that is, in 1864—on the retirement of Mr. Shadbolt, he was appointed Editor, a position he filled for the succeeding fifteen years. In the early part of 1879 he vacated the chair for the purpose of taking a commercial appointment in the United States, and before his departure a numerously-attended farewell dinner was given, and a handsome gold watch presented to him, as marks of the esteem in which he was held by the photographic public. Circumstances deciding him to abandon this new position about a year after his arrival in New York,

he resumed his connection with photographic journalism, taking up the editorship of the "Photographic Times" (New York), which rapidly prospered under his skilful direction, and also



JOHN TRAILL TAYLOR,
Editor of the BRITISH JOURNAL OF PHOTOGRAPHY,
1864-1879 and 1886-1895.

contributing to this journal, of which, together with its "Almanac," he once more assumed the editorship on January 1, 1885.

Some of Mr. Taylor's optical writings were published in

book form a few years ago, but they are not fully representative, either of the extent of the depth of his knowledge of the subject. But, happily, it is not necessary for us, in dwelling upon the vast store of his photographic knowledge and experience, the directness and simplicity of his literary style, and his sagacity as an editor, to do so specifically or in detail—the volumes of the *JOURNAL* and the “*Almanac*,” for over one-third of a century, eloquently tell the story of his life's work, and constitute what we know he himself would regard as his best, most enduring, and proudest memorial.

Outside his journalistic labours, the world of photography has cause to be grateful to Mr. Taylor for many efforts and labours in its behalf. Over thirty years ago he was, we believe, one of the founders of the Edinburgh Photographic Society. In London he was for a long time a member of the

Council of the Royal Photographic Society; trustee of London and Provincial Photographic Association; President of the North London Photographic Society; and an honorary member of the Photographic Club and the Camera Club. He was formerly President of the Photographers' Benevolent Association, and was the founder of the Photographic Convention of the United Kingdom. Many other photographic societies in America, in France, and other parts of the Continent, claim him as a member.

The popularity Mr. Taylor enjoyed among the many thousands of photographers with whom he came in contact during the course of his long career, is not difficult to understand. He was ever genial, communicative, and kind hearted, ready to help with advice, counsel, or information; the beau idéal of fact, of natural bonhomie and good humour.

CHAPTER IX.—W. B. BOLTON.

1864 was a great year for the *JOURNAL* in many respects. Besides witnessing the managerial and editorial changes to which I referred in a previous chapter, it saw the publication, over the names of W. B. Bolton and B. J. Sayce, of an epochal paper, which dealt in a practical manner for the first time with a method of emulsifying the silver salts in collodion

paper pointed the way to what was destined to come at no distant date.

PHOTOGRAPHY WITHOUT A NITRATE OF SILVER BATH.

Without entering into the preliminary investigations which led to this discovery, the secret of the whole consists in converting simply bromised collodion into what we will for convenience designate “collodio-bromide of silver,” by the addition of the combining equivalent of nitrate of silver to the previously bromised collodion.

To reduce this to practice we prepared bromised collodion as follows:—

Alcohol	$\frac{1}{2}$ ounce.
Bromide of cadmium and ammonium.....	3 grains.
Pyroxyline	2 grains.
Ether	$\frac{1}{2}$ ounce.

Well filtered.

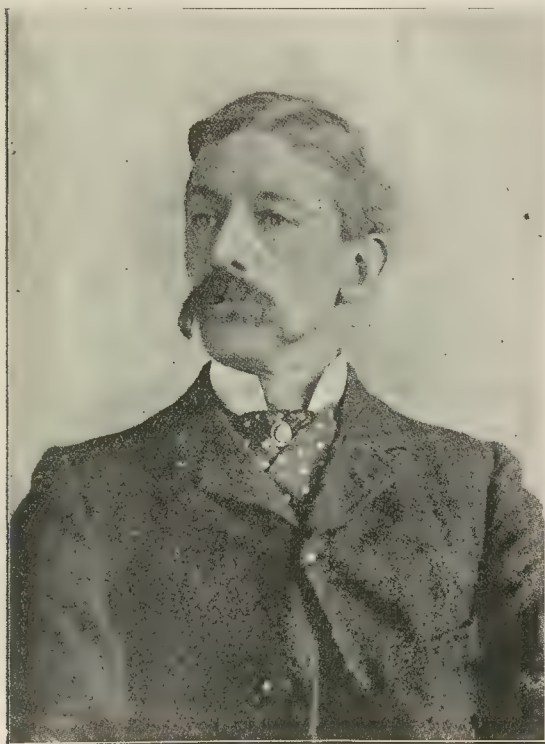
We then took an ounce phial, placed therein four grains of pulverised nitrate of silver, which we dissolved in two drops of distilled water; then covered the bottle with a perfectly non-actinic coating of brown paper, and in a yellow light added an ounce of bromised collodion. The mixture at once produced a milkiness, which does not disappear; we then shook the bottle and coated a clean glass—previously tipped at the edges with benzine and India-rubber solution—with the collodion, without even allowing it to settle, and allowed the film to set in the ordinary manner; then placed the plate, face upwards, in a dish of water, and when the greasy appearance vanished, rinsed under the tap for a few seconds; then poured over the film the ordinary fifteen-grain solution of tannin, worked it into the film for about one minute, drained, wiped the back with blotting-paper, and dried rapidly in a kitchen oven.

This plate was exposed the following day for thirty seconds using a Ross's four inches and a half focus single lens, small diaphragm, say three-sixteenths of an inch. Result: details in full, and sufficiently dense to print, the negative perfectly clean, free from pinholes, comets, spots—in fact, everything was absent that has ever tended to harass and perplex the photographic existence.

Another plate similarly prepared the same evening, and exposed about half a minute after the first for fifteen seconds was only slightly under-exposed. The development was as follows:—We placed the plate, film upwards, in a dish of water when equally moistened we poured over it the following solution:—

Water	1 ounce.
Carbonate of ammonia	3 grains.

to which had been added a few drops of the alcoholic solution



W. P. BOLTON,

Editor of the *BRITISH JOURNAL OF PHOTOGRAPHY*, 1879-1885.

—thus rendering unnecessary the use of the nitrate sensitising bath. As the *BRITISH JOURNAL OF PHOTOGRAPHY* was the only paper in which this important communication appeared I append an extract from it. Undoubtedly Sayce and Bolton's

pyrogallie acid, viz., ninety-six grains of the former to one ounce of the latter.

Development commenced at once; but owing to the extreme transparency and thinness of the film, one or two minutes passed before the details were distinctly visible, when a piece of white paper was placed underneath. At this stage the plate was thoroughly washed; afterwards—in order to neutralise the alkali—rinsed with a little very dilute acetic acid; and then sensitised in the ordinary manner, using the following solutions for that purpose:—

No. 1 SOLUTION.

Pyrogallie acid	1½ grain.
Citric acid	1 grain.
Distilled water	1 ounce.

No. 2 SOLUTION.

Nitrate of silver	30 grains.
Distilled water	1 ounce.

Two drachms No. 1 add two or three drops of No. 2.

The negative rapidly acquired density. When sufficiently dense it was washed and fixed with a saturated solution of hyposulphite of soda, then washed thorough and dried. It yielded a good print. A wet collodion plate under the same circumstances would have required about ten seconds. Twenty seconds would probably have sufficed in our case.

Several modifications of the above process have occurred to us, the experiments connected with which we are now following. We purpose making the film more opalescent, and have hopes of accelerating the exposure so as to equal in rapidity that of bromised or wet collodion.

As far as we can judge from our short experience, the process is singularly free from the risks that have hitherto beset dry-plate photography, and the easy manipulation equals, at least, that of the wet process. One dozen stereoscopic plates may be prepared by one person in half-an-hour—exclusive of cleaning the glasses.

We are not in a position to say whether the collodion deteriorates by prolonged keeping. We know that hitherto we have had no loss in sensitiveness; but, of course, it must be kept in the dark. A bottle in a wooden case, such as those sold by us, is very suitable for the purpose. It had better be painted over with black varnish, and covered with yellow or brown paper.

Having regard to the chemical equivalents in the formation of bromide of silver, the weight of the bromide salts and of the trace of silver may be extended at discretion, as also of the crocoylene, but it will be found desirable not to have the collodion too thick.

Excess of bromide produces insensitiveness.

No doubt many experimenters will at once give the subject their attention, and aid us by the publication of their observations.

B. J. SAYCE, W. B. BOLTON.
Liverpool, September 3, 1864.

William Blanchard Bolton was born at York in the year 1848. It was in the month of September, 1864, that the collodion-emulsion process, with which his name, and that of the late Mr. B. J. Sayce were associated, was published in the pages of the BRITISH JOURNAL OF PHOTOGRAPHY, so that, although still, comparatively speaking, a young man at the time of his death, he had been before the photographic world no less than thirty-five years. In the year 1865 his name figures in our "Almanac" as the Honorary Secretary of the Liverpool Amateur Photographic Association.

In the month of January, 1874, Bolton published in the BRITISH JOURNAL OF PHOTOGRAPHY a washed collodion-emulsion process, and for several years considerable commercial success attended the method which owes its origin to him of removing the soluble salts from the emulsion and adding an organifier. This amounted to an almost revolutionary improvement in the

unwashed process of Sayce and Bolton, introduced ten years before; and, looking back, it must appear strange that so obvious an improvement should have escaped notice long.

For many years one of its most valued contributors, Bolton became Editor-in-Chief of this Journal on January 1, 1879, and occupied that position until the end of 1885, when the late



A. J. WILSON.

A former contributor to the BRITISH JOURNAL OF PHOTOGRAPHY and now the well-known financial writer and Editor of "The Investors' Review."

Mr. J. Traill Taylor resumed his occupancy of the chair. During the years 1879-84 Bolton's writings and experiments on the preparation of gelatine emulsion were both valuable and voluminous, and there is no doubt that in the early days of the new process much useful knowledge was gained from what he published in these pages on the subject.

B. J. SAYCE.

Mr. Sayce, at the time of his death, was fifty-eight years of age. It was in this Journal for September 9, 1864, that the brief but lucid paper, entitled "Photography Without a Silver Nitrate Bath," appeared over the signature of B. J. Sayce and W. B. Bolton, from which an extract is reproduced above. The immediate practical outcome of the publication of the paper was to pave the way for the comparative desuetude of bath photography, the introduction of dry collodion plates, and ultimately of gelatine plates, which, between them, have unquestionably been instrumental in carrying photography to the pitch of excellence it now occupies. The experimental work so happily begun was continued by Mr. Sayce during several succeeding years, and many practical ideas and suggestions subsequently emanated from him in connection with the process.

Mr. Sayce was one of the original members of the Liverpool Amateur Photographic Association, in which he took a deep and active interest until the time of his demise. In 1888, when Liverpool was marked for the holding of the first International Photographic Exhibition ever instituted, Mr. Sayce was president of the association, and he also took a large part in the affairs of the association, when under the presidency of Mr. Adolph W. Beer, the first club rooms in St. George's Crescent, were entered upon by the members. For an exhibition of the method of his discovery, Mr. Sayce was awarded a gold medal at the Inventions Exhibition, held in London in 1885, and of this signal honour he was justly proud. Mr. Sayce was one of the most popular members of the Liverpool Association, and was always ready with information and advice to those less skilled than himself in the art.

CHAPTER X.—THOMAS BEDDING.

IN the early eighties, when Bolton conducted the *BRITISH JOURNAL OF PHOTOGRAPHY*, and made it the vehicle for his voluminous writings on gelatine emulsion photography, there is no doubt the paper was widely read for this feature and this feature only. Experimentalists, investigators, and manufacturers vied one with another in giving their results publicity, and thus until about the year 1885, when the commercial manufacture of gelatine plates finally assumed the shape of a

way he knew a very great deal of the practical possibilities of the various types of objectives in common use.

It must be left to some future chronicler—he who will undertake the Centenary Task in the year 1954—to deal in detail with the more recent history of the *JOURNAL*; the facts and occurrences are too near to appear in their proper proportion. But perhaps the present editor, in drawing a very congenial task to a conclusion, may be forgiven if he lightly runs over



Photo by]

THOMAS BEDDING, Editor-in-Chief of the *BRITISH JOURNAL OF PHOTOGRAPHY*.

1895 —

[H. Walter Barnett, Knightsbridge, London.

scientifically regulative enterprise, the pages of the *JOURNAL* were the recognised means of communication between those who were engaged in the daily task of working out some sort of system of plate manufacture.

Upon resuming the chief editorial in 1886, and until his lamented death in 1895, Taylor in the *JOURNAL* gave prominence to the optical side of photography—a subject which was always uppermost in his mind. Taylor's "trial and error" knowledge of a lens was considerable, and in a rough-and-ready

the story of the *JOURNAL* during the last thirteen years—his perhaps, being the only pen quite qualified to do so. It was in the year 1891, after a novitiate of seven years as a contributor, that Thomas Bedding was appointed assistant editor of the *BRITISH JOURNAL OF PHOTOGRAPHY*. In 1895, on the death of Taylor, he was elevated to the position of editor-in-chief. During those thirteen years the power, influence, and prestige of the *JOURNAL* have expanded in a ratio far greater than in any like period of its career. In 1891-1892 the *JOURNAL* was

successful in raising a fund of £700 for the veteran Dr. Maddox, the inventor of the dry plate. Its ungrudging support was extended to the Photographic Society of Great Britain, the Photographic Copyright Union, the Photographers' Benevolent Association, the Convention, and many kindred bodies. It founded the Traill-Taylor Memorial Lectureship in memory of its former editor. The lecture has since been annually delivered by such distinguished men as T. R. Dallmeyer, F.R.A.S., Major-General Waterhouse, Frederic Eugene Ives, Professor H. H. Turner, F.R.S., Professor Silvanus P. Thompson, F.R.S., and Sir W. de W. Abney, F.R.S. Largely owing to the firm and

consistent support of this JOURNAL, the International Crystal Palace Photographic Exhibition of 1898 was a pronounced success. The establishment of the Professional Photographers' Association, a society of 700 members, is also due to the efforts of the JOURNAL and its editor. An enumeration of the minor fields of photographic activity in which the JOURNAL has beneficently exerted need not perhaps be given here; let it suffice to say that for the past dozen years the policy of the JOURNAL has been to support without stint or qualification every movement clearly shown to have for its object the advancement of photography.



Photo by]

F. J. MORTIMER,

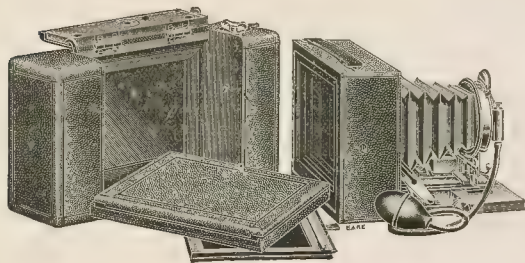
[Furie Lew's.

Sub-Editor of the BRITISH JOURNAL OF PHOTOGRAPHY, 1904—
Late Hon. Sec. Southsea Photographic Society.

New Apparatus, &c.

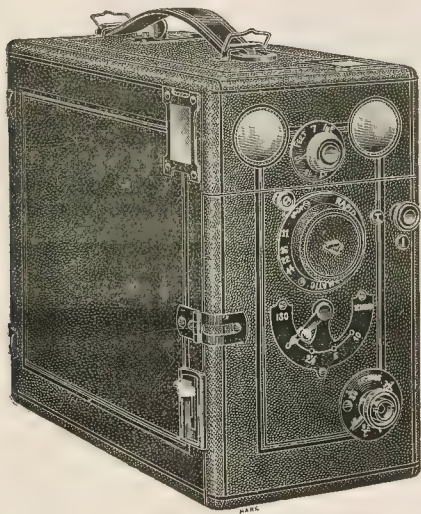
Two New Cameras. Sold by A. E. Staley and Co., 19, Thavies Inn, Holborn Circus, London.

The No. 3 Combination Weno possesses all the latest improvements in film camera construction. The design is new, and comprises features which will appeal to those who wish to use films and plates and have the advantage of focussing the subject full size on a ground glass.



This Weno is so constructed that the film chamber may be removed and a plate adapter placed in its position, transforming the camera from a film to a plate outfit, or vice versa. Films and plates being in the same focal plane, only one focussing scale is required, and by an ingenious arrangement any picture may be focussed on the ground glass while a spool of film is in position.

The camera is fitted with rack and pinion for focussing, rising and falling front, tripod sockets, R.R. lens, and Bausch and Lomb automatic shutter, is Morocco grain leather covered, and has polished mahogany bed and nickel fittings. The entire apparatus is very compact and well finished.



The "Royal" Guinea Magazine Camera is well finished with mahogany body, covered morocco leather, with high-grade achromatic lens, in focussing mount (from 7 ft. to infinity). It is also fitted with three colour screens for isochromatic work, giving an increase of exposure $2\frac{1}{2}$, 5, and 10 times respectively. Shutter is of improved construction, giving various exposures, from 1-100th to 1 second,

as well as time and intermediate speeds. The changing is easy to understand and apparently difficult to put out of order. Two brilliant view finders for upright or oblong pictures are included, and tripod sockets for stand and automatic plate register.

Messrs. Staley have also introduced a new registered stop for use with Unicum shutters, all sizes. This stop will at once appeal to many thousands of users of Unicum shutters. It is instantly adapted by the purchaser, and requires no fitting. It enables the operator to open the shutter for focussing when set at any speed, to



avoiding the necessity of setting the shutter at time before being able to focus. It will fold up on any camera, and can be at once detached from the shutter if desired.

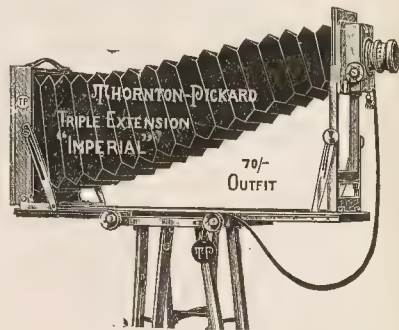
"Platinotype Postcards and Papers," made by the Platinotype Co., 22, Bloomsbury Street, New Oxford Street, London.

The Platinotype postcards, which possess all the good qualities of the Platinotype paper, are put up in the familiar hermetically-sealed tubes, with rotating cutter. Each tube contains eight postcards, with the usual printed matter on the front, and space for communication and sufficient D salts and citric acid to respectively make 10 of developer and 20 oz. of clearing bath. Two masks are included.

The Company have comparatively recently placed some new papers on the market, viz., KK (thick, fine surface), TT (thick rough), (smooth, extra thick), and ZZ (rough, extra thick). The weight of the new papers, taking the AA paper as representing 1, are approximately as follows:—KK and TT, $1\frac{1}{2}$; and YY and ZZ, $2\frac{1}{2}$. They can be supplied sensitised in black or sepia, the two last at a slight extra cost. With the thick papers there is a distinct tendency to give a brighter image, with greater resisting powers against dust and rough usage.

"The Imperial Triple Extension Outfit" and "Panoptic Shutter," made by the Thornton-Pickard Manufacturing Co., Ltd., Alton, Lancs.

The Imperial Triple Extension Outfit puts into the hands of the amateur, and others who do not desire to spend a large sum on the purchase of a complete outfit, a well-constructed camera of new

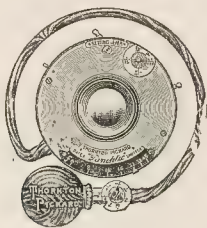


original design, fitted with every practical movement for general all-round work, snap-shots, copying, enlarging, and telephotography.

The camera has an extension of 22 in. in the half plate size, and closes to 3 in. for use with short-focus lenses.

The outfit includes the camera, with triple swing back, rising, falling, and cross front, triple swing front, triple extension, reversing rack, double rack and pinion, and brass turntable. A Beck symmetrical lens, with Iris diaphragm f-8, is included, and double book-form dark slide, with hinged division, three-fold stand, and Thornton-Pickard time and instantaneous shutter with speed indicator.

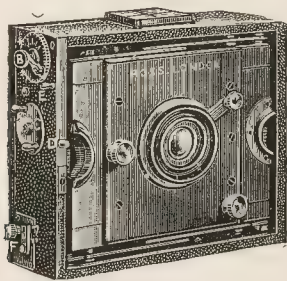
The Panoptic shutter is a new between-lens shutter introduced this season to supply the demand for an English-made diaphragmatic shutter combining accuracy and efficiency. It gives exposures with the same precision and reliability as the Thornton-Pickard roller blind shutter. It can be fitted to all lenses with apertures up to f-5.6 in., being thus suitable for lenses from quarter plate to half plate.



The shutter is opened for focussing by means of an independent lever. All working parts are enclosed in an aluminium box, and it works smoothly without vibration. It has pneumatic and lever release, and is set without exposing the plate. The speed indicator is marked to give time and bulb exposures, and exposures of 3, 2, and 1 second, and $\frac{1}{2}$ to 1-100th of a second.

The Ross Focal Plane Camera, sold by Ross, Ltd., Clapham Common, London.

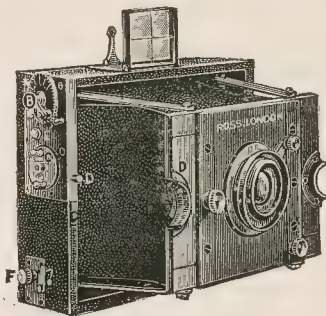
A new and improved pattern of this camera has been placed on the market this season by Messrs. Ross, Ltd. The focal plane shutter has



practically the whole of its working parts now securely and neatly covered in, while the speed can be easily adjusted from the outside. It is arranged for either time or instantaneous exposures of 1-10th to 1-1000th of a second; both being equally certain in action and efficient in result. The shutter works very smoothly without vibration, especially with the slow instantaneous and time exposures, which is a feature that will appeal to those who wish to do indoor portraiture, etc., with the camera.

The body of the camera is collapsible and extremely compact. The woodwork being ebonised and finished with a dull polish, and the body containing the shutter is covered with morocco leather. The extending front, with its rising and falling lens board for vertical and horizontal pictures is supported by very strong metal arms, which are absolutely rigid when the camera is open for use. The front is

thus kept perfectly plane with the sensitive surface of the plate, and absolute definition is obtained with the largest lens aperture. The Ross Patent Homocentric Lens is fitted to this camera, and the definition we have obtained with it at full aperture is beyond re-



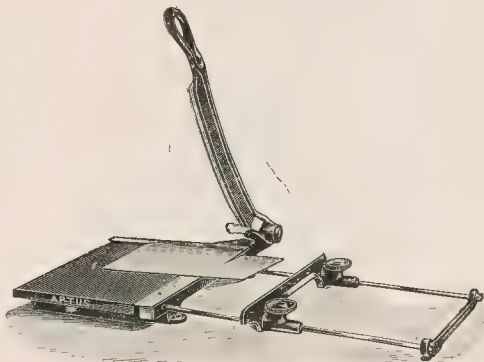
proach. The lens usually supplied is of the Series C, working at f-6.3, but one of the Series B, f-5.6, may be had at a slight extra cost. The lens is mounted in a focussing jacket on which the distances from two yards to infinity are accurately engraved.

Roller double dark slides or changing box are supplied with the camera, both being of perfect finish and reliability.

"Aptus" Specialities, made by Sharp and Hitchmough, 101 and 103, Dale Street, Liverpool.

The "Aptus" Repeater Camera, to take stamp-size photos (called "Sticky Backs"), is a well-made instrument of precision. It is made to produce either 12 or 16 photos of different sitters on a half plate, and, by having an extra repeating slide and fittings, to take eight or nine photos on the half plate the same camera will produce the larger pictures. By having further extra slides and fittings, larger or smaller photos may be made at will, i.e., four, six, or any other number on the half plate according to what may be decided upon. The camera is very strongly made, and well finished and highly French polished; is fitted with rack and pinion focussing adjustment, bellows body, rack and pinion to rising front, loose lens panel, extra panel, reversing back for vertical and horizontal pictures, double repeating back, and one single dark slide for any of the following sizes, viz., 4, 6, 8, 9, 12, 16, or 18 photos on the half plate.

For use with these cameras, a special printing frame in three



styles and adapted for taking two sizes of negatives is made, and is a most ingenious piece of apparatus. No. 1 frame is flat, taking a large sheet of bromide paper to make eight dozen to twelve dozen

prints, according to size of pictures. The pressure board of this frame requires to be opened after each exposure to adjust the paper for the next, the printing of eight dozen or twelve dozen taking about fifteen minutes.

No. 2 frame is also flat, of similar construction, but more convenient to work, as the pressure board need not be opened during the printing, and the time taken in printing is only about ten minutes.

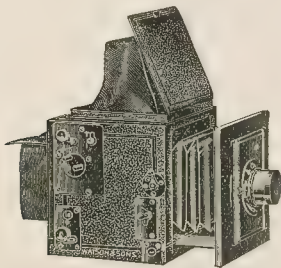
No. 3 is a printing machine of very portable construction, measuring 16 in. by 6 in. by $2\frac{1}{2}$ in. The paper is rolled up and wound from one roller to another from the outside. This machine is simple, easy and quick to work. Time for printing about twelve minutes.

The "Aptus" Card and Paper Cutter.—This cutter is well constructed in every detail. The tables are made of hard wood, and fitted with a graduated back gauge. The movable steel blade is curved, giving a drawing cut so essential to smooth work. The efficiency of the cutter is increased by the combination of the curved movable blade and the peculiar construction of its pivotal spring joint, which allows the blade a slight lateral motion, and thus secures perfect contact of the two blades at every point. This gives smooth edges to the card or paper which is cut.

The "Aptus" B.P.U. Camera for 1904 is a well-made magazine camera for twelve quarter plates or twenty-four films in sheaths, with automatic counting indicator registering the number of exposures. It has a high-class achromatic lens, giving fine definition, with open aperture; Iris diaphragms; two brilliant finders for vertical and horizontal work; and is fitted with a new time and instantaneous shutter with patent time arrangement, giving exposures from 1 second to 1-100th. Focussing extension for portraits and near objects is accurately scaled in yards. Twelve sheaths for plates or films is included with each camera. Seal or morocco grain case with stitched handle. The camera is cheap and good.

The "Argus" Reflex Camera. Made by Watson and Sons, 313, High Holborn, London.

This camera is essentially a portable hand camera, and is, we believe, both as regards dimensions and weight, the smallest and lightest of the reflex type. Its dimensions in quarter plate size are 6 in. by $6\frac{1}{2}$ in. by $5\frac{1}{2}$ in., and the weight only $2\frac{1}{2}$ lb. The focal-plane shutter is of a new pattern, giving either time or instantaneous exposures, and by an ingenious mechanical contrivance is so arranged that when time exposures are being made the reflex finder and focussing adjustment are still available. The mirror is silvered on the surface (which is protected by a coating of transparent varnish), and gives an absolutely true reflection; the action of the mirror rising is quite silent. The camera is strongly made, with all metal and wood



fittings finished black, the whole presenting a handsome and unobtrusive appearance. The lens is the Holostigmat Series I. f-6, 6 in. focus, with Iris diaphragm. The double dark slides are fitted with flexible roller shutters, and bound with aluminium.

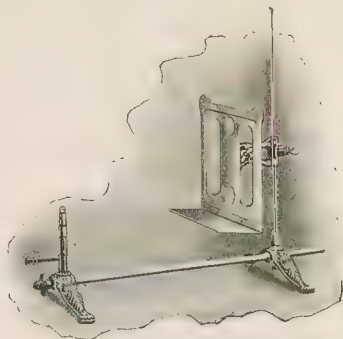
The camera has rackwork focussing adjustment, and rising

motion to the front, in horizontal and vertical directions, and fitted with socket for attaching to tripod.

The "Velox" Amateur Printer. Sold by J. J. Griffin and Sons, Ltd 20-26, Sardinia Street, Lincoln's Inn Fields, London.

The things that are absolutely necessary in making Velox print are few in number and simple in character. The essentials are light—either daylight or artificial light—developing and fixing solution and water for washing the prints. If artificial light is used, it may vary from a "tallow dip" to an arc light, and no apparatus beyond the simplest form of printing frame is required in making exposures. A convenient apparatus, however, for measuring the distance from the light and for adjusting each negative to the proper angle of exposure to produce the best results is of great assistance. It is with this object in view apparently that the Velox amateur printer has been placed on the market. The illustration sufficiently explains its scope. The apparatus is well made, and nickel finished, and the various adjustments for raising, lowering, or inclining the shelf on which the printing frame is stood during exposure, are very complete. The bottom rod, with the gas burner at one end, and the sliding upright rod holding the printing frame support, at the other, is marked in inches and fractions to ensure identical distance between negative and light for future exposures. Fittings for electric light are also supplied.

The "Professional" P.O.P. is also a new introduction by Messrs. Griffin, and is intended more particularly for professional work. As it is generally admitted in the case of printing-out papers a result somewhat softer than the usual result is necessary for pro-



fessional purposes. Messrs. Griffin claim that the "Professional" P.O.P. has the following qualities, which should specially appeal to the profession: (1) Only Rives finest raw paper is used. (2) Soft delicate prints are produced without harsh contrasts appreciable. (3) An economy is effected in the use of gold in toning to enable the profession to test the claims made for this paper. A full sample sheet will be sent to any professional reader of this journal, free of charge upon request to Sardinia Street.

Lumière Films (Planchon Process). Made by Lumière N.A. Co., Ltd 4, Bloomsbury Street, New Oxford Street, London.

The new orthochromatic series of roll films now issued by this firm are well up to the high standard they have set with their other productions. These films are coated with the well-known Lumière Orthochromatic A Emulsion, and for work where correct colour values are desired are most satisfactory. They are developed, fixed, and printed in the usual manner, and are clean working and of good rapidity. Dianol is the developer specially recommended, and a convenient formula is: Water, 5 oz.; anhydrous soda sulphite, 66 grains; Dianol, 11 grains.

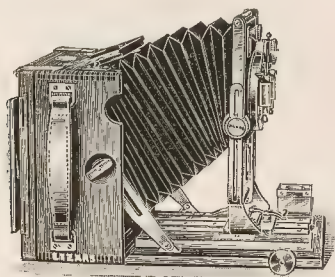
The makers do not advise the use of glycerine as a preventive

curling, but advise rather rolling the dried films round a pencil or piece of tube, film side outwards. If this be done, and the film kept in position by a rubber band for a few hours, the tendency to curl will be found to have disappeared.

The base of Lumière films being of a specially clean and transparent character, enlargements of a perfect nature can be readily made from negatives produced on this film.

The "Challenge" De Luxe Camera. Made by J. Lizars, 101 and 107, Buchanan Street, Glasgow.

The special feature of this fine hand-stand camera are briefly: The lens, shutter, and finder, all close up within the camera, and with focussing screen and hood, combine in one; the universal swing front, which possesses enormous rise, extreme side movement, great extension with perfect rigidity, and can be set back for extreme short focus lenses, and tilted to any degree upwards or downwards;

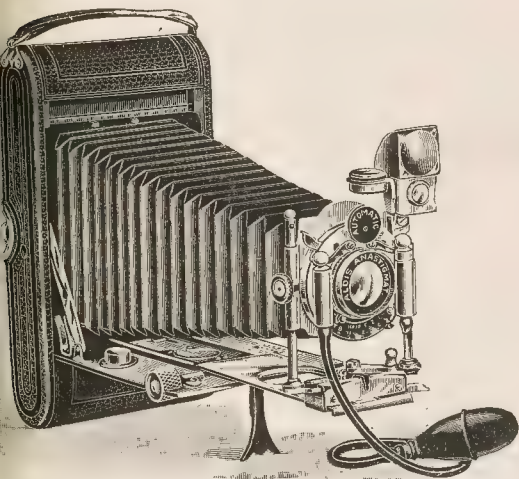


Independent lens panel rising and falling front; swing back; camera can be instantly opened, and front pulled forward on brass guides, and securely fixed at any position by means of quick acting lever; automatic lock, which securely fixes the front at infinity distance—the position generally used for snap-shot work, and graduated lens scale. The camera is supplied either polished or leather-covered, and the make and finish have all the characteristics of British workmanship.

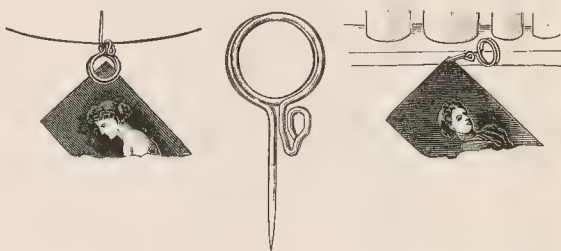
Half-Plate Roll Film "Carbine" Hand Camera. Made by W. Butcher

and Sons, Camera House, Farringdon Avenue, London, E.C.

This camera is a most practical and compact instrument, folding,



into an astonishingly small space, considering its capacity. It is substantially made in walnut, polished inside, and covered in Morocco-grained leather. It has leather bellows, aluminium base-board, rising and cross front, and double extension. The back of camera is fitted



with removable panel for inserting dark slides, and focussing screen, and has a swing back movement, by means of catches in the side struts. Focussing is by means of ordinary rack and pinion, with scales for both short and long focus lenses. The lens is a Beck rapid symmetrical, with patent detachable flange for using lens in any other camera, and the shutter is automatic between lens, with pneumatic ball and tube; exposures from 1-100 to two seconds. A spirit level is attached to the view finder, reversible for horizontal and vertical, and the finder (brilliant form) is reversible for horizontal and vertical views. Messrs. Butcher have also introduced a new form of dark-room pin, which is a print hanger as well, and should prove a very useful little item in the dark-room.

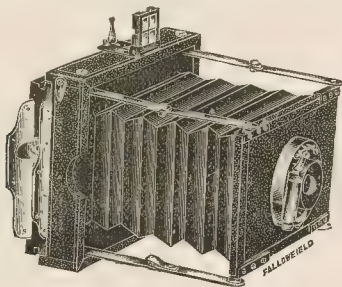
"Barnet" Specialities. Made by Messrs. Elliott and Sons, Ltd., Barnet, Herts.

The Barnet Orthochromatic Plate. The introduction by Messrs. Elliott of an orthochromatic plate has already called for expressions of approval from this journal. Subsequent experiences with the Barnet "Ortho" Plate have quite convinced us of the correctness of our first impressions as to its quality, and we can only congratulate the firm on this notable production, combining, as it does, colour correctness and high speed. We understand that Messrs. Elliott are in the unfortunate (or fortunate?) position of not being able to keep pace with orders for this plate. Our personal experience also of the Barnet lantern plates, which we have used extensively, is equally satisfactory. The Barnet Roll Film is a celluloid film, evenly coated with a remarkably good emulsion, quick and clean. Density is easily obtained, and there seems to be no tendency to fog; in fact, there appears to be a surprising amount of latitude in exposure, which, combined with its undoubted speed, makes it a very desirable film to handle. Barnet "Lustra Matt." bromide paper has qualities of its own that commend themselves to the bromide worker at sight. We find the claims made for it well substantiated in fact. These are: Good range of tones; beautiful surface; remarkable purity in the whites; luminous rich black shadows, giving a wealth of detail; quick printing, just the right paper for contact work; nothing new to learn in the way of manipulation. A free sample may be had for the asking.

Novelties by Jonathan Fallowfield, 146, Charing Cross Road, London.

A new camera of the popular folding form has been put on the market by this firm at a surprisingly low price. It is a well-made little instrument, with good lens and shutter, and possesses all the necessary qualifications for a snap-shot camera. The dark slides are book-form, with pull out aluminium shutters. Flashlight sachets: These useful and portable little flashlights are likely to have a great vogue. They can be carried about in the pocket ready for immediate use, and can be attached by the ring, which is fixed to each, to any

convenient nail or projection. The hooked string, which is supplied with each box, is fixed in the little tab on the under side, a sharp pull explodes the sachet bon-bon fashion, and a brilliant flash results



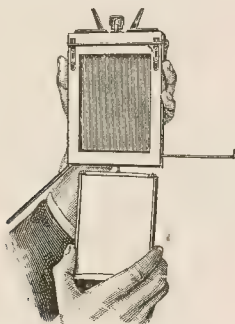
with but little smoke or noise. Their utility is extensive and obvious. A price list and samples of photographic buttons and jewellery, and apparatus for producing the same, is also to hand from this firm, from which we glean the knowledge that this phase of photographic



production is steadily on the increase, and judging from many of the chaste and neat designs submitted, we can easily understand the reason. As an exceedingly remunerative side-line, we can commend these photographic buttons, medallion frames, brooches, etc., to professional photographers all over the country.

The "Rajar" Camera and Changer. Made by the Brooks-Watson Daylight Camera Company, Ltd., Great Homer Street, Liverpool.

The ingenuity of the inventor has from time to time been exercised with varied degrees of success in producing clever devices to obtain daylight changing. There has, however, always been some

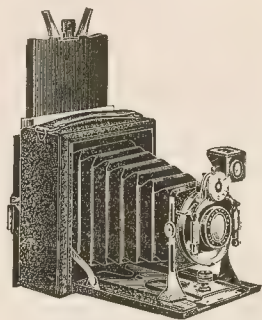


Loading the Rajar Changer with a sealed case of films in daylight.

serious objections either in the apparatus itself or the material required to be used with it, which has considerably handicapped the user, and greatly limited his photographic efforts.

The "Rajar" system appears, however, in combination with the new "Claron" films, of which we hope to speak more fully and to provide a method of daylight changing which should commend itself to the requirements of every photographer.

The "Rajar" Changer is in dimensions no larger than a dark slide and is similar in appearance. The quarter plate size is only $3\frac{1}{4}$ by $5\frac{1}{2}$ in. by $\frac{1}{8}$ in. It consists of a thin sliding box, closed at the top and



The Rajar Camera, with Changer half drawn in the act of changing a film.

open at the bottom, and just large enough to hold one of the thin cases of films. This is contained by an outer box or case, and the changing is effected by an exceedingly simple movement, which appears to be perfectly reliable, and requires no more effort than pulling out the shutter of a dark slide and shutting it again. The new quarter-plate "Rajar" Folding Pocket Camera has been specially designed for use with the "Rajar" Changer, although double dark slides or any other form of magazine can be used if desired. It can be used as a stand or hand camera, and is a very complete little instrument for all-round work. It is well finished in every particular and embodies all the usual movements.

This enterprising firm, in order to induce users of the "Rajar" Changer to demonstrate its action whenever opportunity arises, offers until further notice, a free packet of "Rajah" films to any "Rajah" worker who will send them on a form, which can be obtained from any dealer or direct, the signatures and addresses of ten persons to whom the Changer has been demonstrated by the worker.

New Productions by the Bayer Company, Ltd., 20, Booth Street, Mosley Street, Manchester.

Five new printing papers of high quality are introduced this season by the Bayer Co. They are St. Luke's, Pan, and Tula gaslight papers; Bayer Bromide Paper; and Aristo Paper. The three former are made with several kinds of surface, the St. Luke's being a remarkably quick printing paper. In direct contact printing only a few seconds' exposure is necessary. The subsequent developing and fixing does not necessarily require to be conducted in a dark room with ruby light. Prints can also be made by gas, petroleum, or candle light. St. Luke's is specially adapted for the production of black tones, but brown or brown black tones may also be obtained by varying the length of exposure and by altering the strength of the developer.

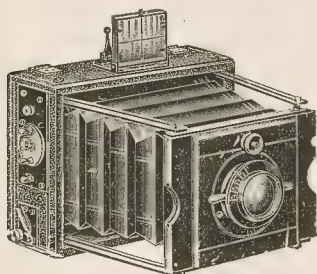
Pan paper is not so rapid, but unlimited keeping qualities are claimed for it, and it yields a great variety of tones from yellow, through orange and brown, to black, according to the exposure and developer employed. The special concentrated Edinol developer is recommended for use with this paper, and instructions are given for securing any particular tone required. Pan has the further advantage of being capable of treatment in the gold toning bath, with the usual characteristic P.O.P. results.

Tula paper is a somewhat slower gaslight paper, and is particularly adapted for the production of pure black tones. Tula is the only developing paper on the market that we are aware of that will bear treatment with hot water, or which can be dried by heat. It is therefore specially adapted for use during the summer season and in

tropics. Its durability is unlimited, but its manipulation is no difficult than any other gaslight paper. The bromide paper is a remarkably fine production, giving prints of excellent colour with remarkable ease in the special Edinol developer recommended in the instructions given with each packet. The paper is one of the oldest gelatine printing-out papers of the keeping qualities. It gives prints of great beauty, prints rapidly, tones readily. It lies perfectly flat in the baths, and gives very fine results and fine shadows. It is especially suitable for printing from weak negatives. Either matt or highly-glazed surfaces can be obtained.

Century Cameras. Sold by O. Sichel and Co., 52, Bunhill Row, London, E.C. Particulars of novelties connected with these new cameras are to be published. We hope to report on them in a future issue. In the meantime, readers should secure an illustrated catalogue from the above address.

Zimmermann's Focal Plane Cameras. Sold by Chas. Zimmermann and Co., 9 and 10, St. Mary-at-Hill, London. A new series of focal plane cameras are supplied at prices so moderate as to bring this type of shutter within the reach of all. Model B, which we illustrate, is of the approved folding pattern. The front is simply pulled out by means of the thumb grips until the struts snap into position; the pointer on the lens is set to the approximate distance of the desired view. The rising front, which is a revolving board, may be used either in a vertical or horizontal position.



The shutter gives exposures from 1-25th to 1-800th of a second; the adjustment of the width of the slit being very simply made with the sliding screen thrown back. Model A is a more elaborate camera in many ways, and is more expensive. The exposures given by the shutter are 1-25th to 1-2000th. Model C has all the good qualities of the other two cameras, but falling base-board and bellows extension, and appears to be a more reliable instrument. A descriptive booklet of the cameras can be obtained from the above address.

"Roto" Roll Film. Made by the Rotary Photographic Company, Ltd., 14, New Union Street, Moorfields, London. This new production of the Rotary Company bears the same stamp of "goodness" that characterises all their goods. Each spool of film is sold in a well-made tin case to ensure its keeping qualities, and development is not proceeded with immediately after exposure, the film should be returned to this case until it can be dealt with in a dark room. This feature will specially appeal to tourists as a safeguard to its keeping qualities under trying atmospheric conditions. The film is of high quality as regards speed and cleanness of work, and is coated on a thoroughly seasoned transparent celluloid, consequently the chances of any action of the celluloid on the emulsion is reduced to a minimum. Another advantage due to the celluloid being well seasoned before it is coated is that it may be

cut into short lengths and developed in an ordinary dry plate developing dish, for as soon as the emulsion is wetted with the developer it lies perfectly flat, and is therefore easily manipulated.

The coating of emulsion is perfectly even throughout, and there is no tendency to frill or peel.

Metol hydroquinone or pyro-soda are the two developers recommended for these films. Good formulae for each are given with each film.

"Sanbride" Picture Postcards. Made by Hood and Co., Ltd., St. Bride Works, Middlesbrough.

A selection of postcards is to hand from this firm, which amply demonstrates the advances that have been made in picture postcard production during the past year or two. Messrs. Hood are specially equipped to provide at short notice and small cost any number of picture postcards from customer's own photographs, the prices quoted for the blocks for printing in half tone being very moderate.

New Mounts. Made by the Crown Photographic Manufactory, Rotherham.

A new series of mounts issued by this firm display a great deal of taste in selection of graduated tints and various shaped openings and plate masks. For professional work they are as good as anything of the sort we have seen. They are, moreover, inexpensive. Samples and price lists will be sent on application.

Patent News.

The following applications for patents were made between May 24 and May 28, 1904:—

Dark Slides.—No. 11,993. "Improvements in and relating to dark slides." Complete specification. Max Hofmann and Georg Schneider.

Shutters.—No. 12,003. "Improvements in or relating to focal plane or other roller blind shutters for photographic purposes." Arthur Lewis Adams.

Dark Slides.—No. 12,038. "Improvements in and connected with photographic dark slides." William Holden and James Schofield.

Materials.—No. 12,125. "Improvements in photographic materials." Alfred William Southey.

WITH June commences the tourist and excursion season of the London, Brighton, and South Coast Railway Company, and in their programme are announced cheap week-end tickets over the wide and interesting region to which the line gives access. The peripatetic photographer should make full use of the facilities offered.

MESSRS. R & J. BECK have lately introduced a new method of accurate shutter speed-testing. They say: "Our attention has been drawn to the failures of instantaneous photography due to the uncertainty of shutters. Many shutters vary, due to time. In others, the speeds originally marked do not correctly indicate the true exposures, and we believe that it would be really a service to the public if they knew what exposures their shutters were actually giving." They have consequently devised a scheme by which, at a nominal charge, they will test the speeds of any photographic shutter which is brought to their Cornhill shop, and if sent by post will do the same at a slightly increased charge, though in this case if the camera has to be sent as well as the shutter it must be carriage paid. It is evident to those who are familiar with instantaneous photography that the speed of one's shutter is comparatively of little importance, provided it is accurately known. The firm supplies a card with a date upon it showing the time at which the shutter is tested, and give no further guarantee for the speeds, as it is evident that in certain classes of shutters, especially those with pneumatic brakes, if they are not carefully kept free from dust, they will vary from time to time. Obviously, for workers with exposure meters, a correct knowledge of shutter speeds is essential, else the speed dial on the meter is of little value.

News and Notes.

THE first instalment of the *BRITISH JOURNAL* "Encyclopædia of Photography" will appear in next week's issue. Readers of the *JOURNAL*, who desire to possess a reliable compendium of photographic information, will do well to file all future numbers. It will be the aim of the compilers of the "B.J. Encyclopædia" to present in brief and readable form a complete guide to photography and all its processes. The best authorities will in all cases be consulted, and much original matter will be contributed by experts.

LONDON and Provincial Photographic Association.—At the meeting on June 16 Mr. R. Child Bayley will give a lantern lecture on "The Alhambra and Spain."

THE subjects dealt with in "The Photo Miniature" seem to be inexhaustible. No. 61, "Combination Printing," should prove invaluable to workers in every branch of photography.

ROYAL Photographic Society.—An ordinary meeting will be held at 66, Russell Square, W.C., on Tuesday, June 14, at 8 p.m. "A New Principle in Photographic Lens Construction," by Conrad Beck.

"THE CAMERA" is the title of a small booklet published by Messrs. Raines and Co., of the Photo Works, Ealing. It contains several useful articles on photographic matters, and is a praiseworthy little production.

On June 10, 1854, the Crystal Palace, after being transferred from Hyde Park at the close of the Great Exhibition of 1851 to Sydenham, was opened by the late Queen Victoria. To-day, therefore, the popular Palace also celebrates its jubilee.

SIR WILLIAM HUGGINS (president of the Royal Society), Prof. H. H. Turner (president of the Royal Astronomical Society), Sir Robert Ball, Sir David Gill (Cape Astronomer), Sir William Abney, and other gentlemen made the annual inspection of Greenwich Observatory on Saturday last.

MESSRS. HOUGHTONS LTD. have sent us a copy of their clearance sale list of odd and surplus stock, which comprises hand and stand cameras of all classes, together with a large variety of lenses, camera cases, shutters, etc. A copy will be sent to any reader on receipt of a postcard to 88 and 89, High Holborn, London, W.C.

THE first part of "The Book of Photography," published by Cassell and Co., Limited, is to hand. It is edited by Paul N. Hasluck, and promises to be a most useful addition to the literature of photography. The contents are divided into Practical Photography, Theoretic Photography, and Applied Photography, and the work will be completed in about twelve monthly parts.

A NEW handbook on the Ilford plates has reached us from the famous Ilford firm. It contains, in addition to much useful information concerning the manipulation of Ilford plates themselves, much that a photographer ought to know, and is generally a most reliable little guide to the production of a good negative. A copy can be obtained from any dealer free, or from Ilford, Limited, Ilford, London, E.

THE forty-ninth Exhibition of the Royal Photographic Society will open at the New Gallery, Regent Street, London, on September 22, and close on October 29. There will be five sections: (1) Pictorial photographs, invitation; (2) pictorial photographs, competitive; (3) scientific and technical photography and its application to processes of reproduction; (4) general professional photographs; (5) photographic apparatus and material. There will be no charge for space in Section 2 and Section 3. The latest date for entries will be September 10.

WITH the thicker varieties of platinotype paper just introduced by the Platinotype Co., mounting can be dispensed with, if paper larger than the negative to be printed from is employed, and the latter masked so as to print with a clear broad margin. This system is very extensively used by professional photographers in the United States, who supplement it by impressing a plate-mark, and printing in various border tints. A combination of the two gives much the appearance of a rich engraving on a laid-down india tint, certainly pleasing to the eye, whatever the ethics on the question may be.

THE proprietors of the "Graphic" announce another Amateur Photographic Competition for this year. Fifty pounds in cash prizes are offered, and the last day for receiving prints is Nov. 1. The

prize photographs will be published in the "Graphic," together with any others which the judges think worthy of special mention. A fee of one guinea will be paid for each photograph reproduced, with the exception of the Prize Photographs. At the last competition a large number of photographs were selected by the judges for publication and special mention, in addition to the prize photographs.

THE Newbury Photographic Exhibition, which is to be held from September 20 to 28, is fortunate in having secured the special patronage of H.R.H. the Princess Christian, whose interest in the art is well known. The exhibition will be held in the Town Hall and Municipal Buildings, and will be on a very large scale. Indeed it will be undoubtedly the largest photographic exhibition ever held in the Royal counties, if not in the south of England. A feature of the exhibition is that valuable cash prizes amounting to over £1,000 will be given, and ten of the classes are open. The schedule of the exhibition should be obtained, as several novelties are included, and can be obtained from E. J. Forster, Guildhall Club, Newbury.

MESSRS. A. E. STALEY and Co. have advised us that they have taken over the entire products of the factory of Dr. Krebs, of Oberbach a/m., and will in future sell all his productions under the name of "Geka" productions. These goods have formerly been sold under the registered trade mark of "Axe Brand," of which Messrs. Fuerst Brothers are the proprietors, the trade mark "Axe Brand" being their property, but in future all the original productions of Dr. Krebs, which were formerly sold under the description of "Axe Brand," will be procurable only through Messrs. Staley, who are now preparing two floors in their premises for the reception of these, and as soon as the necessary catalogues are ready of the various developments, toning, fixing, daylight developing, and other solutions will commence advertising the same.

"THE Year Book of Photography" is to hand, and does credit to the Editor of the "Photographic News." Section I is devoted to "Helpful Articles by Practical Photographers"; Section II is "Photographers' Gazetteer," containing a fund of information about "Where to go," "Where to stay," and "What to photograph"; Section III comprises "Notes and Queries," being a series of useful information, put together in a bright and pithy fashion. Section IV consists of Tables and Formulæ compiled by E. J. Wall, F.R.P., which is a complete reference book in itself, and Section V is a review of novelties of the year in materials and apparatus. The book is embellished throughout with excellent half-tone reproductions, and as a useful volume of reference should be on the book-shelf of every photographer.

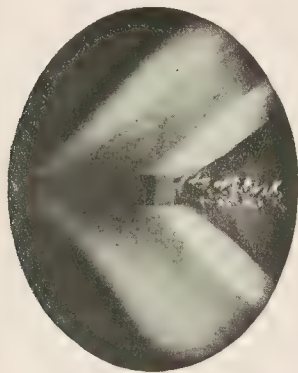
ON Thursday last the Thames Steamboat Company, Ltd., started a new epoch in its career, and a fleet of newly-decorated altogether desirable paddle boats churned the murky waters of the Father Thames between Westminster and Greenwich. Last year Londoners were deprived of a steamboat service on the Thames, but as there were hardly more than three days during the winter summer upon which it would have been possible to sail on the river without catching cold, the deprivation was one that can scarcely have been severely felt. From the present summer one may well hope for better things, even though the "leafy month" has come in with an air of determined melancholy. Rain or shine, however, there are to be steamers on our river henceforth, and we can hardly draw the attention of our readers to the new service of boats, where will more charming snapshots of river scenery be obtained than in the "Pool of London," and who knows but what a humble temptation invested in a trip down the river with a camera may result in a Salon triumph or even a R.P.S. medal?

THE Photographic Salon, 1904.—The prospectus of the Photographic Salon is to hand. The exhibition, in spite of rumours to the contrary, will again be held in the Dudley Gallery, Egyptian Hall, Piccadilly. The receiving day is Monday, September 5, from 10 a.m. to 6 p.m., on which day all pictures for exhibition must be delivered at the gallery, either personally or through an agent. The exhibition remains open from September 16 to November 1, and the conditions of entry are much the same as in previous years. Special conditions applying to American exhibitors only are introduced this year. The work of such exhibitors must be submitted to a Selection Committee sitting in New York, and composed exclusively of American members of the Linked Ring. The pictures approved by the American Selection Committee will be accepted for hanging

t passing the London jury. We have a limited number of forms at our disposal, which we will be pleased to send to exhibitors on receipt of stamped addressed envelope.

Selborne Society.—The annual meeting and conversazione of the Society, the object of which is to promote the study of natural history, were held last week in the theatre and halls at the offices of the Civil Service Commission, Burlington Gardens. The President, Lord Avebury, delivered his address in the theatre to a large audience, and in the course of his remarks said that we were beginning to realise the importance of science in education, and that a step forward had been taken by the introduction of nature study into our schools. The Selborne Society had thrown itself heart and soul into the work of forwarding the nature study movement, and last year took a very prominent part in organising the Counties Nature Study Exhibition. The promoters of this undertaking were very successful in their endeavour to show that nature study is not a superficial thing, but that it is a real and substantial work on living things by pupils themselves was the object of nature study. They still heard that nature study was in some degree superficial. That it was elementary he agreed, but it was not at least or not to be, superficial. It was elementary, of course, as science, but not as education; or, if elementary, it was in the sense that it was a beginning. Nature study was good for the mind and for the body.

A reproduction of a photograph of a rifle-shot is interesting inasmuch as the said shot was travelling at the rate of 20,000 ft. per second. The exposure was one-millionth part of a second,



made by means of the electric spark. The plate used was Schussner's Special Rapid Observatory plate, particulars of which may be obtained from Thomas Christy and Co., Old Swan Lane, Thames Street, London, E.C.

International Catalogue of Scientific Literature.—The International Council, which is the governing body of the International Catalogue of Scientific Literature, held its first general meeting on Monday and Tuesday of last week, at the rooms of the Royal Society, the meeting of the International Association of Academies. The conference was attended by representatives of Austria, Denmark, Germany, Great Britain, Greece, Holland, Hungary, India, New South Wales, Norway, and Russia. The catalogue dates from January, 1901. Its inception is due to the Royal Society of London, and it is the outcome of negotiations extending over about ten years during which time no fewer than three international conferences were held in London to discuss and settle preliminaries. The object is to provide complete classified subject catalogues of current scientific literature in a form to enable workers to ascertain the state of progress in all branches of science. A striking picture of the scientific activity of the various countries concerned in the work is afforded by the following table in the report showing the number of slips or equal entries received at the central bureau:—Austria, 6,379; Belgium, 584; Canada, 537; Denmark, 1,722; Finland, 707; France, 1,445; Germany, 146,552; Holland, 6,557; Hungary, 1,745; India, 2,231; Italy, 13,473; Japan, 2,208; New South Wales, 1,016; Norway, 327; Poland, 1,303; Russia, 3,492; Sweden, 21,071; South Africa, 645; South Australia, 130; Sweden,

1,457; Switzerland, 1,932; United Kingdom, 43,484; United States, 37,688; Victoria, Australia, 1,445; Western Australia, 16—total, 243,503. It will be seen that Germany supplies about half the material for the catalogue; France, the United Kingdom, and the United States come next in order, but no one of these countries supplies more than one-eighth of the entries. The publication of the 17 volumes of the first annual issue was not completed until February, 1904, owing to various causes which delayed the organisation. Nine of the volumes of the second annual issue have already been distributed. It is anticipated that the completion of the first five annual issues will not be delayed more than two or three months beyond April, 1906, the date originally contemplated. The volumes vary in price, according to their size, from 10s. to 39s. At present their cost is undeniably high. As soon as sales to the public become considerable, however, it will undoubtedly be possible to cheapen the catalogue. The value of such a work can become known only gradually, but it is to be hoped that all concerned in the progress of science will assist in promoting the enterprise by freely subscribing to its support. The various volumes must ere long prove to be indispensable to all serious students of scientific progress.

FORTHCOMING EXHIBITIONS.

June 12-24.—First International Salon in The Hague. Sekretariat. Haag, Conrad Kade 63, The Hague, Netherlands.

June-October.—Glasgow Photographic Exhibition. Secretary, Art Gallery and Museum, Kelvingrove, Glasgow.

July 14 to September 30.—Vienna Photographic Society. Secretary, W. Burger, Karmelitergasse 7, Vienna 11.

August 1.—Andover and District Horticultural Society. Photographic Section. Hon. Secretary, W. L. Gradidge, Jubilee House, Andover.

September 16 to November 5.—Photographic Salon, Dudley Gallery, Egyptian Hall, Piccadilly. Hon. Secretary, Photographic Salon, 1904, Dudley Gallery, Piccadilly, London, W.

September 20-28.—Newbury Photographic Society. Hon. Secretary, E. J. Forster, Guildhall Club, Newbury.

September 22 to October 29.—Royal Photographic Society's Forty-Ninth Exhibition, New Gallery, Regent Street, London. Secretary, A. W. W. Bartlett, 66, Russell Square, London, W.C.

October 1-30.—Berlin International Photographic Exposition. M. Franz Goercke, Berlin W. 62, Maassen-Strasse 32, Germany.

October 19-22.—Rotherham Photographic Society. Hon. sec., H. C. Hemmingway, Tooker Road, Rotherham.

November, 1904.—Ilford and District Photographic Society. Hon. sec., W. N. Beal, 155, Thorold Road, Ilford.

November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Sec., James Dunlop, Myrtlebank, Motherwell.

November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.

November 23-26.—Hove Camera Club. Hon. Secretary, A. R. Sargeant, 55, The Drive, Hove.

November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., G. W. Simmers, Aberdeen House, Ramsgate.

December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.

December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104, West 101st Street, New York.

December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.

December 13-20.—Southampton Camera Club. Hon. Secretary, S. G. Kimber, Oakdene, Highfield, Southampton.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

June, 1905.—Northern Photographic Exhibition. Secretary, F. G. Issott, 62, Compton Road, Harehills. Leeds.

FORTHCOMING COMPETITIONS.

June 30.—"Photographic News" Quarterly. Money prizes, silver and bronze medals for prints. Any subject. "Photographic News," 9, Cecil Court, Charing Cross Road, London, W.C.

June 30.—Kodak. £1,000 in cash prizes for pictures taken on Kodak films and plates, etc. Kodak, Limited, 41-43, Clerkenwell Road, London, E.C.

October 1.—Thornton-Pickard. £100 cash prizes for pictures taken with Thornton-Pickard cameras and shutters. Thornton-Pickard Manufacturing Co., Altrincham.

October 10.—Luna paper. £240 cash prizes for prints on Luna paper. Lucien Allegre and Co., 59a, New Oxford Street, London, W.C.

October 15.—Belgian Association Lantern Slide Stereogram Competition. Secretary, M. Vanderkindere, 97, Avenue Brugmann, Brussels.

October 31.—Coxin. 68 prizes for users of Coxin. Judging twelve pictures. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.

November 1.—The "Graphic." £50 in cash prizes. Manager, Photo Competition, the "Graphic," Tallis Street, Whitefriars, London, E.C.

December 31.—Barnet. Nineteen classes. Prizes valued at £500 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

March 15, 1905.—Ilford. £750 in prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

June	Name of Society.	Subject.
13	Southampton Camera Club	Printing Processes. Debate.
14	Nelson Photographic Society	Members' Print Evening.
15	North Middlesex Photo. Soc.	Carbon Printing. Mr. H. G. Seshorne.
15	Everton Camera Club	Platinum Toning on P.O.P. Demonstration. Mr. C. B. Stonehouse.
16	Lon. and Prov. Photo. Assoc.	Lantern Night.
16	The Optical Society	Stereoscopic Living Pictures. Demonstrated. Mr. Theodore Brown.
16	Watford Camera Club	Competition—"A Hertfordshire Lane Scene."

Several reports of meetings are held over until next week.

Correspondence.

- * * Correspondents should never write on both sides of the paper; notice is taken of communications unless the names and addresses of the writers are given.
 * * We do not undertake responsibility for the opinions expressed by correspondents.

Several interesting communications have been held over this owing to the extreme pressure on our space. They will appear in next week's issue.

Answers to Correspondents

- * * All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.
 * * Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.
 * * Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.
 * * For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Unmounted copies of each photograph must be sent with the fee.

We must crave the indulgence of our numerous correspondents to wait and refer them to our next issue for replies to their queries.

COMMERCIAL AND LEGAL INTELLIGENCE, STUDIO GOSSIP, AMERICAN NOTES AND NEWS have also been held over this issue through lack of space.

* * NOTICE TO ADVERTISERS.—Blocks and copy are received subject to the approval of the Publishers, and advertisements are inserted absolutely without condition, expressed or implied, as to what appears in the text portion of the paper.

The British Journal of Photography

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THE BRITISH JOURNAL JUBILEE NUMBER.

This Special Jubilee Number of THE BRITISH JOURNAL OF PHOTOGRAPHY, which we published on Friday, June 10, met, we are pleased to say, with a most cordial and durable reception at the hands of the photographic public—indeed, the success achieved was so striking and instantaneous as to cause even ourselves, who had anticipated the Special Number would secure a wide degree of appreciation, the liveliest feelings of gratification and assurance at the chorus of commendatory approval meted out to the issue.

Several extra thousands of the Special Jubilee Number have been printed, and they are selling rapidly at the ordinary price of twopence per copy, or by post twopence-halfpenny. The number consists of a total of 132 pages, and forms the largest ordinary issue of any photographic journal ever published in the United Kingdom. The contents include thirty special articles by the foremost photographic authorities of the time; a history of THE BRITISH JOURNAL OF PHOTOGRAPHY since its foundation; and about twenty original portraits of celebrities connected with photography; thus forming a unique and most interesting souvenir of the Jubilee of the oldest photographic journal in the world.

This souvenir number of the JOURNAL is in such great demand, and is shortly likely to be scarce, that readers at home and abroad who have not yet secured a copy are advised to do so without delay.

EX CATHEDRA.

A New Method of Making Platinocyanides. The tedious method ordinarily adopted in the making of platinocyanides is well known, but in the recent "Comptes Rendus" of the Paris Academy of Science M. André Brochet describes a method he has discovered which may facilitate the production of this salt, which holds the field for brilliancy of image under the influence of Röntgen rays. He finds that it behaves as iron and cobalt towards an alternating electric current, and dissolves very easily in cyanides, a chemical action of considerable interest in view of the fact that platinum is such a refractory metal with regard to chemical agents.

* * *

Lightning and Studios. It has often been a source of surprise that so few instances have been recorded of damage to photographic studios through being struck by lightning, seeing that, as a rule, they occupy the highest part of a building. It should, however, be remembered that they are usually surrounded by chimneys, which, in the case of a thunderstorm, would be the most likely points of attraction for the electric discharge. In the event of the erection of a studio where, however, a lightning conductor is decided to be fixed, some remarks recently made by Sir Oliver Lodge at a meeting of the Institute of Architects, will be found useful. He had some models on the table representing the effect of an electrically charged cloud which was made to discharge through copper, iron, and wet string. He held the opinion that iron was quite as efficient as copper—and of course much cheaper—and more, seeing that copper was more likely than iron to set up "side-flash," which, in buildings furnished with lightning conductors, had been the origin of most lightning disasters.

* * *

Suggestion for a New Subject for Photography. In these days of the post-card and of illustrations for magazines, every hint as to a possible new subject is acceptable. We make our readers a present of one that would be decidedly novel. There is a devoted band of a dozen young men, who, under the rigid surveillance of the Chief Chemist of the American Agricultural Department, have been since the beginning of the year, to the end of May, literally living on poisoned, or, at any rate, adulterated food, in order to ascertain the actual result upon the human economy of the ingestion of a variety of the substances commonly used to adulterate or preserve from decomposition the food supplied to the nation. Everything they ate has been more or less soaked with salicylic, sulphuric, or benzoic acids, such substances as are employed by domestic and foreign packers in preparing meats, butter, and other products for shipment. The

results of the trials will not be made known until a formal report is presented to Congress. Meantime, the "Poison Squad" is disbanded. What a taking title!—"the Poison Squad"! If these young men know their business they will not permit themselves to be photographed except upon terms—"cash down" and "no spec."

* * *

Self-lighting Gas Burners.

Many of our readers are acquainted with the property of spongy platinum of becoming heated to redness when a stream of hydrogen impinges upon it, and thus causes the ignition of the gas, the well-known Döbereiner's Lamp which was re-introduced in a portable form about a quarter of a century or more ago being an example of a practical use of this fact of theoretical interest. In this instrument there was an arrangement for producing hydrogen at a moment's notice and so obtaining a light, but as the days of the phosphorus match had long since arrived, the only *raison d'être* of this lamp was as a chemical curiosity. Lately, however, the principle has been applied to the fusion of coal gas by finely divided platinum, and a self-lighting Bunsen burner has been introduced which should become popular. A bye-pass connects with a bundle of fine platinum filaments attached to a small bracket at the open end of the burner, and when the gas is turned on it becomes alight through the action of the platinum, the flame being directed by a movable hood in the proper direction to light the mixed gas issuing from the main orifice. The idea is excellent, and the apparatus is said to work efficiently, at least at the beginning of its being put into use. The question is, "Will the apparatus prove to be durable, either as to its existence or its function?" The delicate bundles of platinum used to be very easily put out of order. If it do prove a success, one would imagine that it will not long be confined to the Bunsen burner. It would be a great boon to the user of gas-fires, which are to be found in almost every house in the country, and whose main drawback is the need for a match to be struck to set them going, and the want of a fireplace to throw that match, cigarette ends, or other rubbish for which the open fireplace is so useful a receptacle.

* * *

The Supply of Radium.

"Radium, radium everywhere, but not a gramme to buy," we might, to parody part of a well-known verse, say with perfect truth. Not a daily paper can one take up, and scarcely a magazine, but we are almost certain to read some wonderful tale about this marvellous element, with its perpetual store of heat and continuous emission of radiant energy without sensible loss of weight or apparent change of form; yet the supply is so limited that half a million pounds a pound has been given as an approximate estimate of its market price. We know many photographers desirous of experimenting photographically with it, but so small is the quantity in the whole world they cannot get hold of any to experiment with. It is reported that M. Curie, its discoverer, was once asked what would be the result if a kilogramme of it were stored in a room. "Certain death to any one entering the room," was the reply he is said to have made. A kilogramme! We doubt very much if a single one of our readers has ever seen in one parcel a single gramme of it. All the while we are told of its existence almost everywhere, but, unfortunately, as the Bath people discovered to their chagrin, not in paying quantity. The latest announcement as to a new source of radium is to be found in a newspaper paragraph which states that a new survey of Salisbury Plain is probable on account of the recent appearance of a new lake covering the roadway from the meeting of the Amesbury and Old Marlborough Road to the brow of the descent into Bulford Camp. The

paragraph in question concludes thus: "Divers have been sent for to examine the bottom of the lake, which is supposed to resemble blancmange, and which is thought to contain radium to a large extent together with the wreckage of motor-cars!"

* * *

The Greenwich Visitation.

This annual event took place about fortnight ago, and a detailed account published in most of the science periodicals. We have less than usual of matter possessing photographic interest, the chief reference to which has regard to stellar photography and a new stellar map of all stars between the fifth and ninth magnitude within 26 deg. of the North Pole, all the stars visible over 13,270 being recorded. An idea of the number of negatives taken will be formed when it is known that five observations of each star are required. Ten years was the original estimate made of the time required to obtain all these negatives, but the work has been so well and quickly done that it is now anticipated that this catalogue of reference stars will be finished by the end of next year. Photographers have often been warned of the desirability, when taking a lens to pieces for the purpose of occasional cleaning, of being careful not to screw the lenses up too tight when putting the components together again; a concrete example of the need for this care was shown at Greenwich. It was found last year that certain observations were not in accordance with a standard table of reference, and an investigation into the cause of the error was made, with the result of the discovery that one of the lenses was screwed up too tight, and, further, that it also had a slight tilt. When the faults were recognised and remedied the discordance referred to almost entirely disappeared. A better example could not be found of the necessity for that centring of the lenses which some photographers are inclined to look upon as a sort of tale invented by opticians to excuse the high prices of their objectives. But when it is considered that some modern objectives consist of eight individual lenses, each of which has to be accurately centred, some conception may be formed of the amount of the detail work of the mere putting together of the lenses, after the labour of grinding has been performed, in such a way that they have a common central axis.

* * *

Our Open Spaces.

It has often been pointed out that Londoners know little of the best spots which are to be found in their very midst, and fear that photographers who make great efforts to find out subjects for their cameras far away from the Metropolis are among the ignorant ones. Some of the parks and open spaces offer most charming pictures, at all times of the year, especially before the sun has had time to darken the foliage. Hampstead Heath is still unrivalled as being the most rustic spot near London; it has been the haunt of poets and painters always, and it does not lose its charm. In the South of London perhaps Tooting and Streatham Commons offer the best opportunities for photographic work, but they do not equal Hampstead's variety and scenery. Nor should Hyde Park and Kensington Gardens be neglected, and although they cannot boast of rural characteristics, we can at least see the gay side of life in the form of well-dressed human and splendid equipages. Kensington has always been the haunt of fashion, and a century ago its gardens called forth an inflated eulogy in the "Times," which we now presently quote. The chief journal does not indulge in such grandiloquent language now, nor does it descend to the puerility of a pun, as it often did a hundred years ago. Here is the extract, dated May 21, 1804: "Yesterday

the Metropolis poured forth its myriads in all directions, to enjoy the pleasures of rural excursions. The art of fashion in Kensington Gardens presented an uncommon crowd of beauty and *ton*. We have rarely witnessed a scene so replete with the fascinating characteristics of our country—beauty and elegance. Amongst a crowd of admirers we observed the Turkish Ambassador and his secretary, who appeared to anticipate, in the contemplation of British charms, the promised paradise of Mahomet. "Good old times! Good old 'Times,'" were the Kensington ladies could thus excite the rapture of the newspaper reporter. And yet we may suppose that the hand-camera been possible then it would have recorded nothing more extraordinary than anything we see to-day. The fashions would have been a little different, but the human beings would be much the same they are now. A hundred years hence those who look back will have the advantage of criticising the various changes of fashion as shown by photographs, and for the neglect of posterity pictures of current times should not be neglected. Our open spaces afford unique advantages for the taking of such photographs.

Patents and Trade Marks.

The recently issued Annual Report of the Patents Office, or, more exactly, of the Comptroller-General of Patents, Designs, and Trade Marks, for 1903, affords some interesting reading, and records certain improvements in the working of the Patents Office. That our system of patents is capable of vast improvement needs no discussion to prove. Still, it is better than it was; it is improving, and promises to improve. When Section 1 of the Patents Act of 1902 comes into operation, the date having been fixed by the Board of Trade, every patent application reaching the complete stage will have to be examined for purpose of ascertaining whether, in whole or part, it has been forestalled during the last fifty years by another patent excluding provisional ones that have not been followed by a complete specification. For this purpose the role of the patents involved are being re-arranged for easier reference. Over half a million are involved, and two-thirds are already finished. The abridgments and drawings are to be mounted on cards, and the specifications themselves attached. Last year 28,832 applications were received, which works out to a daily average of about twenty-two. Ninety additional examiners are to be eventually appointed, which would give every application the average possibility of over one day's examination for novelty being made. Of the whole applications of 1903, about 2 per cent. made by women inventors, 3,466 came from the United States, 980 from France, while 2,781 were made in Germany. As shown by the great "Tabloid" Bill, the law with regard to trade marks is capable of amendment, and a new Bill for the purpose has been laid before Parliament, and read a first time. It promises to be largely disputed in parts, but it is to be hoped that the provisions for simplifying the rules confirming existing rights, and reducing the present highly technical limitations may be passed and become really operative. Many persons hold the view that Government monopolies held for the benefit of the public—such as Post Office and Patents, etc.—ought to be worked entirely in the interest of the public, and not made a source of profit. But the former brings in annual millions, and even the latter with its modest quarter of a million pounds of receipts shows a profit of almost exactly one-half of this sum. If that amount were devoted to the purpose of improving the certainty of patents once granted it would be well disposed of; but then there would be fewer Patent law suits, and lower fees and costs for the lawyers.

A School of Art Closed.

Professor Herkomer's School of Art, which he established at Bushey some twenty-one years ago, is about to be closed. The reason for this, so it is said, is that the students, male and female, gave less attention to their work in the studio and expended more time in flirting than was conducive to the gaining of proficiency in drawing and painting. It is quite possible that young people in well-to-do circumstances should sometimes prefer the study of nature in the open in couples, in the picturesque districts of Hertfordshire to the mere drudgery of the studio. Be that as it may, the school is to be closed. Professor Herkomer, it is tolerably well known, is no great friend and admirer of photography. Some ten years ago, in one of his lectures, he denounced photogravure as "a very evil thing." But not very long afterwards—in 1894—he, with Mr. Cox, patented a mechanical method of producing engraved plates, and a syndicate was formed to work the process commercially. The process was demonstrated at the Fine Art Society's rooms in the early part of 1896 before the art representatives of the lay Press. The critiques were quite unanimous as to the virtues of the new process, and it was suggested by the latter that it would eventually supersede the "evil thing," photogravure, as in this process the artist himself's touch would be in evidence in the work. However, photogravure is still flourishing, and we have heard nothing of the "New Art," as it was then called, of late years. The method of working Herkomer's and Cox's process may be interesting to our readers, and it is, briefly, this: The artist is supplied with a silvered copper plate, and on this he paints his picture in oil paint, the paint being composed of a slow drying oil mixed with a black pigment. The shadows of the picture were to be represented in the painting by thick layers of colour, and half-tones by thinner, and so on. The plate was then handed to the process worker, who dusted the surface over with powdered bitumen, mixed with a bronze powder to form a grain. The excess is then dusted off and the plate put aside for a few days for the paint to dry or harden. From this an electrotype is taken, and this forms the printing plate, after it has been re-touched by a skilled engraver. It will be noted here that this process is somewhat akin to the Waterhouse method of photographic engraving, except that in the "New Art" oil paint takes the place of the moist gelatine film, produced photographically by the carbon process. In the Waterhouse process a carbon print is produced on a silvered copper plate, and while it is still moist it is dusted over with a gritty matter, which sinks into the soft gelatine in proportion to its thickness. When the picture is dry the gritty particles are removed and an electrotype made of it. This electrotype is then printed from after the ordinary manner of copper-plate printing. The Waterhouse process has now been superseded by the photogravure system, in which the image is etched through a carbon print developed on the copper plate, upon which a dust grain has been laid. When the "New Art" was first published we made some comments upon it (see page 98 of our volume for 1896), and at the same time expressed great doubts as to whether it would, as some thought, supersede what Professor Herkomer decried as the "evil thing"—photogravure. The opinion we then expressed, it will be seen, has been quite justified.

The Ilford £750 Competition.—In awarding the prizes in this competition, we understand that Ilford, Limited, will avail themselves of the independent help of eminent artistic and photographic experts, whose names will be announced shortly before the close of the competition.

COPYRIGHT INFRINGEMENTS FROM A BUSINESS POINT OF VIEW.

NOTWITHSTANDING that so much has, from time to time, appeared in these pages on the matter of copyright laws as it affects photographers, there seems to be no falling-off in the number of queries we are continually being asked to reply to through the "Answers to Correspondents" column. Many of the subjects have been duly dealt with in the editorial columns many times, and some even quite recently; yet the queries continue to come, not a few of which, in effect, have often been replied to but a week or two before. Why this should be the case it is a little difficult to conceive, unless it be that readers take but little notice of the subject until they find themselves personally interested in it through some real—or imaginary—wrong done them. Then they write to the Editor for his advice in the matter instead of looking up what has already been said. Within the last three months we had two articles on certain misconceptions that some photographers appear to labour under with regard to their supposed rights under the Copyright Act (see pp. 248 and 308 *ante*). Since they have appeared we have had quite a number of queries that were fully answered in those articles.

In the current issue we reply to two correspondents which we refer to here as showing the lack of knowledge they—as well as some others—labour under. One says that he photographed a professional man, registered the copyright, and gave him a dozen copies for the sitting. The sitter, he says, afterwards purchased a dozen copies, and our correspondent asks: "Does that purchase destroy my right to the possession of the negative and the copyright? Also has he (the sitter) the option of giving the right to reproduce?" Of course, the copyright still remains the property of the photographer, and the sitter has no right to give permission for the reproduction of the picture. We call particular attention to this query because it may be assumed that, according to the idea of the writer, the negative is the property of the sitter if there is no copyright in the picture. We know that in some small country towns the sitter sometimes claims the negative, and, by threats of legal proceedings—and "bluff"—occasionally obtains it. The query just quoted somewhat illustrates this, as here the photographer does not seem to be aware that, whether the picture is copyright or not, the negative is his property, and that there have been several decisions given on the point both in county courts and also in the high courts to that effect. The copyright in a portrait that the photographer has been paid for taking is vested in the sitter, but the negative is his property. This has been pointed out in these pages over and over again. Yet here is a case where the photographer does not seem to be aware of the fact that the sitter is not entitled to it, and cannot legally claim it in a court of law.

The other query, above alluded to, is quite a different one, and is one that some who may contemplate taking action for infringement of their copyright will do well to consider, from a business point of view, before commencing proceedings. Briefly, the case is this. The photographer granted permission to a local stationer to reproduce a copyright portrait of his as a picture-postcard on condition that his name and the word "copyright" appeared on the cards. Whether payment was or was not made for the privilege is not mentioned—but that is of no moment. The permission was given. Then a local newspaper reproduces a portrait from the post-card and credits the stationer for it, and makes no mention of the photographer whose copyright it is. The latter then consulted his solicitor, who, of course, told him that

he had cause of action against the newspaper, and advised him not to take proceedings, because, in his opinion, the damages he would recover would not exceed five pounds, and even if this sum were awarded by the court it would not more than pay the expenses. He added that if it were proved that the reproduction in no way injured the sale of the prints from the original negative the damages might be but a farthing. This would usually not carry costs. We have briefly quoted our correspondent's letter, which is published at some length elsewhere, and he is evidently not altogether satisfied with the opinion of his solicitor, for he appeals to us for further advice as to whether he should proceed against the paper or not. We think the advice given by the solicitor sound and good, for what is the use of going to law if nothing is to be gained by the litigant? Such actions are only good for the lawyers. What is the advantage of obtaining a small sum by way of damages if the cost of obtaining them is more than swallowed up by the expenses?

To recover damages in any lawsuit it is necessary to prove, to the satisfaction of the court, that actual injury has been sustained, and in such a case as that in question it would be very difficult on the part of the plaintiff. Our correspondent sent us a copy of the portrait as it appeared in the newspaper, and we should surmise that it would be next to impossible to prove that the publication of such a print could in any way affect the sale of those from the original negative. Indeed, if we were the owners of that we should be pleased that our name as the producers of the photograph were omitted, for we should consider that it would not redound to our credit to have our name associated with any such reproduction. Be that as it may, we imagine that in a case like this it would be very difficult for the most clever counsel to convince a jury that any real injury had been done, such as would induce it to award anything beyond quite nominal damages. *Amour-propre* and business are different things. No one likes his works, whether copyright or not, copied without his sanction or without his name appearing in connection with the reproduction, but let us just look at the business side for the moment.

Usually, when a publication has pirated a photograph and attention is called to the fact that it is copyright, the proprietors of it are generally glad to pay a sum to the owner in order to avoid litigation. When that sum is fairly reasonable, in the circumstances, the photographer will do well to accept it—together with the costs—as between solicitor and client. These latter should always be insisted upon, if the services of a solicitor have been invoked, as they are always an item to be considered. When this course is taken, the photographer is sure of a certain amount without further anxiety, which is not always the case if the matter is taken into court and the verdict rests with a jury.

THE World's Fair at St. Louis is apparently not exciting the universal interest which the promoters expected. It is too early to predict a failure, but, according to the "Daily Telegraph," ominous stories are afloat concerning the attendances and small receipts. The Government has lent nearly a million sterling towards the exposition and fear is entertained lest a Government Receiver should be appointed to run the business and secure reimbursement. The chief complaint made here is that the advertising department at St. Louis while possessing large funds, lacks capacity and originality in placing its attractions before the public. Mr. Secretary Shaw has already communicated with the president of the exposition concerning this matter. By the terms of the loan it is expressly provided that the Government shall have power to step in and manage the show in default of payment of the first instalment, which was due on June 15.

A PHOTOGRAPHIC LIBRARY.

The following lines have been written in response to the Editor's suggestion that the Jubilee Number of his journal should include a contribution from the writer's pen. The appearance of this article when the Jubilee is a thing of the past unfortunately due to pressure of official duties; but the writer is glad even at this late date to associate himself with the event, and to join those others who have tendered their congratulations to the Editor on the completion of the fiftieth year of his paper, and their best wishes for its continued prosperity.

A photographic library for subject matter is perhaps poor material with which to angle for attention; but the writer hopes that a little contribution on the subject may arrest the eyes of a few at this Jubilee time, when, to hark back and review the history of photography is perhaps not devoid of interest.

It may be too much to lay down that England possesses the

graphic age that it almost entirely lacks the old volumes in which early philosophers and investigators recorded those observations which form the basis of photography, and which in later years have been intimately linked up with the more recent discoveries that go to make up the photography of the present day. For these one must go to private collections, or that first and last source of information, the splendid library of the British Museum.

The writer may be excused by no means a new lament when he expresses regret that the Society for the greater part of its career has had little, and for a long time no, accommodation in which to treasure up the books and publications which record the story of photography. Twelve years ago its library was less than commonplace, and entirely unworthy of the first society in the country.

That it had from time to time many books which still do not find a place on its shelves is apparent from the early files of its Journal. For years it did not possess a complete file of its own organ, "The Photographic Journal," and its collection of other publications, was equally incomplete. The Society had before it, however, better times, and with an ability to command premises of its own the expansion of its library was one of the most obvious duties falling upon its officers. To the writer's predecessor is undoubtedly due the placing of the library upon a creditable basis. In those days it was possible to acquire batch after batch of books, few, if any, of which were upon the shelves, and the work would have proceeded faster with a command of more funds. The R.P.S. library was not the only one at the time to which attention was being given, and in consequence a good many exchanges of duplicates were possible. This process of adding to the library has long since become less productive, and while the Society still wants a number of important works or editions, the task of bringing them to light is growing increasingly difficult and unencouraging by the lack of any success.

To make an end of regrets, however, it may be taken that the library was first deserving of a catalogue in 1893, and one giving full titles was issued in that year. It is a pity that it was arranged only under author's names, but it served, in addition to its more legitimate purposes, to interest in the library a good many who commanded still missing books or editions, and further additions were made.

That catalogue of 1893, the first issued by the Society, has long since been out of print and hopelessly out of date because of the growth of the library since its publication. In the last decade the Society has seen to it that the future members of the Society will be unable to regret the neglect of contemporary works, to the acquisition of which a respectable sum has been devoted every year. But there are still many books which, by their absence, rob the Society's library of its value. It would appear that the best means of discovering these missing books is to advertise the wants, and this the writer proposed to do through the medium of the new catalogue. The idea was to make of the new catalogue a complete list of photographic books and periodicals, whether in the library or not, those in the Society's possession being sufficiently indicated to make it serve the double purpose. An obvious step in this direction was, of course, the combination of the existing printed catalogues of the societies named, with a number of others, amongst which that of the Dansk Fotografisk Forening of Copenhagen is worthy of notice. But it became apparent that the publication of the new catalogue would be unduly and, in the opinion of some, unnecessarily delayed, and the scheme in question has been set aside. The writer would like to see such a catalogue, however, from the point of view of its value as a complete bibliography of photography, and that, also, of its utility as a means of advertising the Society's wants; but for the present it is no longer under consideration. It may be of interest to point out that the



A. W. W. BARTLETT.

Secretary "Royal Photographic Society of Great Britain."

st photographic library of to-day; but in the Royal Photographic Society's collection this country undoubtedly commands a place which is entitled to rank amongst the foremost.

In many respects this library has no peers, but in some other respects it is closely run, if not excelled, by the valuable collections brought together by the Camera Club of New York, the Société Française de Photographie in Paris, and the London Camera Club.

The present reference to the subject is suggested by the impending publication, in the autumn, of a new catalogue of the Royal Photographic Society's library, which is in the writer's charge; and the opportunity, afforded by the retrospect associated with a celebration of this sort, of drawing attention to a matter which has a very real claim to the notice of those who attach importance to a proper record of photographic movements and things.

The R.P.S. library belongs so essentially to the purely photo-

defect of the former catalogue—the omission of a subject classification—will be remedied, and the writer hopes that his present early reference to the subject may be a means of enabling him as librarian to get into touch, before the date of publication, with some of the many at home and abroad who must still have editions of old books and early volumes of old journals which are at present conspicuous by their absence in the library at Russell Square.

One may be asked: What is the use of all this? Does the creed of the librarian and the book-collector commend itself to the photographer? The answer may not be altogether a rosy one, judging by the amount of interest shown in the making of the library in the first thirty-five years of the Society's existence; but one must not forget that not everyone responsible for our literature is encyclopædic, and that when a library is referred to it is in the majority of cases consulted in the interests of the many. For this reason it is to be hoped that the present appeal for co-operation, which the Editor kindly permits the custodian of the library in question to make, may not be made in vain. The collection of books is now so good that it ought to be better, and if only a dozen additions result, the writer will feel well paid for his trouble.

Much more might be written about the contents of the library, and about a photographic museum which goes hand in hand with a photographic library; but these were not contemplated in the present notes, which have already absorbed perhaps more than a due proportion of these pages.

A. W. W. BARTLETT.

SOME DISCURSIVE REMARKS ON ORTHOCHROMATIC PLATES.

I.

PERHAPS owing to the increased attention that has lately been paid to colour photography generally, or to a better appreciation of the failings of the ordinary plate in colour rendering, there is no question that colour sensitive plates are more generally used than they were a few years back; and something, too, is due to the fact that it is now almost universally acknowledged not only that such plates keep as well as non-colour sensitised, but that they will do all that the ordinary plate will do, and, as a rule, a little more besides.

The terms ortho or iso-chromatic are not legitimately applicable to any plate—the former because no plate gives absolutely correct visual rendering, and the latter because no plate gives absolutely equal colour rendering, and if it did it would not be correct. Panchromatic seems more justifiable. It must not be overlooked that in a colour sensitive plate there are two distinct positions of sensitiveness, the one belonging to the bromide, or bromoiodide of silver itself, and the other belonging to the bromide + dye; these may merge the one into the other, though it is a little unusual, but we must recognise their existence as separate, and, whilst we can increase the sensitiveness of the plate to those rays visually most luminous, the sensitiveness to the blue and violet still remains abnormally high, and entirely wrong according to the visual impression. If we set the visual luminosity of the yellowish green, near the well-known sodium or D lines, as 100, that of the blue, between F and G, the position of maximum photographic sensitiveness, is only 10; whilst at this position the photographic luminosity is 1,000 and that of the yellow-green only 10, with an ordinary plate. It will be obvious, therefore, that we must enormously increase the photographic action of the yellow-green if the blue sensitiveness is to remain constant, but if we reduce this by the use of an absorbent medium, in the shape of a yellow screen, then the task of yellow sensitising is not such an impossible one.

This absorption of the blue and violet is the sole purpose of a yellow screen, and the most perfect one is that which, whilst

absorbing the more refrangible rays, transmits the others without any reduction. In this respect all the commercial glass screens are unsatisfactory, not only because they are not a pure yellow, being more orange, but because they contain a considerable percentage of black, which degrades the whole of the spectrum. With all, or at any rate the majority of commercial ortho plates, there is a peculiar drop or minimum of sensitiveness in the green-blue, between the E and F lines. This characteristic of all dyes of the fluoresceine family, which includes, of course, the eosines and erythrosines and any orange tint in a screen absorbs more or less of this green-blue, and therefore makes matters worse. This minimum is particularly noticeable with short exposures, but even itself out with full exposures. Excellent screens can be made with tartrazine, naphthol yellow, picric acid, and ammonium picrate; less satisfactory ones with acridine yellow, aurantia, uranine, Madder yellow, etc. A solution of tartrazine exposed continuously to white light alters in colour, becoming more greenish, but I am not aware that such action is to be detected when used in the ordinary dry filter form. Any green in a filter, except, of course, for special work, is a mistake, because according to its tint it absorbs more or less red or orange, and this makes the photographic action of these colours worse.

There are, of course, commercial screens, such as Cadett's, which have a pronounced orange colour, but it must not be forgotten that they are adjusted to one plate, and for a special purpose, and therefore do not come into consideration as generalities.

M. Vidal and the late W. K. Burton were the first, I believe, to suggest that the yellow screen should be put in the plate itself by staining the gelatine, in which the silver salt is embedded, with ammonium picrate. This idea has lately been revived and the following solution recommended:—

Ammonium picrate	0.65 g.
Dextrine	2.5 g.
Distilled water	100 c.c.

In this the colour-sensitive plate is bathed, then rinsed in water and dried. The disadvantage of this process is that it reduces the general sensitiveness to white light, or, in other words, slows the plate, which is not always required, because one may wish to give an extremely short exposure to an ortho plate, and this would lead to under-exposure.

The excellence of commercial ortho plates is so high now that there is little inducement for the average worker to dye his own plate, except he wishes to specially sensitise for red with one of the new cyanines, and it is not a job that I can recommend, as the pitfalls are many. In the first place, the composition of the emulsion is to the plate user an unknown quantity, and it is not every emulsion that can be satisfactorily colour-sensitised, for as a rule plates rich in iodide, for instance, do not take kindly to the process; the presence of free bromide is another and an important factor; then, again, some plates will fog, and this is frequently due to slow drying, and others to a high temperature in drying. Some will not stand ammonia, nor will some dyes, though if one works to a given formula this point is generally determined for one.

Yet another and an extremely important point is to ensure that one obtains exactly the dye recommended, for every aniline dye maker seems to issue what he thinks he will under a common name. As an instance of this, I may cite that I have seven erythrosines, obtained from different sources, and only two are the same in sensitising action, and one of these differs from the other when used as erythrosinate of silver. Again cyanine never seems to be pure; some samples give perfectly clean plates, others fog badly, and others slow the emulsion more than others. Eder's method of treating it with hydrochloric acid and evaporating to dryness does not, as stated, convert it into chlor-cyanine, the ordinary variety being iodo-

ine, but it certainly improves it. The new cyanines, ethyl orthochrome, pinachrome, and Miethe's latest irisine, will probably entirely replace the ordinary cyanine, as giving better and general sensitiveness, and they are all of them pure.

At present we have no information about irisine other than that it is made by substituting a monatomic complex of the iodine in ethyl red, and it is, I gather, the nitrate of ethyl red, and, according to Miethe, sensitises well for red, perfectly clean plates, and is likely to be of great value. Surprisingly enough, orthochrom T in my hands has been a complete failure, always giving fog, but this is probably because I have not happened to have hit on the emulsion that it suits.

Sensitising plates by bathing, one must not forget that a yellow stained plate is not necessarily of higher colour sensitiveness, because one has simply stained the gelatine more. An ideal plate would probably be that in which the silver halide molecule alone was stained and the gelatine colourless, the essential principle of colour sensitising is that the dye salt should combine with the dye. Excess of dye can stain the gelatine, and then acts as a screen, and, as most dyes show sensitising action at the position of their maximum absorption, though in some cases the two are not absolutely coincident, the shifting of the sensitising being a few wave-lengths, it may well happen that the excess of dye acts as a screen to the very rays for which it sensitises; as well, therefore, to rinse the plate thoroughly after bathing, and I prefer to then place it on a whirler for a short time to rid of any adherent drops of water.

In the early days, and even now with collodion emulsion, or compounds of some dyes, particularly eosine and erythrosine, dissolved in ammonia, were and are used, and certainly the erythrosine silver bath gives very satisfactory results regarding colour sensitiveness, even with gelatine plates, they will not keep more than a few days, and I have always used, even with collodion emulsion, and much more so with irisine, that fog is almost invariable when an alkaline developer is used, unless the plate be first bathed in a weak bromination, about 0.5 per cent., then rinsed and developed. There are many other dyes which also give good results with silver emulsion, but as, except in one or two cases, equally satisfactory sensitiveness may be obtained by other dyes without silver, it is not necessary to deal with them.

E. J. WALL, F.R.P.S.

NEW LINK BETWEEN CALCULATING AND EFFECTING CAMERA EXPOSURES.

[A paper read before the Royal Photographic Society.]

The better type of hand-camera the user is provided with means of altering the lens aperture, and varying the shutter speed. These adjustments are valuable if used rightly, but a source of error with many, for an alteration of the one requires alteration of the other, and as these alterations are often made in the hurried moment before an exposure, with perhaps unaltered light to deal with, it is no wonder that mistakes are made.

Shutter makers and lens makers have hitherto done practically nothing to ensure the right stop being used with the right shutter speed (or vice versa), and the object of my paper is to show a means by which the chances of error are reduced to a minimum.

Let us examine in the first illustration (Fig. 1) the scales as usually provided. The bars with pointers represent the movable parts, the figures being on an immovable part. In the diaphragm scale of all iris diaphragms I have seen (except some made in my own workshop), the divisions between the standard stop numbers are unequal, becoming smaller with the smaller size diaphragms.

In almost all scales of shutter speeds the divisions are still more irregular, the one illustrated (copied from a well-known shutter) having the space between 1-5 and 1-25 less than that between 1 and $\frac{1}{2}$. I have only seen one instance (a pneumatic blind shutter of Newman and Guardia) in which the divisions were uniform.

In the next illustration (Fig. 2) I show the same moving parts and scales for the same purpose as before. But three points are essential to my purpose are observed. Firstly, the moving parts are brought into fractional contact. Secondly, the long exposure end of the exposure scale is at the same end as the

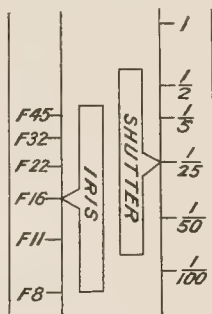


Fig. 1.

small diaphragm end of the diaphragm scale. Thirdly, there is a uniformity between the two scales, the distances between figures, which halve or double, being identical throughout. Thus the distance between 1 and $\frac{1}{2}$ is the same as between 1-32 and 1-64, and as that between $f/8$ and $f/11$. In short, the scales are logarithmic. It will now be seen that a great practical advance is secured, for if both moving parts are moved together either up or down the scales, the opening of the diaphragm is automatically compensated by a shorter shutter speed and vice versa. In fact, the camera user who wishes to alter either the shutter speed or the stop can do so with confidence without altering the total light effect on the plate. This

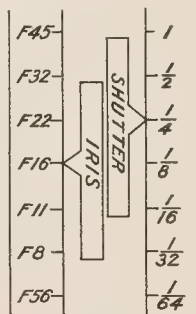


Fig. 2.

of course is presuming that the speed figures represent true effective exposures on the plate, which, by the way, is sometimes a rash presumption. If, therefore, the right exposure is secured by using a certain stop with a certain speed, the same exposure effect is automatically secured with an altered stop and speed.

This, the effecting a camera exposure, is only one step in the method I am describing, and I have not yet touched upon the link mentioned in the title.

I have, by the way, used the word "new" for the method, as it has not been described before a society or in the press.

But it is really four years old, my patent on the subject being dated March, 1900.

And now a few words on calculating exposures.

The factors influencing an exposure can usually be condensed to three, viz.:—light (whether estimated by actinometer or tables), speed of plate, and diaphragm. These, with the resulting value of exposure, are the four values which come into the calculation.

The most obvious and simplest way to estimate from these factors is by the ordinary single slide rule, as in the Bee Meter. And this obvious way possesses the commercial advantage that one is able with it to bewilder the public with reference to "one movement of one scale."

But there are innumerable ways of arranging a slide rule or slide rules to attain the same end. For our present purpose it is sufficient to describe one. Two movable slides (Fig. 3) work side by side. Each carries a scale, one for light values, the other for plate speeds. To each slide a pointer is attached, indicating on scales on the fixed part of the instrument, these two last scales (the outer ones) being for diaphragm and exposure. The instrument is set by setting the plate speed against the light value, and then moving both slides together until the left-hand pointer indicates the diaphragm used; the other pointer will then indicate the exposure. The peculiarity of this arrangement is that when plate value is set against light value,

PLATE		LIGHT	
	8		
F45	16	2	1
F32	32	4	1/2
F22	65	8	1/4
F16	130	16	1/8
F11	250	32	1/16
F8	500	65	1/32
F5.6		130	1/64
STOP		EXP.	

Fig. 3.

the two pointers will always indicate a diaphragm and an exposure which when used together will be correct, and this holds true if the two slides are together moved up or down. The divisions of the scales are of course logarithmic. Thus if plate 130 is set to light 16, and the pointers indicate $f/22$ and $\frac{1}{8}$ exposure, the same total light effect on the plate will result if the slides be together moved downwards and the values indicated—say $f/8$ and $1/64$ exposure—be utilised.

I think that if this slide rule is kept in mind, and that if we go back to the previous illustration (Fig. 2), the link between calculating and effecting will become plain.

We have only to divide the two movable bars logarithmically, and add figures for the plate and light scales, to have a calculating shutter in which the act of making the calculation, setting plate speed against light value, automatically sets the diaphragm and shutter speed in such a relation to each other, that a correct exposure results whatever diaphragm is indicated and used.

I have shown these movements as in straight bars, but the plan equally applies with the circular scales of iris diaphragms and modern between lens shutter. In fact, most of my trials have been with the circular form. I will try to illustrate this form with a "lever" lantern slide.

I also threw on the screen a photograph (Fig. 4) of a meter shutter with circular scales made on this system, and you will

have the opportunity of examining this shutter, which, however, is by no means final in construction.

It is, I think, a convenience to add to the plate scale adjustable marker, consisting of two pointers, a long and short one. The longer pointer is placed over the speed of the plate in use, and saves selecting this speed from a set of figures. In a full exposure the long pointer is used to indicate the light value, and for a minimum exposure the short pointer.

The movable ring or bar which adjusts the shutter speed and also carries one of the scales, is "frictioned on" to a similar ring or bar, which adjusts the diaphragm; so that when the diaphragm ring is moved it carries with it the exposure ring, unless the latter is held, and the movement of the one exactly compensates, as regards light action on the plate, the movement of the other.

The simplicity attained in use of this "link" is very striking. The act of moving one slide (holding the other) so that the pointer indicates the light value, not only makes the required calculation, but automatically sets diaphragm and shutter speed to such a relation that a "correct exposure" results when made. One movement will then alter to any required diaphragm, or shutter speed, without disturbing this relation.

So far all appears smooth sailing, and I have given no indication

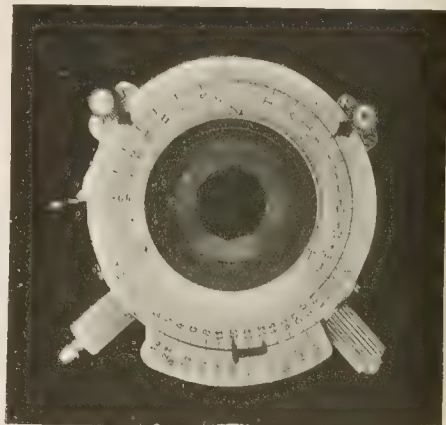


Fig. 4.

of the difficulties which stand in the way of constructing such an appliance.

Both in iris diaphragms and in shutter speeds the habit makers has been to construct the mechanical part, and then mark the position of stops and speeds at whatever part of the scale they chanced to come. But in this appliance, uniform logarithmic divisions on the scale are a necessity, and the scales have to be constructed first and the iris and shutter built to fit them. This really means the redesigning of both.

As regards the iris diaphragm, the difficulty has been overcome by the mechanical foreman in my own workshop, who has designed the necessary form.

As regards the shutter, the diversity and choice of construction is so great, and the inherent defects of each construction so manifest, that after four years' application to the task, with much aid from a skilled mechanic, I cannot claim final success, although it may come any day. It is possible to provide a shutter which will fulfil the conditions (subject to the imperfections of all shutters), but not easy to do so in a commercial form.

Perhaps the existing form of shutter most readily adapted

ld be the Newman and Guardia type, the front of the era being given up to the shutter, and the speed decided varying escape of air from the pneumatic cylinder. This d adjustment conforms to the logarithmic scales with little culty.

the compact shutters of the Bausch and Lomb type, which open and fly shut quickly (even at slow speeds), the difficulties are greater, and the speeds are best made to conform the logarithmic scales by means of a circular cam, which be shaped to press upon a speed lever to any desired unt at any selected point of the logarithmic scale. I find the recent Volute shutter can be fitted with my calculating es with but little alteration, and I show a rough example. In this shape of shutter there is usually a defect caused by sudden check at the end of the fly-open movement, and h makes the speed from $\frac{1}{4}$ th to 1-25th uncertain.

must also be remembered that a photographic shutter of necessity, an imperfect appliance; for it is an aperture, a point, which has to be uncovered, and while the aperture n course of being uncovered only partial efficiency is ined.

With present appliances the photographer may put up with e many defects without even discovering them. But with the er shutter I have been describing he is invited to discover n by the means which are provided. For instance, the

PLATE LIGHT			
F45	8	2	1
F32	16	4	1
F22	32	8	1
F16	65	16	1
F11	130	32	1
F8	250	65	1
F56	7	6½	6

Fig. 5.

ter is set to $f/8$ and 1-64, and a plate exposed; the two es are then moved together until they indicate $f/45$ and $\frac{1}{2}$, another plate exposed. When developed together the ult will soon show whether the effective values of the cked speeds were relatively correct.

With the "fly-open" type of shutter the short exposures are ntively much less efficient than the longer ones, and to mpensate this error it will probably be necessary to intro-e a compensating error into the logarithmic scales. If six the exposure divisions occupy the space of seven of the hragm divisions it will be about right. The two inter-iate scales must then have divisions of intermediate length. s is shown in Fig. 5.

on shutters (as in most of Newman and Guardia's) where the osing plate moves at a uniform speed throughout its action, a speed being alterable, the same error does not arise, as long exposures have the same relative inefficiency as the rt ones, and the compensation I mention will probably not required.

There are two distinct ways in which the methods I describe e, be partially adopted, and very considerable advantages tured, although not the full advantages of the complete thod.

The first is to apply the two slides to a shutter (other than etween lens shutter), the one slide being attached to the speed ustment, and the other merely indicating on a scale the

diaphragm to use, or which it is proposed to use. In this method the diaphragm (a separate appliance) has to be set by hand in the usual way. This would probably be the application for focal plane shutters.

The second method is to apply the two slides (in the form of rings) to the mount of a lens, the one slide forming the usual ring of an iris diaphragm (which must be constructed to indicate on logarithmic divisions) and the other indicating on a scale the exposure to give. The exposure is then effected by hand or by shutter.

In the light scale of these slide rules I have adopted a simple figure to denote the value of the light falling upon the subject, and have assumed that this light value be ascertained by means of an actinometer. I regard this as by far the simplest and most complete way of ascertaining the light value.

But for those who prefer to ascertain the light value by computing it from time of year, time of day, state of atmosphere, and class of subject, the same scales will still apply, as Burton's well-known table (multiplied by 2) will give an estimated light value, Burton's standard for best mid-day summer light being 1, and mine being 2. To apply this exposure table plan it might be advisable to add an additional movable scale of pointers on one of the movable slides to provide for the elaborate classification ranging between landscape and portraits indoors, which is necessary in the exposure table plan, but unnecessary in the actinometer plan.

ALFRED WATKINS.

PLATINUM PRINTS WITH GLOSSY SURFACE.

A WELL-KNOWN superiority of the platinum print is the deep, saturated coloration of the shadows, which can be obtained by this process. The matt surface of the platinum print, its pure black tone gradations to the deepest shadows, remind more of the superiority of photo-engravings, than the traditional reddish-brown glossy albumen and collodion prints, and we imagine the former, therefore, to be more artistic than the latter. But the platinum printing process puts some high demands on the negative, which are partly conditional by its want of gloss. The covering of the lights must be in such a way, that the shadows have reached the deepest blackening, when the details in the brightest parts of the picture are printed out. If the negative is less covered, the shadows will be without the necessary strength, if abundantly covered, the details will disappear in the shadows. To this may be added, that on account of the peculiar gradation, richly detailed shadows cannot easily be obtained upon platinum paper. The print shows a very handsome shading in the lights, pronounced "high lights," but an unsatisfactory gradation in the dark tones. For this reason the process is preferably used for light subjects with limited shadows, and for reproductions of paintings the carbon print is given the preference. But if a glossy surface is given to the platinum print, even weaker covered negatives will give yet sufficiently strong pictures, and the details in the broad shadows become visible, because the colouring platinum is then in a transparent layer, whose "depth structure" can be distinctly recognised. For this reason it is justifiable, to produce in certain cases glossy platinum pictures. Henry Dietrich gives in the "Photographic Times" Bulletin for May a translation of A. Von Hübl's method of obtaining such prints. He says: "As glossy coating I have selected gelatine, and it is peculiar, that this body, which prevents the formation of brown tones, if present in only small quantity, facilitates this coloration, if the coating is put on so thick, that the picture will not originate any more on the paper fibre, but simply upon the gelatine. The paper—principally coarse-grained drawing paper—is coated with a uniformly thick gelatine solution. The paper is moistened and squeegeed upon a horizontal glass plate, the edges of the paper are turned up and the gelatine is poured on. For a paper surface of cm.^2 about 10 c.cm. gelatine solution 1:20 are used.

A tanning of the film is not necessary, as this is done so completely by the sensitising, that the paper will stand a hot development. Strongly gelatinised drawing paper is very uneven after drying, it is therefore necessary to tack it to a drawing board before sensitising

and let it dry on the board. The sensitising has to be done rapidly to avoid stripes. For black pictures it is composed of 4 c.cm. iron solution, 1.5 c.cm. potassium chlorure of platinum 1:6. To this developer are added 2 c.cm. platinum solution to 50 c.cm. oxalate of potassium 1:4. For development, prints of larger sizes are tacked again upon a board and the solution is put on rapidly and uniformly with a brush or sponge. If hot development is applied, the print is simply drawn through the heated developer. Stripes or other defects will seldom or never result from this operation. For brown pictures, mercury salts are added to the sensitising solution or the developer. The sepia brown pictures do not consist, as formerly accepted, of brown metallic platinum, but to a great extent of a brown mercury-platinum compound. In strong acids, chloride of copper or chrome acid, they will bleach out rapidly, but they resist completely the atmosphere and all atmospheric influences.

If a paper, coated with a sensitising solution containing mercury, is developed after printing, two processes run parallel. On the one hand, black metallic platinum is secreted from the platinum salt, and, on the other hand, the mercury salt is reduced to an oxidal salt, and this unites with the chlorure of platinum to a brown compound. From the relation of the black platinum precipitate to the brown compound depends the colour of the picture. But these two processes, according to circumstances, pass at a different rapidity, and it may happen, that in the lights only brown compound, and in the shadows only the black platinum, is secreted. Such double-toned pictures do not make an agreeable impression. To produce pure brown tones, the reduction of the platinum has to be counteracted, and that of the mercury salt has to be increased. The former is done by the addition of much acid to the sensitising solution and the developer, the latter by the application of easily reducing mercury salts, for instance, citrate of mercury. For the production of sepia pictures upon strongly gelatinised paper, the following sensitising solution is used:—

Iron solution	20 c.cm.
Potassium chlorure of platinum 1:6	8 c.cm.
Citrate of mercury solution 1:30	+5 c.cm.
Citric acid solution 1:2	5 c.cm.

Four c.cm. citrate of mercury solution give prints of pure sepia colour, and, by reduction respectively increase of this addition, the brown coloration can be changed from brown-black to sepia red. Unbroken, light brown or reddish sepia tones can be found suitable only for certain subjects, while the black shades, with only traces of mercury, result in a rich scale of generally useful colour tones.

For development the following solution will serve:—

Oxalate of potassium	200 g.
Citric acid	20 g.
Water	1,000 c.cm.

If 10 to 50 c.cm. of citrate of mercury solution are added to this solution, the quantity of mercury in the sensitiser can be restringed, and the development will then proceed quicker. The pictures can be developed cold with the brush, or hot; in the latter case, somewhat lighter, purely brown shadows are obtained. One defect, which has not been entirely removed yet, is that with a large quantity of mercury the lights show sometimes a yellowish coloration. This general tone shows itself mostly after fixing during the washing of the prints, and may be ascribed to some extent to a further action of the light upon the sensitising—and developer rests, remaining still in the paper. At all events, such prints should be held in the dark until washed. The gloss of the picture depends essentially upon the treatment of the paper. If put into the drying closet in a still moist condition the gelatine film will soften and dry with a gloss; but if it is left to dry in an ordinary temperature only a matt gloss is obtained. If developed hot high gloss will always originate. If this is to be avoided the gelatine solution must be mixed with arrowroot.

These pictures can also be varnished. For this purpose Damar varnish, and also the ordinary negative varnish, can be used. In the latter case, the print should be heated previously, and the varnish applied with a flat brush, and dried afterwards by heating."

Mr. W. G. Moore, photographer, of 11, Upper Sackville Street, Dublin, has added a photographic material department to his business.

THE THREE-COLOUR PROCESS.

The following correspondence and articles appeared in the number of the "Spectator":—

THE THREE-COLOUR PROCESS.

[To the Editor of the "Spectator".]

Sir,—Messrs. Cassell are not in the habit of complaining of reviews of books published by them, and they fully recognise the general fitness of the literary notices contained in the "Spectator"; but a paragraph purporting to be a review of a very important work theirs—"The Water-Colour Drawings of J. M. W. Turner, R. in the National Gallery"—appeared in your issue of May 21 which they cannot pass without protest.

Your reviewer has evidently gone upon the assumption that an attempt to reproduce Turner's water-colour drawings must necessarily result in nothing but a "travesty" of the originals; and has certainly not taken the pains to see for himself what is possible even in reproducing Turner.

Possibly in the past he may have seen work by the three-colour process that he did not like, and doubtless in the stages of progress which have led up to the success of the process which has been achieved indifferent results were a necessity. But it is surely to that your reviewer acquainted himself with the progress that has been made, and revised his judgment. Messrs. Cassell do not claim that the work is perfect, and that no further improvement is possible; but they do claim that no better work of the kind has ever been done, and that no artist was ever on the whole so satisfactorily reproduced in colour.

You will observe that this is not a question of opinion, but of fact. It is not a question as to whether your reviewer likes or does not like three-colour reproduction, but as to whether these reproductions fairly represent the originals, a matter that can be judged of by even an artist as well as by a literary reviewer, and I shall be glad if you will put by the side of your reviewer's flippant treatment of the book the opinions which I subjoin. They are a few only of many, but they are, I think, a sufficient reply to what appears to me to be the uninformed prejudice of a literary reviewer in dealing with an artistic matter.—I am, Sir, etc.,

EDWIN BALE, R.I.

(Art Director, Cassell and Company.)

La Belle Sauvage, Ludgate Hill, London, E.C.

Sir E. J. Poynter, Bart., P.R.A., writes:—"The reproductions of masterpieces, and the book will be a delightful possession."

Mr. Hawes Turner, Keeper and Secretary of the National Gallery, writes:—"The coloured reproductions are undoubtedly the best hitherto attained."

Mr. George Clausen, A.R.A., Professor of Painting at the Royal Academy School, writes:—"One can turn to the book again and again as one can to the fine originals. . . . Indeed, the reproductions are as good as the drawings."

Mr. Alfred East, A.R.A., writes:—"It is a splendid volume, and a tribute to a great artist."

Mr. B. W. Leader, R.A., writes:—"I think the reproductions of the most successful I have yet seen in any publication of the kind."

Sir Ernest A. Waterlow, R.A., President of the Royal Society of Painters in Water-Colours, writes:—"I made the acquaintance of the work some little time ago, and think the reproductions excellent. To the busy man who has little time to visit galleries the work will prove a boon, and will, I am sure, be highly appreciated."

[Our Art critic deals with the three-colour process elsewhere, and with the not very courteous suggestion that our reviewer had "certainly not taken the pains to see for himself what is possible, even in reproducing Turner." Before we leave the subject, however, we must point out that no attack was made upon Messrs. Cassell, or upon their use of the three-colour process. The contention of our reviewer was merely that the three-colour process, by whomever and wherever used, does not, in fact, give a true representation of the picture depicted. He did not, that is, accuse Messrs. Cassell, or any other publisher, of defective work, but merely insisted, as he had every right to insist, that the three-colour process does not give us Turner colouring. If a critic is not allowed to say this of a mechanical process, criticism becomes a farce. As a matter of fact, we believe that the best artistic opinion in the nation will be with our Art critic. The three-colour process has beauties of its own, and whose designs are specially made to be reproduced by it, it is often very

ant to the eye. To pretend that it reproduces the glories of
er's palette is absurd.—ED. "Spectator."]

The "Spectator" of May 21 there appeared a short notice of a book
productions of water-colour drawings by Turner in the National
Gallery. In this review, to the authorship of which I must plead
guilt, I declared that the three-colour process was wholly incapable
of reproducing the wonder and subtlety of Turner's colouring. This
spoken view has been challenged by the publishers of the book in
question, Messrs. Cassell and Co., and their art director, Mr. Bale,
written a letter of protest, which appears in the present issue of
"Spectator."

The first charge which he brings is that the reviewer "has certainly
taken the pains to see for himself what is possible, even in re-
producing Turner." Let me assure Mr. Bale that I have a deep
gratitude for first-hand information, and that I took the book in question
to the National Gallery and compared its reproductions with the
originals, making notes in the margin of what appeared to me to be
grosser errors of the process. Mr. Bale asks that I should make
myself acquainted "with the progress that has been made," and
use my judgment. But what more can I do than study his book,
which he seems to regard as reaching hitherto unattained heights of
reproduction—though here there is a note of modesty, for we are
told that it is not claimed "that the work is perfect"? This apologetic
attitude suggests the famous dancing dog of Dr. Johnson, and
may truly say of this colour-printing that "the wonder is not
that it is well done, but that it should be done at all." Indeed,
there is something marvellous in the fact that minute dots of three
colours mechanically placed side by side should produce even a re-
semblance to painting. But then the question arises—Is the result
justified by its beauty and nearness to the original? The whole
point is that these reproductions claim to represent the colour of the
original with something of the same accuracy that a photograph
represents the form of a picture. I have open before me as I write Mr.
Bale's print of Turner's "More Park" ("Rivers of England," No. 18),
the margin of which I noted in the National Gallery what
appeared to be the differences between it and the original. (I
could here like to point out that these notes were the result of an
unprejudiced study made before any controversy had arisen.) If

Mr. Bale cares to compare the print and the original, I think he
will find that the sparkling lights in the trees on the right are not
in tone or colour, that the edge of the reflection beneath them is
hard and dark, that the piece of earth beneath these trees at the
bottom of the picture is too hot and red, and that the red in the
trunks of the lock is wholly false. If the sky is examined it will
be clear that the blues have a tendency towards a dirty purple, and
that there is an exaggerated spottiness of this colour quite foreign
to Turner's sky. Also, the pale warm lights are dirty, and the
principal light in the sky over the hill is lost. After I had made a
careful examination, I placed the book by the side of the original,
I walked across the room to study the effect at a distance. The
result I recorded in the following note: "Looking at the print and
the original side by side at a distance, when the form is not seen
clearly, it would be hard to tell that the print was intended as a
copy of the colouring of the water-colour." I will not weary the
readers of the "Spectator" with the notes I made of several other
drawings, all with like result. But I wish to show that my dislike
of the process is the result of study, and not, as Mr. Bale says, "the
informed prejudice of a literary reviewer in dealing with an
artistic matter."

Mr. Bale twice in his letter alludes to the "literary reviewer."
By this term I make no objection; there is something flattering and
humiliating about it, for does not the amateur of an art always wish
to be considered a professional? But I cannot lay claim to this
honourable title. I can only claim that of *pictor ignotus*, hoping
at the constant, though humble, practice of painting enables me at
least to appreciate the art of others.

The real importance of the question of the three-colour process lies
in the fact that a great many people who have not the leisure or the
willingness to enable them to judge of it independently are wont to
assume that because it is a mechanical process based on photography
it is therefore accurate. This assumption is misleading, because it
leads to the falsifying of ideas about the colour of pictures. There
is in a book by Mr. Lewis Hind, published by Messrs. Black, a re-

production of the picture of the "Death of Procris," by Piero di
Cosimo, in the National Gallery. The colour of this print, even if
slightly gaudy, is not unpleasant, but it is not the colour of the
original. The sky of Piero is a warm grey-blue, and not the colder
and greener hue reproduced. Neither is the grass the cold green of
the print, nor does the blue hill contrast so strongly with the satyr's
face and arm in the original as in the copy. There is another ques-
tion, and that is the variation between the different impressions of
the same picture. The advertisement of Mr. Hind's book contains a
specimen print, which, if compared with the same picture in the
book, reveals little differences. The picture represents a flock of
sheep near some blossoming trees, and has a sky with large cumulus
clouds in it. In one copy the sheep are much bluer in their shadows
than in the other, and the same colour has got into the tree-stems.
The clouds, too, are warmer in the whites in one version than in the
other. Now, which of these am I to accept as the representation of
the original? They cannot both be right. Obviously the personal
equations of the printer and of the photographer have entered into
the result. Hence the prints are only copies in which the copyist
uses an elaborate mechanical apparatus instead of a brush. Just as
several copies by the same painter will differ from their original, so
will these colour-prints differ. Therefore these prints cannot be
looked upon as mechanically accurate copies of colour, any more than
photographs are absolute in their renderings of the values of a
picture. But by increasing the difficulties the margin of variation
increases also. Nor can these prints often claim to be objects of
beauty in themselves. Their shiny surface, their tendency to lilac
tones irrespective of the original, and the blur of the screen, all go
to prevent them being as decorative as a fine photograph.

Mr. Bale quotes the opinions of various artists who approve these
reproductions of Turner, which he wishes to be regarded as a
counterblast to my criticism. It would be indecorous to contend
against such an array of Pontifical *ex-cathedra* declarations, begin-
ning with those of the President of the Royal Academy and ending
with the President of the Royal Society of Painters in Water-
Colours. I will, in this case, only quote from Mr. Bale's letter and
say: "This is not a question of opinion but of fact."

The last authority whose opinion is quoted—Sir Ernest Waterlow
—makes an interesting statement: "To the busy man who has little
time to visit Galleries the work will prove a boon, and will, I am
sure, be highly appreciated." What possibilities are opened up to
future hard-worked Presidents! No longer will they have to visit
the Galleries of Europe to become acquainted with the works of the
great masters. In future, in the intervals between painting a
masterpiece and of presiding over a business meeting of "members,"
distinguished heads of Royal institutions will consult pocket editions,
in three-colour process, of the works of great men of the past and
present. It will no longer be necessary to waste time on foreign
journeys, for the glories of Madrid and Venice will be produced
"neatly bound in boards," and on very shiny paper. By means of a
row of volumes the busy artist will possess the museums of Europe.
Mr. Clausen goes even further, and says: "One can turn to the
book again and again, as one can to the fine originals. . . .
Indeed, the reproductions are as good as the drawings." Happy
Mr. Clausen, who now possesses the treasures of Turner at the mode-
rate cost of three guineas, and is as content with these prints as
with the treasures of the National Gallery. I can only say, in con-
clusion, that I envy Mr. Clausen.
H. S.

A FEATURE in the report of the proceedings of the sixteenth annual
meeting of the U.S. Association of Economic Entomologists is an
address on insect photography by Mr. M. V. Slingerland. While
urging the importance of this comparatively new application of photo-
graphy, the author points out that many of the replicas of photographs
published in current literature are of a very inferior type.

MARK TWAIN gives the following account of his first meeting with
the late Mr. Whistler. "I was introduced to Mr. Whistler in his
studio in London. I had heard that the painter was incorrigible
joker and was determined to get the better of him if possible. So
at once I put on my most hopelessly stupid air and drew near his
canvas. 'That ain't too bad,' I said, 'only here in this corner,' making
as if to rub out a cloud effect, 'I'd do away with that durn' cloud.'
'Be careful, sir!' cried the painter, 'don't you see the paint is not
dry?' 'Oh, that don't matter,' said I, 'I've got an old pair of
gloves on.' We got on well after that."

WARM TONES ON BROMIDE PAPER.

Dr. Lakin's formulae as reported in "The Photographic Record" (organ of the Manchester Amateur Photographic Society).

For warm tones directly by development the developer invariably used is Pinakol P. (amido-acetate of soda plus pyro), a developer which merely requires the addition of water, and is very receptive to the restraining action of potassium bromide, 10 per cent. The formula: Pinakol P., 2 drms.; potassium bromide (10 per cent.), 30 drops; water, 6 oz. If the time of exposure is doubled, then with this formula we get a fine sepia colour; with a still further increase of exposure and the addition of more bromide, we can get a fine range of colours ending in a pleasing red chalk. With a metol-hydroquinone made as follows we can get red or brown tones:—Stock metol-hydroquinone developer: Metol, 50 grs.; hydroquinone, 15 grs.; soda sulphite, 500 grs.; potass. bromide, 10 grs.; potass. carbonate, 100 grs.; water 20 oz. Developer for colours: Metol-hydroquinone (stock), 2 oz.; water, 20 oz.; citric acid ($\frac{3}{4}$ per cent. sol.), 1 oz. Ten times the exposure required for black tones will give a brown tone, and if we allow the developer to stand four or five hours before use we obtain with the same exposure red tones. The addition of ordinary table salt (80 grains to $\frac{3}{4}$ oz. of edinol developer) will, with a slight increase of exposure, give us fine brown tones. A toning formula which gives fine sepia tones is: A. Ammonium molybdate, 65 grs.; glacial acetic acid, 4 oz.; water, 10 oz. B. Potassium ferricyanide, 45 grs.; glacial acetic acid, 1 oz.; water, 10 oz. For sepia tones: A, 2 oz.; B, $2\frac{1}{2}$ oz. For reddish brown, equal parts of A and B. Prints must be thoroughly fixed and washed before toning, and again washed after toning. This formula is practically the cheapest toning bath for bromides, with the exception of hypo and alum, and gives very fine sepia tones.

Commercial & Legal Intelligence

NOTICE of Removal.—We learn that Messrs. L. Trapp and Co., dealers in photographic materials, late of 29, Budge Row, E.C., have moved their offices and showrooms to Milton House, 8 and 9, Chiswell Street, London, E.C.

Mr. HERBERT ANDREW CROMARTIE WARMINGTON, F.S.I., has been made a partner in the firm of Messrs. Glasier and Sons, No. 7, St. James's Street. Mr. Warmington is a son of Mr. C. M. Warmington, K.C., and he was educated privately and at the Royal Agricultural College, where he was successful in gaining the first place in the examination for membership in August, 1895. He was afterwards articled with the well-known firm of Messrs. Chinnock, Galsworthy, and Chinnock, and in 1901 he won the Crawford Prize at the examination of the Surveyors' Institution. The style of the firm will remain the same.

WORLD'S Advertising Company, Limited.—The above-named company has been registered with a capital of £25,000 in £1 shares. Object, to adopt agreements: (1) with J. Rosenberg, J. Wertheim, and J. Wenk, trading as the World's Advertising Company; and (2) with J. Rosenberg, J. Wertheim, J. Wenk, and W. Gibbons, and to carry on the business of general advertising contractors, agents, and displayers of advertisements of all kinds by magic lantern, cinematograph, biograph, or other device, etc. Minimum cash subscription, 100 shares. The first directors are W. Gibbons, J. Wenk, and J. Wertheim (all permanent). Qualification, £250. Remuneration as fixed by the Company. Registered office, 34 and 35, High Holborn, W.C.

HAND-COLOURED Local Views.—A specialty of Mr. Philip G. Hunt, 100, Deansgate, Manchester, are local views in plain collotype, platinum printing, and hand-coloured; and his staff of operators is constantly taking new series in all parts of the country to suit customers' requirements, while he also does a large trade in reproducing from clients' own negatives. He has the sole agency for Great Britain for Messrs. Deyhle and Wagner, of Berlin and Paris, and supplies also real photo postcards, hand-coloured, of high-class quality and beautifully finished. We may mention that for the convenience of London publishers he is shortly opening a London office, where samples and full particulars can be obtained.

FORTHCOMING EXHIBITIONS.

June-October.—Glasgow Photographic Exhibition. Secretary, Gallery and Museum, Kelvingrove, Glasgow.

July 14 to September 30.—Vienna Photographic Society. Secret. W. Burger, Karmelitergasse 7, Vienna 11.

August 1.—Andover and District Horticultural Society. Photographic Section. Hon. Secretary, W. L. Gradidge, Jubilee Hall, Andover.

September 16 to November 5.—Photographic Salon, Dudley Gall. Egyptian Hall, Piccadilly. Hon. Secretary, Reginald Craigie, Photographic Salon, 1904, Dudley Gallery, Piccadilly, London, W.

September 20-28.—Newbury Photographic Society. Hon. Secret. E. J. Forster, Guildhall Club, Newbury.

September 22 to October 29.—Royal Photographic Society's Fortieth Exhibition, New Gallery, Regent Street, London. Secret. A. W. W. Bartlett, 66, Russell Square, London, W.C.

October 1-30.—Berlin International Photographic Exposition. Franz Goercke, Berlin W. 62, Maassen-Strasse 32, Germany.

October 19-22.—Rotherham Photographic Society. Hon. sec., H. Hemmingway, Tooker Road, Rotherham.

November, 1904.—Ilford and District Photographic Society. Hon. sec., W. N. Beal, 155, Thorold Road, Ilford.

November 3.—Frome M.I. Photographic Society. Hon. Secret. B. J. Mitchell, 3, Willow Vale, Frome.

November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Sec. James Dunlop, Myrtlebank, Motherwell.

November 9.—Hackney Photographic Society. Hon. Secret. Walter Seife, 70, Paragon Road, Hackney, London, N.E.

November 21-26.—Sheffield Photographic Society. Joint Secret. J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.

November 23-26.—Hove Camera Club. Hon. Secretary, A. Sargeant, 65, The Drive, Hove.

November 24-25.—Isle of Thanet Photographic Society. Hon. Sec. G. W. Simmers, Aberdeen House, Ramsgate.

December 2-8.—Southsea Photographic Society. Hon. Secret. F. J. Lawton, 20, Clarence Square, Gosport.

December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-1 West 101st Street, New York.

December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.

December 13-20.—Southampton Camera Club. Hon. Secretary, S. Kimber, Oakdene, Highfield, Southampton.

December 23-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 138, Glasgow Road, Wishaw.

January 14-28, 1905.—The Scottish National Salon. Hon. Secret. W. A. Frame, 28, Bank Street, Hillhead, Glasgow.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 25, Bank Street, Hillhead, Glasgow.

June, 1905.—Northern Photographic Exhibition. Secretary, F. Issott, 62, Compton Road, Harehills. Leeds.

FORTHCOMING COMPETITIONS.

June 30.—"Photographic News" Quarterly. Money prizes, silver and bronze medals for prints. Any subject. "Photographic News," 9, Cecil Court, Charing Cross Road, London, W.C.

June 30.—Kodak. £1,000 in cash prizes for pictures taken on Kodak films and plates, etc. Kodak, Limited, 41-43, Clerkenwell Road, London, E.C.

October 1.—Thornton-Pickard. £100 cash prizes for pictures taken with Thornton-Pickard cameras and shutters. Thornton-Pickard Manufacturing Co., Altrincham.

October 16.—Luna paper. £240 cash prizes for prints on Luna paper. Lucien Allegre and Co., 59a, New Oxford Street, London, W.C.

October 15.—Belgian Association Lantern Slide Stereogram Competition. Secretary, M. Vanderkindere, 97, Avenue Brugman, Brussels.

October 31.—Coxin. 68 prizes for users of Coxin. Judging twelve pictures. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.

November 1.—The "Graphic." £50 in cash prizes. Manager Photo Competition, the "Graphic," Tallis Street, Whitefriars, London, E.C.

December 31.—Barnet. Nineteen classes. Prizes valued at £50 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

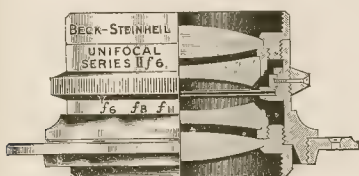
March 15, 1905.—Ilford. £750 in prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

We have been asked to announce that our contemporary, "Focus," will issue its "Birthday" number next week. Extra pictorial literary, and other matter will be included to mark the celebration of the completion of the paper's first year of existence.

New Apparatus, &c.

Beck Steinheil Unofocal Lens. Sold by Messrs. R. and J. Beck, Ltd., 68, Cornhill, London, E.C.

A new Unofocal lens invented by Dr. Rudolph Steinheil, of Munich, and manufactured under his patent by Messrs. R. and J. Beck, Ltd., has some novel optical properties. It consists of two component lenses, two of which are positive and two negative, and the result of these component lenses is that they have all the same focal length, and, moreover, are all made from glass with the same mean refractive index. Such a construction would suggest that an exact neutralisation was produced by the two positive against the two negative component lenses, but the power is obtained by placing the lenses at slight distances apart. It is well known that whereas a convex lens of one inch focus will exactly neutralise a concave lens of the same focal length when they are placed in contact; it will no longer do so when the lenses are separated. For the same reason two lenses with different dispersion but the same mean refraction may be made use of to correct the chromatic aberration. It may, however, be wondered for what reason this undoubtedly ingenious method of constructing a corrected lens has advantages. It may be here explained in order to make an anastigmat lens, a certain condition, called the Petzval condition, has to be satisfied. This condition demands that the foci of the component positive or convex lenses of an



anastigmat lens must bear a particular ratio to that of the component positive or concave lenses, and this ratio has to be that of the inverse indices of the glasses out of which the lenses are made. The utmost possible differences in this respect between the lenses which the available is very small—about 15 to 16—so that positive and negative lenses have to be very nearly the same focus. Consequently they have to be individually very high in the center, deep concave lenses balanced against deep thick convex lenses, and the result is a balancing of great errors of a positive lens against equally great negative errors. In order to properly correct all the corrections in a photographic lens, when hampered by a serious limitation, is very great, and Dr. Steinheil's new method of making all the foci and the refractive index of all the component lenses the same removes this difficulty, and allows the designer of the foci and the shapes of the lenses to be determined in a way as to correct all the other errors. The Petzval condition has long been, as it were, automatically complied with, long focus power lenses may be employed, which allow of flat curves, which produce scarcely any loss of light from reflection, and consequently increase the relative rapidity. The Unofocal lens is free from flare, and a $f/4.5$ lens when stopped down is as good as any other for wide angle work. The central definition is so good that it is suitable for telephoto work and projection. The lens is made in two series, with an aperture of $f/4.5$ and the other $f/6$.

ERRATA.—In our issue of last week (the Jubilee number), will our readers kindly note the following errata:—P. 495, interpolate between two lines of Mr. Wall's article, "are made, we may feel confident that they will be recorded in the." P. 497, col. 1, line 34, for "Snowdon and Ward" read "Snowdon Ward"; col. 2, line 4, for "Dr. Hill Norris" read "Dr. Hill Norris"; line 6, for "Joyce" read "Joyce"; line 23, for "Trail, Taylor" read "Traill Taylor"; line 24, for "Sutton-Rylander" read "Sutton, Rejlander"; line 25, for "Lake, Glacier" read "Lake Price, Glashier." P. 509, col. 1 line 12, "Davanne" read "Davanne"; line 14, for "fakings" read "dings."

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

June	Name of Society.	Subject.
18.....	Watford Photographic Society.	Photogram. The Misses Smith.
21.....	Bowes Pk. and District Ph. Soc.	Competition. Ouding Prints.
23.....	South London Photo. Society..	Slow Plates for Rapid Work. Mr. C. E. Kenneth-Mees, B.Sc., F.R.S.
21.....	Nelson Photographic Society..	Carbon. Demonstrated. Mr. A. Plunkett.
22.....	North Middlesex Photo. Soc. ..	Shutter Testing. Mr. J. McIntosh.
23.....	Lon. and Prov. Photo. Assoc. ..	Nomination of Officers.

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

MEETING held June 9, 1904, Mr. R. Becket in the chair.—Mr. W. T. Wilkinson gave a lecture on "Factorial Development," in the course of which he pointed out that from the first appearance of the image it is possible, by the aid of a suitable factor, to prognosticate the exact time the image will require for complete development, the density being controlled by modification of the constituents of the developer. Even the purely mechanical time (or machine) development is a scientific and workable method—e.g., a normal developer, a standard subject, and correct exposure all lead to a stated time for the full effect of development. Take the case of copying a set of diagrams by artificial light. Better and more uniform results can be obtained by timing the development than by trusting to visual examination during the process. For studio work also, where the conditions are mostly normal and the exposures almost uniform, time development is practical and useful. For general outdoor work, however, this time development cannot be applied. It would not be possible to develop in the same dish a plate exposed upon an open landscape and one exposed in a dark crypt—that is, of course, if both negatives are wanted to be good; therefore, for general work, we must use the factorial method of development, and control the results by suitable modification of the developer, to suit the subject, plate, and exposure. With factorial development, for correct exposure, the time of first appearance is very regular, and when that time is exceeded or advanced prompt measures can be taken to remedy the error. The developer should be compounded to suit the subject, also the particular kind of plate used, slow, medium, rapid, and extra rapid—each requires its particular strength of developer. Slow plates, being prone to hardness, must have the reducer in less quantity than the medium plates; whilst rapid and extra rapid plates require the presence of a restrainer. All these factors must be taken into consideration, as well as the development factor of the particular reducer used. With factorial development and controlled developer a far greater proportion of good results are obtainable than by the older hit-or-miss style of judging the result. Factorial development is the only possible method for scientific work, such as three-colour negatives, microphotography, etc. By the use of time development (factor controlled) intensification and reduction are seldom required. It is invaluable to the beginner and a help to the expert. Development itself is only one of the many stages between the glass plate and packet of gelatine to finished negative, and time plays an important part in all these stages. Time has a great influence on the sensitiveness of the film during coating and drying, and quite as great upon its exposure to light; therefore it is the height of absurdity to deny that a time factor is not applicable to what may be called the last, but not the least, stage in the making of a negative.

The discussion was opened by Mr. Rapson, who took exception to the statement that studio exposures were uniform, as he had found the light fluctuate very much during the day. Mr. Rapson preferred to use time development for three-colour negatives on account of the dim light necessarily used, making it almost impossible to see the first appearance of image. Mr. Thomas asked why could not an exposure on an open landscape and a crypt be developed in the same dish if both had received the proper exposure. Mr. Pennett said that all negatives must be developed to suit the printing process, and that could only be done by

a suitable modification of the developer. A flat landscape would have a ratio of contrasts, probably 1 to 10; the crypt 1 to 500 or 600. When the exposure is made the photographer should decide what sort of a negative is required, and developer mixed according. Personal experience will tell how far to go; time should not enter into the question at all. He had tried all methods, and the diagrams shown were the results of own measurements, confirmed by independent testimony. Mr. Thomas could not see why both time and factorial development should be condemned, and said that probably the truth lay somewhere in between the opposed method.

The London and Provincial Photographic Association will have an outing to St. Paul's Cray Common, Chislehurst, on Saturday, June 25, and a supper at the Bickley Hotel, near Chislehurst Station. Reserved accommodation will be provided on the train leaving Cannon Street Station at 2.20 p.m., and on the return train leaving Chislehurst at 10.6 p.m. The supper will be served at the Bickley Hotel at 7.30 p.m., Mr. Oscar Hardee, photographer, Chislehurst, presiding; Mr. R. J. Kindon, hon. secretary, occupying the vice chair. Members and friends should apply for tickets (price 5s. 6d., including return railway fare and supper) as early as possible, so that adequate arrangements may be made, both for comfortable travel and efficient catering at supper. Tickets are obtainable from Mr. W. T. Wilkinson, 226, Malpas Road, S.E.

CROYDON CAMERA CLUB.

JUNE 1.—An ingenious and inexpensive little device recently introduced by Messrs. Houghton for daylight development was shown by Mr. E. A. Salt at an informal meeting, the spring session having closed. In form it presents a flat rectangular case of transparent ruby celluloid, open at the top to allow of the plate's insertion, which is effected under cover of a portable changing-bag, the aperture at the same time being covered with a close-fitting lid. One wall of the case is recessed, to allow free access of the solutions to the sensitive surface of the plate. The developer is fed in through a pipe, which extends up one side of the case, and a tap allows the developer being withdrawn, and the plate washed and fixed. A plate was successfully developed and fixed without any apparent difficulty, although some misguided amusement was shown at the operator's omission to turn off the tap at the start, and thereby receiving a considerable proportion of the developer up his sleeve. He stated he had no previous experience with the appliance, which appeared a trifle obvious. Mr. Dunmore somewhat pointedly asked if a discussion would be permitted. Mr. Salt removed his coat and said, "Certainly." The former speaker then changed the subject, and produced a series of negatives on plates all taken from one box, which were covered with minute spots shining with the lustre of gold; he wanted to know the cause. The President, Mr. S. H. Wratten, said he had never seen anything of the sort before, but had little doubt the spots arose from particles of some foreign matter settling on the film.

News and Notes.

We have been informed that the publication of the "Optical Lantern and Cinematograph Journal" will be suspended till October next.

PHOTOGRAPHIC CLUB.—At an adjourned meeting of the committee on June 8, it was decided to call a special general meeting of the members at 8 p.m. on Wednesday, 22nd inst., to receive a report of the committee with regard to the present position of the club, and to adopt such measures as may be deemed advisable in its interests.

SINCE the publication of our Jubilee number we have been in receipt of numerous excellent suggestions re the B.J. Encyclopædia. We have decided to take advantage of some of these, the inclusion of which will necessarily delay the appearance of the introductory chapters. A further announcement regarding the work will therefore be made in a future issue.

The Savage Club.—In recognition of his services to the Savage Club as hon. secretary and "as a mark of friendship and esteem," Mr.

E. E. Peacock was presented on Saturday night with an illuminated address and a silver bowl, together with a diamond bracelet for his wife, and a cheque representing the balance of a subscription from 300 members. A handsome clock was also presented to Mr. Peacock by the staff of the club.

NATURE STUDY.—A nature study museum has been opened at George's recreation-ground, adjoining St. George's Church, Southwark. The museum, which is a branch of the Stepney Borough Museum, and is under the direction of the Public Libraries Committee, has been established for the exhibition of simple and common forms of life, with the hope that it may be used by the schools of the district, as well as by the public. It is intended to arrange short courses of lectures on the various forms of life shown.

THE ROYAL PHOTOGRAPHIC SOCIETY.—A technical meeting was held at 66, Russell Square, W.C., on Tuesday, June 28, 1906, at 8 p.m., "On Instruments for Sensitometric Investigations, with Historical Résumé," by C. E. K. Mees and S. E. Sheppard. Synoptic Coating machines; a new machine for accurately coating plates in small quantities. Exposure instruments: an enclosed instrument the Hurter wheel, with a standard acetylene light; a device thermostat for the control of temperature during development. Photometers: the Hüfner spectrophotometer and some new fittings for the measurement of plates.

OPEN SPACES IN SURREY.—On the summit of Colley Hill, Reigate, on Saturday last, a large undulating stretch of land, which had been presented to the borough by Mr. George Taylor, of the well-known firm of A. and G. Taylor, in memory of Queen Victoria, was formally opened as a park by Viscount Middleton in the presence of several thousands of the inhabitants. Viscount Middleton said that several favoured spots should be rescued from the builder. There were over six hundred different tracts of common or village greens within Surrey, and there was no other county in England of the size of Surrey which possessed so many open spaces for the public.

SALISBURY CAMERA CLUB.—A Camera Club has been formed in Salisbury and district, and a provisional committee has been elected to make the necessary arrangements. It is suggested to hold meetings in the winter for discussions, demonstrations, exhibition of lantern slides and prints, and other matters of interest. Photographic outings will be held during the summer months. Various photographic papers will be taken, and circulated amongst the members. Any persons interested in photography, and desiring further particulars, are requested to communicate with Mr. C. Osmond, honorary secretary, pro. tem., "Glenthorne," London Road, Salisbury.

DEATH OF MR. W. J. ROUTLEDGE.—The photographic societies of the north have suffered a sad loss by the demise of Mr. W. J. Routledge, who died suddenly whilst at his business on the 7th inst. The deceased was hon. secretary to the Gateshead Camera Club, and also acted as one of their delegates on the Council of the Northumberland and Durham Federation. Well known as a lecturer and demonstrator amongst the local societies, and being tactful and genial, he made many friends, and his services were always at their disposal. He was personally attracted towards the pictorial side of photography, and his work more than once received awards.

THE HULL PHOTOGRAPHIC SOCIETY visited Newbald and Houghton Woods last Saturday afternoon. The church claimed most attention from the fact that it is a fine specimen of Norman architecture, and an excellent state of preservation. The doorways, font, and beautiful arches were much admired, as well as photographed. The outing of this society have been, we understand, remarkably well attended, due, no doubt, to the determined effort on the part of the officers of the society to make each item on the syllabus both profitable photographically and socially, and so far this has been warmly appreciated by the members. The next outing, to Burton Constable, on June 25, will be in the nature of a picnic. Arrangements are being made, which include permission to the grounds of the Hall.

ROYAL INSTITUTION.—A general monthly meeting of the members of the Royal Institution was held on the 6th inst., his Grace the Duke of Northumberland, K.G., president, in the chair. Mr. Richard Bagot, Mr. W. Carrington, Mr. E. G. Fellows, Mr. W. R. Freeman, Mr. R. F. Nicholson, and the Hon. C. A. Parsons, F.R.S., were

members. The sincere thanks of the members were returned to Andrew Carnegie, who is so intimately associated with the steel industries, for his donation of £1,200, to enable Mr. Dewar and Mr. R. A. Hadfield to prosecute their joint investigation on the physical property of steel and other alloys at various temperatures, and to Dr. Frank McClean for his donation of £100 to the research fund of the Royal Institution.

A radium clock, which will keep time indefinitely, is the latest invention. The principle of this apparatus is simplicity itself, the rate of time being made in two-minute beats, whilst its function is to exhibit the dissipation of negatively-charged alpha rays by radium. The clock comprises a small tube, in which is placed a minute quantity of radium supported in an exhausted glass vessel by a quartz rod. To the lower end of the tube, which is coloured violet by the action of the radium, an electroscope formed of long leaves or strips of silver is attached. A charge of electricity in which there are no beta rays is transmitted through the activity of the radium into the leaves, and the latter thereby vibrate until they touch the sides of the vessel, connected to earth plates, which instantly conduct the electric charge, and the leaves come together. This simple operation is repeated incessantly every minute until the radium is exhausted, which in this instance would occupy thirty thousand years.

At the Counter.—One often hears curious things asked for over the counter, but the photographic dealer surely gets more curious queries than most trades. "Houghton's Monthly" tells us:—The day a pretty girl came into the shop and asked for some photographic paper, and seemed quite upset because a tube of ordinary photographic paper was given her. She said she particularly wanted the tube that she had asked for, because it had such a pretty name. The dealer was sure other dealers stocked it if they didn't. Then he remembered, too, of a case where a man came in and returned a photograph, saying that the lens was faulty because the image on the photographic screen was upside down. He said that he thought at first it was merely due to accident, and imagined that the lens had been fitted wrongly; yet he had tried to screw the lens in differently many a long time, but had not succeeded in getting the picture right way up. Could he have another lens? It took a good half-hour to explain that the lens and the camera were all right, and then he went out of the shop with the feeling that he had been deceived somehow.

Scottish Photographic Federation Excursion.—The first annual excursion of associates of the Scottish Photographic Federation, was held on Saturday last, when a representative assembly gathered from all parts of the kingdom. The arrangements were under the care of a small committee, consisting of Messrs. Munro (convener), Coates, and Baird, who were assisted in their task by Provost of Callander, and Mr. Arch. Menzies; the Provost unfortunately was unable to be present owing to illness. On arrival the party was photographed in the immediate neighbourhood of Callander. Then, with Ben Ledi, the bridge, and many fine tree studies; then to Roman Camp and Bracklinn Falls. After lunch in the Dreadnought Hotel, Blair's coaches took the party a delightful drive—witnessing scenes for photography—via Pass and Falls of Leno to Loch Lomond, where the inevitable group was taken, then via Kilmahog, to Gortchionzie Bridge to Loch Ness, and returning by Coilachalan Woods in time for tea. The whole outing—the weather was all that could be desired—was a very enjoyable—good fellowship prevailed, and there was much humorous stalling of better-known associates—and augured well for the success of future outings.

SYNOPSIS.—As the name implies, this is a new method of obtaining printed impressions from animal or vegetable life. The Journal of the Society of Arts for June 10 gives the following description of the process:—The subject to be reproduced is placed on a sheet of paper and pressure is applied; this leaves a hidden impression on the paper—strong or light, according to the amount of oil or moisture contained in the subject. This design is developed by the aid of a coloured powder, which is dusted over the impression; this brings the complete print into view in a permanent colour. If necessary, the impression can be made to remain undeveloped for a considerable time—three months have

elapsed between printing and developing some of the work done by the inventor. The process is specially adapted for finger printing, as it is no longer necessary to blacken the fingers with pigments. Pending the publication of the inventor's patent specification, full details cannot be published, but it may be stated that prints can be made on any ordinary paper, though the best results are obtained on the paper prepared for the purpose. The whole process is a speedy one, and takes less than a minute to make an impression and develop the print.

PHOTOGRAPHS of Old Pictures.—An association has been formed under the name of the Arundel Club, for the purpose of preserving and publishing records of precious works of art in private collections and elsewhere. The prospectus states that:—"All German and most American Universities are engaged in forming collections of photographs of all kinds of works of art of the past, from the days of ancient Egypt down to the Nineteenth Century. It is only in England that no such collection has been undertaken." A correspondent of the "Morning Post" takes exception to this statement, and says that it "argues a singular ignorance of the subject on the part of those responsible," and he points to the collection of photographs in the Victoria and Albert Museum. Sir Martin Conway writes in reply:—"As one who has often used that collection I venture to repel this accusation. The museum collection doubtless contains a great number of photographs, but it makes no attempt at historical completeness, as it is not primarily a historical collection at all. One such collection I know of in England, and one only. In it the attempt has been made to arrange the photographs in strictly chronological and geographical order from the earliest prehistoric epoch down to modern times. Between a collection thus arranged and a mere assemblage of photographs in boxes under the names of the artists to whom the original pictures are often wrongly ascribed, there is a difference not merely of degree, but of kind." Any persons interested in the undertaking should address the Hon. Secretary of the Arundel Club, Mr. Robert Ross, 10, Sheffield Gardens, Kensington.

ART and Literature.—Mr. Edmund Gosse, at the anniversary festival dinner of the Artists' Benevolent Fund, said that among the young art critics who ruled opinion at the present day—a race whom they admired and feared—no opinion was more fiercely or more scornfully repudiated than that there was any relation between literature and art. If they timidly reminded them that this was not the view of Hazlitt and Haydon, or, in later days, of Ruskin and Leighton, they proudly answered, "So much the worse for your Leightons and your Hazlitts." He would not deny that there had been occasions, and still might be, when art and literature had hung too languidly in one another's arms. He need but remind them of a flagrant example. During our late African misunderstanding there was produced a picture which professed to portray Lord Roberts in his tent, holding a baby Boer upon his knee, and teaching that sympathetic little fugitive to spell out its Bible, while his own orderly stamped with impatience at the door of the tent. That was a ridiculous work, in which they might almost say that art held open the trap while literature poured liquid sentiment down the sewer-pipe. But such examples—and others less flagrant than that—did not make him consent to that complete divorce between the painted and the written word which our latest critics desired. When Keats, some ninety years ago, was writing "Endymion," he saw the great Titian, the "Bacchus and Ariadne," which was now one of the glories of our National Gallery. It had then lately been brought to England. His imagination was completely inflamed by what he saw, and he went home to interpolate into the fourth book of his poem that magnificent passage about the noise of revellers that came over the light blue hills, which was in verse nothing else than what Titian's composition was in colour. He thought that this mutual relation between poetry and pictorial art was one which must be preserved, in spite of the abuse it had received from cheap and incompetent hands. It was right that art should pursue its own course, with complete intellectual independence; but it was to go too far, it was to limit the scope of its pre-occupation with beauty, to refuse to allow it to be influenced by poetic images and even by philosophical ideas.

"SRIHIT Photographs."—The claim that a sensitive plate on occasion will reproduce images of things that no human intelligence could detect in front of the camera, and that such images represent

materialised "spirit forms," is an egregiously impudent one. I would remind my readers of the remark of an old and experienced photographer, who said, when discussing this subject, "You can never be sure what a plate will develop." Dr. Russell's experiments on photography in the dark proved that sensitive plates wrapped in freshly printed newspapers would receive impressions from the paper without exposure. Let us suppose such a plate to receive the image of a face from an engraving, and to be afterwards used and developed in the ordinary way, and one may easily see how a perfectly natural phenomenon might be construed in terms of the supernatural. I can give another case in point. A lady during an illness was shocked by being shown a photograph, developed from a snapshot, in which she was depicted with a procession of nuns passing her by. The camera had not been used by her, and no recollection of a conventual scene was possible of being recalled. She had been snapshotted by a friend, but the nuns' procession appeared to her somewhat in the light of a disagreeable portent. The explanation came in the shape of a previous exposure of the plate in Italy. The procession was duly photographed, but a second exposure of the plate in her case resulted in her appearance in the somewhat mystical scene. It is in much the same way that you can have taken a photograph of yourself as you exist in the solid flesh, while alongside of you another self appears, ghostly and transparent, so that your friends can see through you perfectly. As for the spirit-photographers, they are simply tricksters all. Mankind, because of their savage origins, may never be able wholly to free themselves from the influence of superstition appearing as a factor which exercises an influence on their life and fortunes. He is the happy man who, discarding the idea of luck altogether, works while it is called the day, and determines that he alone is "captain of his soul."—KAY, in "The Referee."

BRITISH Exhibits at St. Louis.—In the department of chemistry (classed as a group in the Liberal Arts) Great Britain makes an excellent show on both the theoretical and the practical sides. In manufacturing chemistry so much notice has been bestowed on the triumphs achieved in Germany by synthetical carbon-chemistry, in the manufacture of artificial indigo and numberless other dyeing materials and in the production of new pharmaceutical preparations, that the public is in danger of forgetting that, after all, these carbon-compounds occupy only a small part of the whole field of chemical industry, and that apart from them there is a host of substances the importance of which is none the smaller because they have been known and used for a much longer time. This fact is illustrated by a wide range of British products exhibited in this section—phosphorus, sulphur, arsenic, bichromates, copperas, alum, cyanides, and all the varied products of the acid and alkali manufactures, not to mention pure drugs and pharmaceutical preparations. The exhibition, too, serves as a reminder that in pure research Great Britain has taken no insignificant part, and that in one particular branch at least she still retains the predominance won more than a century ago. "La Chimie," Wurtz declared, "est une science française." When one thinks of the names of Boyle, Black, Cavendish, Priestley, Davy, and Faraday, it may be said with greater truth that the chemistry of gases has been a British science, and the British exhibits at St. Louis suggest that, in spite of notable contributions by workers in other countries, such it still remains. During the last decade five new gases have been added to the list of those contained in the atmosphere, and this addition has been made by the joint efforts of two British men of science, Lord Rayleigh and Sir William Ramsay, the latter of whom shows specimens of the new substances. During the same period Professor Dewar has completed in the laboratories of the Royal Institution the work which was begun in the same laboratories by Davy and Faraday a century ago, and has reduced to the liquid and solid state all the "permanent" gases of the older chemists. One of the most striking exhibits at St. Louis is a reproduction, on an even larger scale than the original, of the apparatus used by Professor Dewar for the liquefaction of hydrogen. This apparatus has been constructed to the order of the Royal Commission from designs by him, and it is to be shown in operation at frequent intervals during the course of the exhibition. Further, in connection with this exhibit a series of lectures is to be given by Mr. J. E. Petavel on the scientific work carried out on the subject from the time of Faraday down to the present, and for this purpose a large quantity of apparatus, together with diagrams and lantern slides, has been sent over.

Correspondence.

- * * Correspondents should never write on both sides of the paper, notice is taken of communications unless the names and addresses of the writers are given
 * * We do not undertake responsibility for the opinions expressed by correspondents.

THE "B.J." JUBILEE NUMBER.

To the Editors.

Gentlemen,—As to the Special, it is really worthy of the old paper and does you as great credit as it must give you satisfaction. I was struck with were the portraits of some, whose names are familiar but who one has not met personally. Really, I should like to have a paper give us a collection of those who, in various phases of photographic work, one knows by repute, a kind of "Who is Who." It seems so different to what one had pictured.—With all good wishes and all congratulations, faithfully yours,
 W. THOMAS

2, Tanfield Court, Temple, E.C.

June 10th, 1904.

To the Editors.

Gentlemen,—I feel I must just send you a few lines congratulating you upon your Jubilee Number. It has given me the greatest pleasure to peruse its pictures and reading matter, and must have spelt "Well" with a very big "W." in its preparation. It will be prized, I am sure, as a pleasing souvenir and a valuable record of fifty years' progress in the photographic world, in addition to the interesting details of birth and fifty years' growth of your influential journal by the photographers of the world. Again my congratulations and best wishes for another fifty years' success to the "B.J."—Believe me, sincerely yours,
 NEWMAN, MAYALL AND CO.

91, King's Road, Brighton.

June 10, 1904.

From amongst a large number of congratulatory letters on the subject of the Jubilee Number of the BRITISH JOURNAL OF PHOTOGRAPHY that we have received we select the following extracts:—

"Congratulations on its bulk and interest."—GEO. E. BROWN, F.I.C.S.S. (London.)

"Permit me to congratulate you on your Jubilee issue. It ought to have the effect of increasing your output."—EDWARD DUNMUR (Southend).

"Congratulations on your Jubilee number."—RAINES AND CO. (Ealing).

"Having dabbled in photography for over forty-six years, I can well understand my appreciation. I congratulate you heartily for the most interesting reading I have had lately."—JOHN WHITEHEAD (Scarborough).

"Congratulations from an interested reader."—J. K. HOME CROFT (Portobello).

"Your Jubilee number is a brilliant idea, and is surely worthy of an extension. So many of the early fathers still have a memory amongst us, and no doubt you have many other portraits you can include in future numbers, even if only one or two a week."—ARCHER CLARKE (London).

THE DETENTION OF SPECIMENS.

To the Editors.

Gentlemen,—I notice in the last issue of your journal a complaint from one signing himself "Poor Assistant." I shall be glad to mingle my tears with his. I have replied to over a hundred advertisements, and also enclosed eighty-six stamps, without receiving a reply. I on one occasion sent the whole of my specimens as original testimonials, with sufficient stamps and properly re-addressed with boards for their safe return. That was some four months ago and yet they have not returned. I admit being fool enough not to keep the number and letter of the advertiser (he giving no name or address, for reasons best known to himself), but, of course, I thought I was at least dealing with an honourable person. The non-return of specimens or stamps to me was a puzzle, but on reading in your journal the article giving the information that they are teaching photography to the criminals in gaol, and successfully, I can quite understand my stamps and specimens never being acknowledged.

ned. I think if you would insert the above in your journal it be the means of at least an acknowledgment on the part of stamp collectors.—Believe me, sincerely yours,

ANOTHER POOR ASSISTANT.

To the Editors.

Gentlemen,—I notice this week a letter from an assistant coming of the treatment of himself by employers. I am of the opinion, as I now have my specimens in the hands of an entirely high-class photographer who has neglected to return whether wilfully or not, of course, I cannot tell. I have written requesting their return, but no notice has been given. I intend sending the gentleman (?) the price of postage in stamps, as perhaps he has had so many to return he is unable to affix a penny stamp. At any rate, few assistants have so many specimens that they can afford to lose what they have. I am of the opinion that it would not be a bad plan for every assistant whose specimens are detained beyond a week to expose the name of the employer in the JOURNAL for the benefit of other poor victims.—Yours faithfully,

A LADY OPERATOR.

The following notice appears in the advertisement pages of every number of the JOURNAL:—"** In applying for Situations where specimens are sent, it is preferable that they should be unmounted. In every case, the owner's name and address should appear on the back of each photograph, which would avoid confusion and facilitate return. Postage for return of specimens should always be enclosed." Much regret that we cannot devote further space to the discussion of a subject which so frequently crops up in our columns.—B.J.P.]

NOTE ON THE RESORCIN HYDROKINONE DEVELOPER.

To the Editors.

Gentlemen,—In April, 1901, I read, before the Croydon Camera Club, a paper, which was reprinted in the BRITISH JOURNAL OF PHOTOGRAPHY, April 26th, 1901. In that paper was given a formula for a developer which contained both Resorcin and hydrokinone, and which I at the time believed the Resorcin to play an important part. When I took up the study of development in 1902 with Mr. Sheppard, Mr. Sheppard told me that he considered the Resorcin in that formula to be utterly useless. At that time I had no opportunity for investigating the question, but I have recently worked the matter out in the following way: Two plates were exposed in a camera, so as to get a graduated series of known exposures. The first was then prepared without Resorcin, and one plate was developed for 30 mins. at 20 deg. C. in the developer without Resorcin. The correct quantity of Resorcin was then added to another portion of the developer, and the second plate was developed for the same time in this portion. On measuring the developed densities and plotting the results it was found that the addition of the Resorcin had greatly weakened the developer; in fact, the velocity of the development had been divided by four by the addition of the Resorcin. The cause of this weakening is fairly obvious; the Resorcin has no developing power of its own, but all the same it requires a considerable quantity of the hydrokinone, which would otherwise be available for the hydrokinone. I thus found that the Resorcin, so far from being an advantage, actually weakens a hydroquinone developer, nothing remains but for me to apologise to any whom I may have misled. I believe that the Resorcin was very little used, but it is certainly desirable that so great an error should be pointed out as soon as possible.

C. E. KENNETH MEES.

Windsor, Caterham, Surrey.
June 9th, 1904.

THE MEDAL QUESTION.

To the Editors.

Gentlemen,—The following figures, which represent accurately my own experiences as a consistent contributor to most of the exhibitions of the last season, may provide food for reflection to those who are interested in the medal and pot-hunting question. I have entered for fifty-one exhibitions this season, receiving fifty-one awards. These awards have been won by fourteen different persons. The cost of exhibiting has been as follows, viz.:—Entrance fees, £10 14s.; carriage, £8 2s.; repairing broken frames,

glass, etc., £4 11s.; framing bill, £36 19s. 2d.; photographic material £12 3s.; total, £72 9s. 2d.

This is a very serious bill for one exhibition season, but to set against that there is on the credit side the amount of £62 5s. received for the sale of pictures, and the medals themselves, leaving a net cost of £10 4s. 2d. It is just a little over twelve months since I first entered an open class at an exhibition; therefore, sir, you will understand what an amount of hard work it has involved and of scores of nights in the dark room and of the week-ends of printing, as practically the whole of this work has been done apart from the ordinary hours of business. I have long ago come to the conclusion that a thing that is worth doing at all is worth doing well, and it seems to me, sir, that if there was a little more enthusiasm and a keener desire to work amongst amateurs as a whole there would be less grumbling about pot-hunting, as they would become medal winners themselves.—I am, sir, yours, etc.,

ARTHUR MARSHALL.

King Street, Nottingham, June 9, 1904.

PSYCHIC PHOTOGRAPHY.

To the Editors.

Gentlemen,—What I will tell you here is not much of photography, but since you speak of psychic photography it may well find its place here, and as the following writings may not be well put down for printing in your BRITISH JOURNAL OF PHOTOGRAPHY, nor, perhaps, prove interesting to your readers, I will leave it entirely to you and your responsibility to publish it or not or write it down again yourself in a clearer or more satisfactory way, hoping you will understand what I mean and I am perhaps unable to explain well. After reading this you will probably take me for a heretic, but I cannot very well imagine the hereafter of a soul, and therefore nothing that can be photographed except pure imagination, which is shown by the dressing of the psychic photos, which is purely conventional, and as one imagines it to be, or should be, from former-seen engravings, modern or old costumes, and principally draped bed sheets. We have learned from childhood that nothing down here is eternal, and even radium, which is said to be so, has shown by calculations not to be so entirely, however incalculable years are thought to be necessary for its disappearance, yet not immortal, and then why should the soul be so, and be able to come back and be photographed? Another puzzle has always been to me to know at what age this soul comes back or shows itself to mediums. We have heard—at least I have read—of spirits of children which, having died as infants or below ten years of age, returning ten years later (these years more or less), at the age of twenty, with all the knowledge attached to that age and taught at school. How is that? Then we have parties that died at the age of forty always showing themselves at that age; these do not change or grow older. Why? Then we have spirits of people that died at seventy, and possibly eighty or more, that died from age and in infancy, or maybe lunatics. Do these show themselves through mediums or in bed-sheets or any other way as they were born, or at eighty in infancy both sides, or at what age and cured by magic at twenty, thirty, forty, or what?

Now, here is what would rather be my idea of what souls are made of and how their disappearance (and possibly later on their reappearance, if it is ever to be so) may be explained. Everything that is on this earth exists there and remains there. Nothing is added to it nor leaves it on account of the immense vacuum that exists around it. All that is on earth may suffer transfiguration and change-form, but does not disappear. Trees grow, make ashes, or decay, and from this other trees grow. Animals are born, die, and leave place to others, and even feed on each other. Why should not the souls act in the same way. To-day, in the reign of electricity, we find it everywhere and nowhere. Supposing that the soul is formed of something analogous which is itself found everywhere, but a fluid as yet unknown, and some explanation may be formed of why it should be there with more or less energy or knowledge in man, and yet completely disappear after the death of the body or battery that contained the mysterious fluid and stored it until it broke. Now, we have a baby that is born. It is a total void. It cries, but does it hear? It has eyes, but does not see. Feelings are very dull, if present. But it has a battery called brains, which is ready to receive all kinds of impressions. These impressions, which will form his mind and soul, are all around in the world, and ready to assimilate themselves with the matter ready to receive them, and in proportion

to the development of each cell which is in each brain. Something like the anteurs, which are now ready to receive the new wireless telegraphic messages and retain it. To help this assimilation and storage we have first mother and father, then the professors, etc. Later on sickness may rob a party of some of its faculties so acquired, and at last, when death arrives, the whole resolves again in the air to be acquired again by a new battery. This would explain why some parties are more ready to receive impressions than others, development of one thing to the detriment of others, and why some whose receptacle is defectuous will never be able to understand or acquire one thing or the other. But this would be pretty much the end of psychic photo, or return in one body of a separated soul, except something else happens and another explanation. Maybe a medium will be able some day to reconstitute the particles disappeared at death, but then, how can we reconstitute the body to the photographer? There is the mystery.

I give you the above idea for what it is worth. Do with it what you please. It does not mean that there is no God, but tries an explanation of things existing.—Yours very truly,
A. LEVY.
Asnières (Seine), June 4, 1904.

To the Editors.

Gentlemen,—It is to be regretted that your correspondent, Mr. D. Bachrach, should have so hastily assumed fraud in the photographs which he examined because a few of them presented the appearance of screen work. The majority do not, and therefore should have suggested careful inquiry as to the why and wherefore of the difference.

Claïrovoyants have occasionally during certain sittings described to me that the spirit sitters were behind a kind of auric veil or netting, the mesh of which varied in size with the individual. Mr. B.'s own experiences of twenty-five years ago, for which, of course, he expects full credence, should have made him more considerate towards others who obtain abnormal results on their plates. His testimony is, however, very welcome, as it may stimulate others to find out that everything must not be put down to halation, fog, etc.

A lady of my acquaintance, strongly mediumistic, has been the despair of several photographers, who have been quite unable to take a good normal portrait of her owing to curious lights always appearing.

Considering that photographs or representations of spirit faces, designs, and other markings have frequently been obtained in total darkness, both with and without the use of a camera, it is futile to argue, as does Mr. N. Maskelyne, that the photographs must be fraudulent because some of them are not according to what the usual laws of photography would lead us to expect as to lighting, etc.

Though I have made a close examination of many of those Mr. Maskelyne refers to, I have not been able to find any in which the aura is of a woven texture.

In full materialisation this is the case, and on several occasions the spirit visitors have, by request, cut off small pieces of their spirit drapery, some of which has afterwards slowly dematerialised, while others have remained.

Replying to another point, I have many spirit portraits of those who lived prior to the photographic era, but they do not differ in any way from the modern ones.

The spirit workers can, however, through the means of a suitable medium, reproduce the appearance of an engraving or picture should they so desire, and seeing that it is reported that we can by the aid of electricity do the same at the other end of the wire, it would not be so surprising if they could do likewise by a kind of wireless telegraphy.

We should also remember that nearly 20 years ago Mr. A. R. Chatwood succeeded in reproducing on a sensitive plate the image of a piece of printed paper at which he had steadily stared for a considerable time, and the spirit workers, with their more extended powers, may be able to do this with the quickness of thought.

Mr. Maskelyne most conveniently leaves out of his reckoning the evidence of various clairvoyants who have repeatedly seen the spirit visitors taking up, and sometimes altering, their positions by the side of the sitter, and also that in very many cases the spirit friends have in this way fulfilled promises made by them, in some cases thousands of miles away.

Had the duplicate rabbit marks referred to been produced by double exposure, the prints would naturally have been carefully cut down.

One explanation of these has been suggested by Mr. Levy in letter.

In the United States there are two or three photographic mediums who obtain spirit faces when copying a photograph.

In my own case I am surrounded by fourteen faces, and five of them have been previously taken with me in a different pose in London and Washington. The photographer is a complete stranger to me, has taken over 1,300 during the last few years; they are all different and each showing a number of faces. I trust that now the question is being so thoroughly ventilated, we shall hear of others in country who may develop this phase of mediumship, and that will have the courage to come forward and further prove that spirit photography is a fact.—Yours faithfully,
H. BLACKWELL.

June 13, 1904.

P.S.—In your report of the discussion which followed the reading of my paper on the above subject, your reporter has unintentionally misquoted some of my replies. With your permission I will correct in your next issue.

To the Editors.

Gentlemen,—There is much that can be said upon spiritual manifestations that you, I take it, could not admit into the "B.J." Therefore, I will endeavour—difficult though it be—to confine my remarks to its photographic phase. I attended the meeting of the London and Provincial Photographic Association, at which Mr. Blackwell lectured. I took a camera and plates, hoping that perhaps I might get a chance shot or two at the spirits. But I understand, from Blackwell's reply to my query, that my camera would have to be magnetised before I could succeed, so I did not try. Perhaps some day I may reach a higher astral plane (I think that is the proper term) and be able to magnetise my own apparatus; meantime, it seems to me that a good business could be done in ready magnetised cameras and plates, if only Mr. Blackwell would put one of our large medium or dealers in the proper way of going about it, otherwise I fear there is little chance of the ordinary or garden photographer ever attaining to the higher ranks of the cult. As the case stands, one has to have his camera magnetised, employ a medium (they make a charge—naturally), and expose a large number of plates and yet get no spirit photograph whatever. One is apt to get tired of this negative result, and cease to persevere. I cannot imagine anything less calculated to remove that wall of prejudice with which we are said to be surrounded and which is such an insuperable barrier to our progress.

It was not till after the meeting was over and we had left that I knew we had had a clairvoyant, who was also a clairaudient, as we the whole evening, and he told me that our old friend, Traill Taylor was standing between Mr. Henderson and myself, laughing at Henderson's remarks. I cannot help regretting that this opportunity of communing with him was lost to me, an opportunity that probably will never occur again. I think he should have spoken at the time. I also had some very serious talk with a member of the London Provincial, who has gone into the matter a great deal. Among other things, he told me that everybody could become a medium. It is a mere question of striving to be one, believing in it, and persevering while to others it comes as a gift. This is only reasonable, for do not know that while some of us are born, say fools, others only grow so. Moreover, he advised me to have nothing to do with spirits, as he knew of so many cases where nothing but disaster followed. He tells me that good spirits are not permitted to appear to mortals; it is only the evil ones who do so, and they take delight in deceiving, annoying, and punishing those who meddle with them. This is a great comfort to me, and probably explains why I have not succeeded in my wish to communicate with the departed. I take it that those I wished to communicate with are too good to get leave to come. To those who wish to try psychic photography, I may add, I elicited from Mr. Blackwell that the exposure for a spirit "ranged from a snap-shot to one minute," but as most of the slides shown that even represented a human being besides the spirit, no matter whether it was in the nebulous form or materialised, it would appear that you must have to trouble yourself about the correct exposure for the mortal, spirit adjusts itself to this. For myself, at least for the present, I think I shall take my friend's advice and leave spirits alone.

Walthamstow.

ALF. J. BROWN.

Answers to Correspondents.

All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.

Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless names and addresses of the writers are given.

Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., Wellington-street, Strand, London, W.C.

For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

Dean, 14, High Street, Rugby. Photograph of Men Leaving British-Thomson Austin Co. Works, Rugby.
Burton & Sons, 8, Haymarket, Leicester. Three Photographs of the Last Sir-day head in the Humberstone Gate, Leicester, May 16, 1904.
Kime, 116, St. James' Street, Newport, I. W. Photograph of Second Sherwood Foresters' Football Team 1903-1904.
Tate, Main Street, Westford. Photograph of The Most Rev. Dr. Browne, Lord Bishop of Ferns.
H. Gardiner, Daneway, near Cirencester. Photograph of the Church of St. Melinus, Sapperton. Photograph of Daneway Wharf, Thames and Severn Canal.
Cock, 35, Longbridge Road, Barking, Essex. Photograph of the late Rev. J. McDonald.
Kilks, Exchange Street, Retford, Notts. Two Photographs of Mr. F. Newman.
Don Photographs of the Rt. Hon. Sir F. Milner Bart., M.P.
Tattersall, 55, Avenue Parade, Acclington. Three Photographs of Opening Ambulance Drill Hall, Acclington.
S & Nixon, 200, Bank Street, Alexandria, N.B. Photograph of the Rev. W. Blachier.
Hence, The Station, Station Road, Dunbar. Photograph of Highland Cattle.

WORKING REGISTERED:—

Horton, Wansford House, Sunny Hill, Halton, near Leeds. Drawing of the H. P. "Advertising Curtain.

REF.—We know nothing of the matter, and cannot help you in it.

ADOLPHUS.—Your query, as you say, in no way relates to photography, and we are sorry we cannot help you. We might suggest, however, that you consult a dealer in art metal works. He might be able to restore the bronze statue for you.

PLAT-TINS.—"PLAT-TINS" asks: "What can be done with these? Will any one give anything for them?" In reply: Unless the Platinotype Companies will, we do not know of any one else who would. In future, please write on a sheet of paper instead of a post-card.

MOND.—If you will carefully read the Rev. T. Perkins' article again, you will see that the price mentioned does not include the cost of the block, which, as the author says, will be about half a guinea extra. This brings the price up to those you quote.

GMATIC.—It is quite without our province to criticise what appears in the pages of a contemporary, or to pass any opinion upon it. It is certainly not our intention to adopt the suggestion you make. Your best way will be to study the works of the best artists, and emulate them. The prints sent are tolerably good.

TRAVELLER.—"TRAVELLER" asks: "Will you kindly pass your opinion upon enclosed prints? These were taken by Field Camera, with R.R. Lens; 1 and 2 were taken in a room; 3, 4, and 5 were taken outside. These have not been picked, but are from my ordinary work. What class should they pass under?" In reply: To be candid with you, it is very poor work, say, third or fourth rate.

INQUIRY.—"I shall be much obliged if you will kindly give me your opinion of my retouching. I have enclosed a few prints, taken both before and after retouching. The negatives from which they are taken are not very good, but the only ones to hand." In reply: The work is but fairly good. Much of the modelling in the faces has been destroyed in the retouching.

A LEGAL QUERY.—FREE PHOTO SYSTEM asks: "Could I post the enclosed warning up in my shop window, also insert it in our local paper, without making myself liable to law?" In reply: We should think you could; but before doing so we think you should consult your solicitor. If you are a member of the Professional Photographers' Association it will assist you in the matter.

COPYRIGHT QUERY.—REPRO says: "Would you give me your opinion upon the following case? I photograph a professional gentleman, present him with a dozen copies, and register the photograph copyright. He then purchases from me a dozen copies. 1. Does that purchase destroy my right to possession of the negative and the copyright? 2. Has he the option of giving permission to reproduce?" In reply: 1. No; certainly not. 2. No; the copyright is yours, not his.

WOODEN DISHES.—ARTEMUS asks: "Is it practicable for me to make dishes of wood, say about 25 in. by 21 in., for fixing and washing bromide enlargements in? If so, what should I caulk the joints with to make watertight? and should the whole inner surface of the dish be also covered with any preparation? If so, what?" In reply: Yes. If you are a good carpenter the joints will not require caulking. The inside should be coated with some impervious-to-water material, such as pitch mixed with a little tallow or paraffin wax.

COPYRIGHT QUERY.—"F. E. G." asks: "Will you kindly say if registering photographs as follows is in order? A gentleman was invited to sit for his portrait, and after some difficulty he agreed, and in due course a print was sent to him; meantime, registration forms were obtained, but on same day as this was sent to Stationers' Hall, I received an order for a number of copies. Would this invalidate the registration?" In reply: If the portrait was taken at your solicitation, and was not paid for by the sitter, the order for copies will not invalidate the copyright.

EMPLOYMENT WANTED.—"B. B." says: "On the other sheet of paper I give you my qualifications. I am anxious to procure a berth with some firm or private gentleman not in the ordinary photographic business, and I think your advice would be of great help. If you would kindly give me your opinion how I might possibly get such a berth. I have thought of trying to get in some observatory, if they employ photography." In reply: The only suggestion we can offer is that you advertise your qualifications and requirements in the advertisement columns of the JOURNAL.

MOUNTING.—"MOUNTANT" asks: "Would you kindly let me know what is the best mountant for sepia platinotypes, when they have to be mounted on a very thin mount? I have tried starch and flour, and even kept them under pressure after mounting, but they buckle when dry, and will not keep their flatness for any length of time. I shall be glad if you will help me in the matter." In reply: The best system of mounting in these circumstances is that of the Dry Mounting Company, Fetter Lane. E.C. They will mount the prints for you. The mountant given on page 1,071 of the "Almanac" is a good one for the purpose.

COPYRIGHT QUERIES.—"COGNITO" asks: "Would you be good enough to answer the following questions? (1) Would it be an infringement to copy a picture which had been made copyright, but was not so marked? (2) Assuming that the answer to question (1) is as follows: 'Yes; it is an infringement,' what legal steps could the holder of the copyright take in the case of an infringement? (3) Is it absolutely necessary that a copyright picture should be marked 'copyright'?" In reply: (1) Certainly it would. (2) Sue for penalties (not exceeding ten pounds per copy), damages, an injunction to restrain the production of further copies, and the forfeiture of all prints, negatives, etc. (3) Not at all.

CELLULOID.—IGNORANT asks: "1. Of what is celluloid composed? 2. What is its cheapest form, and its cost? 3. What are its cheapest solvents and their cost? 4. Also, I have some old views of local buildings (long since demolished) not taken by me. Should I be right, legally, in offering them to a firm of postcard publishers? Some I have copied and possess the negatives, others only prints. I know the pictures have not

been copyrighted in any way. I shall be very pleased to know your opinion." In reply: 1. Nitro-cellulose and camphor. 2. The price depends upon the quality. Better get the price from the makers. 3. Probably acetone. From about 1s. a pound. 4. Yes, if there is no copyright in them.

WATER RATE.—"WATER" writes: "I should be very much obliged if you will kindly help me by answering the following. When chance permits I do professional work, portraits, etc. I have just had some cards printed and circulated. I have no studio, and do not use a great quantity of water. To-day I have received a water rate demand note for 2s. 6d. for one quarter. (1) Am I obliged to pay this in addition to the usual one of 7s. 7d. per quarter? (2) If so, is 2s. 6d. the correct charge? I might mention this is a private house." In reply: (1) If you use the water for trade purposes, as apparently you do, you will be charged extra for it. (2) Each water company have their special rates, and the extra rate charged to you seems to us very moderate.

DEVELOPER.—"COB" asks: "Would you kindly inform me (1) which self-toning paper you consider best suited for proofs? I prefer dark chocolate colour, or near it, if possible. (2) Also, of a good developer for bringing out detail in white dresses, etc. I should prefer to use dry pyro, if possible. Or a formula for pyro soda, for using dry pyro. (2) How could I obtain several prints as specimens of good posing and lighting?" In reply: (1) It is, as we are continually saying, against our rules to recommend any particular maker's goods. (2) Any developer will answer if it be used somewhat diluted. (3) We should say that the best way would be to purchase some of the portraits of celebrities, taken by the best photographers, as shown in the shop windows, and study them.

STUDIO BLINDS.—E. WEST says he should be glad of advice on the following: "I have a small studio, 18 ft. long, 9 ft. wide, 6 ft. to eaves, 9 ft. from floor to ridge. Can you advise me the best way, and material for blinds, to light same to get best results? Have drawn rough sketch below. There is 8 ft. of glass, as shown, 1 ft. from background end." In reply: As the aspect of the studio is not stated, it is not really possible to say what is the best colour to use for the blinds. If the studio is lighted from the north, light blue blinds would be suitable. If from the south, then a dark green would be preferable. Curtains would be best for the sides, and blinds for the roof. It is a pity that the 8 ft. of glass was not placed more in the middle of the building, say, commencing 4 ft. or a little more from the background end.

MOUNTING GLOSSY PRINTS.—"MOUNTANT" writes: "On page 451 of the BRITISH JOURNAL you recommend treating glossy P.O.P. to a formalin bath before squeegeeing on to the ferro-type plate, saying that after becoming dry the prints may be dipped in water, and mounted in the usual way. By adopting this treatment, could any starch paste be used for mounting (I use Higgins' at present) without injuring the glossy surface, or is a special gelatine mountant required? If so, would you kindly give particulars of same?" In reply: If you read the article again you will see that we did not recommend the method. It was extracted from an American journal, to whom we credited the suggestion. Personally, we have not tried the method, but we have little doubt that it is all that is claimed for it. The mountant you are using, we should say, would answer quite well.

FLASHLIGHT COPYING.—G. BELASCO says: "Kindly give me the following information, as I am very fond of photographing old carvings, either portable, or as fixtures. I wish to photo some very old and beautiful oak (black) wainscot and overmantel work, but situated in a very dark hall, where little or no light penetrates, and to accomplish this critically, I wish to know the following items of interest: (1) the lens; (2) the stop; (3) time of exposure; (4) the plate; (5) whether ribbon, or dust magnesium as a flash, in fact, just what you would do yourself; (6) if ribbon, what length, if powder, how many flashes repeated (single), and in what position the light to shine on the work?" In reply: (1) Any lens that will cover the size plate you require. (2) The largest that will yield good definition all over the plate. (3) That will depend upon

the intensity of the light. (4) Any ordinary plate of med rapidity. (5) Ribbon would perhaps be the better. (6) This is quite a matter of judgment, and as we do not know subjects, we can give no opinion. Why not employ daylight? The subjects will not move, and any length of exposure may be given.

COPYRIGHT INFRINGEMENT.—X. Y. Z. writes: "I am sending you paper and pictorial postcard. The stationer who issued the card had permission from me to reproduce photograph (of which I have copyright) on condition my name and word 'copyright' be printed. The newspaper has pirated the same, and completely ignored me. I would not have troubled you in this matter, as I have consulted a solicitor, but after reading often in your valuable journal the advantages of the Copyright Act, I was surprised at his (the solicitor's) advice, which was to take no further action, although he admits I have a claim and would receive damages, which, in his opinion, would exceed £5. He also informs me they could prove that it in no way hurt the sale of my photographs, and in that case might only be awarded a farthing damages. Even at best would make no more than pay expenses. What I should like to know, should I ask a sum of money to prevent it going to court, and, if so, what would be a reasonable amount to ask, and in the event of them not complying would you advise me to proceed farther?" In reply: Legally, you have cause of action if the case be as stated in your letter. But as you have consulted your solicitor we should say you should act on his advice, which seems to us perfectly sound, particularly as the newspaper has since explained in its columns that the copyright is yours. Your solicitor might, possibly, obtain a small sum from the paper, which they would perhaps pay to avoid litigation. This query is further dealt with in another column.

SIGHT Tests in the Mercantile Marine.—The report of the sight tests in the Mercantile Marine for the year ended December 31, 1903, has been issued as a Parliamentary paper [Cd. 2,111]. It states, in three tables, the details of each case of failure reported, the percentage of failure in form vision and in colour vision to the total number examined, and the nature of the defect in each case of reported colour blindness. The number of candidates of competency as officers in the Mercantile Marine and others who were reported to the Board of Trade as having failed to pass the form vision, colour vision, or colour ignorance tests last year was 40—19, or a percentage of 0.47 out of 4,641 candidates, having failed in form vision, and 21, or percentage of 0.45 out of 4,622 candidates, having failed in colour vision. Among the failures in colour vision there were four cases of complete red blindness, or 19.0 per cent. of the total number of failures, and .09 per cent. of the total number examined for colour vision; two cases of incomplete red blindness, or 9.5 per cent. of the total number of failures, and 0.4 per cent. of the total number examined for colour vision; nine cases of complete green blindness, or 42.9 per cent. of the total number of failures, and .19 per cent. of the total number examined for colour vision; and six cases of incomplete green blindness, or 28.6 per cent. of the total number of failures, and .13 per cent. of the total number examined for colour vision. Appended to the report is a chart of specimen colours of the various series of skeins used in the examinations.

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THE BRITISH JOURNAL JUBILEE NUMBER.

Special Jubilee Number of THE BRITISH JOURNAL OF PHOTOGRAPHY, which we published on Friday, June 10, met, we are pleased to say, with a most cordial and favourable reception at the hands of the photographic public—indeed, the success achieved was so striking and instantaneous as to cause even ourselves, who had anticipated the Special Number would secure a wide degree of appreciation, the liveliest feelings of gratification and assure at the chorus of commendatory approval meted out to the issue.

Several extra thousands of the Special Jubilee Number have been printed, and they are selling rapidly at the ordinary price of twopence per copy, or by post twopence-halfpenny. The number consists of a total of 132 pages, and forms the largest ordinary issue of any photographic journal ever published in the United Kingdom. The contents include thirty special articles by the foremost photographic authorities of the time; a history of THE BRITISH JOURNAL OF PHOTOGRAPHY since its foundation; and about twenty original portraits of celebrities connected with photography; thus forming a unique and most interesting souvenir of the Jubilee of the oldest photographic journal in the world.

As this souvenir number of the JOURNAL is in such demand, and is shortly likely to be scarce, readers at home and abroad who have not yet secured a copy are advised to do so without delay.

EX CATHEDRA.

Still Another Property of Radium Discovered.

When shall we know all that radium will do, or what it will not do? Every week—almost every day—brings forth some new discovery of its most remarkable properties. Last week Sir Wm. Crookes, at the Royal Society, communicated some curious observations illustrating the effect of radium emanations on the diamond. It appears that when a crystal is exposed to the impact of radiant matter it becomes phosphorescent of different hues, and assumes a dark colour. After a long exposure it becomes almost black, though the time for that varies with different stones. This coloration seems to be due to the formation of a coating of graphite—a form or carbon—on the gem. Sir William said he had also found that by a different method of applying the radiant matter the colour of the diamond was altered without the formation of a crust, which was suggestive of a chemical as well as a physical change. By this treatment it was suggested that it may be possible to improve the value of gems by deepening the colours of those which are but slightly tinted. Should the above method of treatment of precious stones turn out to be practicable in a commercial sense, we imagine that some of the dealers in gems will not be slow to take advantage of it, because we all know that the value of gems is greatly dependent upon their tints or colours. If these can be changed from those of comparatively little value to those of greater worth, even if the cost of doing it is great, it may prove remunerative, particularly with gems of the larger sizes.

* * *

Interesting to Hand Camera Workers.

Hand camera workers, who used to delight in snap-shooting the vessels and barges moored in the lower Thames, much regretted the suspension of the penny steamboat service. The boats now plying between Westminster and Greenwich every twenty minutes throughout the day gives them the opportunity of continuing their work, which they have been unable to do for the past season through the withdrawal of the boats. Vessels of all sizes group well, and at all times make, with suitable lighting, good pictures. The dismal looking tug, vomiting forth dense masses of black smoke, followed by a string of heavily-laden barges, with a background of wharfs, usually makes an excellent picture. In the docks, too, no end of fine pictures are to be obtained, either with a hand or a stand camera. When taking the annual holiday at the seaside London amateurs rarely fail to embrace the opportunity, and it is a little surprising that they seem to quite ignore the shipping on the Thames, which is available to them all the year round. Now that the boats are again running, there will be ample work for the hand camera on the lower Thames—between London Bridge and Greenwich. The vessels of all

nationalities moored in the Pool and in the docks make excellent subjects for hand camera work, and may well be obtained from the steamboats. Indeed, a dozen, or a couple of dozen, plates may be profitably exposed going and returning, between London Bridge and Greenwich, any fine afternoon—Saturday or any other. Of course, in making the exposure from a moving boat it must be brief. Therefore a quick shutter, rapid lens, and highly sensitive plates should be employed if sharp pictures are desired. With these there is no difficulty in obtaining excellent results from the river steamboats now running.

* * *

The Art Season.

Those who glance through the advertisement columns of the daily press need not be reminded that the picture season is now "full swing." The Royal Academy and all the other annual shows are open, as well as some additional ones. For example, at Earl's Court there is an exhibition of Italian pictures that are well worth seeing, and, recently, a loan exhibition of Irish pictures was formally opened at the Guildhall Art Gallery by the Lord Mayor, accompanied by the Lady Mayoress and the Sheriffs. The pictures shown, it should be mentioned, are by Irish artists, as there cannot be said that there is an Irish school in art in the sense that there is a Dutch school, a Flemish school, an Italian, or a French or English school. The pictures shown are, however, by Irish painters, and amongst them are some very fine works by the best masters, though perhaps not their very best pictures. There are works by MacIise, Mulready, Shannon, Brabazon, Hayes, Asborne, Lavery, and many others. The pictures that will probably attract the greatest attention by the general public are those by Mulready, by reason of their vivid colouring and exquisite drawing. Amongst this artist's work is the "Choosing the Wedding Gown." This picture, it may be remembered, was the one selected for the Society of Arts competition some few years ago, for the substantial prizes offered by it for the best photograph plate, untouched, from a picture. If at any future time there should be a competition for a good size reproduction of a painting in colours by means of photography, we cannot call to mind a better subject for it than this picture. Anent art makers, it may be mentioned that at a sale of pictures at Christie's on Saturday last, some very high, if not record, prices were realised. For instance, a Gainsborough, a portrait, fetched 3,300 guineas; a Reynolds, also a portrait, made 4,000 guineas; while a Turner, "Walton Bridges," was knocked down to a firm of picture dealers (Messrs. Agnew and Sons) for no less a sum than 7,000 guineas. The total amount realised at this one day sale was between fifty-eight and fifty-nine thousand pounds.

* * *

Sight Testing.

The Spectacle Makers' Company is one of the few old City companies that are taking really active measures in the furtherance of the crafts they are supposed to represent. One day last week the first of the examinations in sight testing as instituted by this Company was opened. Over a hundred opticians were present, candidates for the award of a diploma attesting their skill in the correction of defects of vision. In some introductory remarks, the Master of the Company, Mr. Alban G. H. Gibbs, M.P., referred to the fact that the practice of sight testing by opticians had been challenged from an influential quarter, but said that the various issues had been carefully sifted and weighed by a committee, and it was decided that sight testing should be recognised by the institution of a special examination of opticians engaged in the trade. He added that, at the expressed wish of the trade, and very properly

too, he thought, they had obtained first-rate professional co-operation. He trusted that in future the position of an examiner to the Spectacle Makers' Company would be looked upon by ophthalmic surgeons as a highly privileged one, offering, as it did, great opportunities and responsibilities for promoting a proper understanding of the limits their practice should not overstep. All we think will commend the Spectacle Makers' Company for the step they have taken. Good eye-sight is one of the greatest blessings a person can possess, though it is too often impaired by those who vend spectacles, and who do not understand their business by selling glasses that are thoroughly unsuited to the vision of the purchaser. If he finds—as is too often the case—a pair of spectacles that he can see a little better with than his old ones, he makes the purchase—possibly to the injury of his eyes. But if he purchases from an optician who holds a diploma from the Spectacle Makers' Company, he has the satisfaction of knowing that he is getting what is best for his sight, even if he has to pay a little higher price than he would do at the ordinary spectacle vendors. It is not every one who can afford to pay the fees of an ophthalmic surgeon when he finds his eye-sight failing him. Hence he has had recourse to the ordinary vendor of spectacles, with the result that his vision has suffered to the end.

* * *

A Meteorological Discovery. Photographers, like most other persons, have been at a loss to discover a reason for the excessive rainfall of the past two years. The business depends largely upon fine weather, and they naturally feel that if the cause of unusual moisture could be ascertained, there might be some remote chance of a remedy being found for the evil. Meteorologists have failed to give a satisfactory explanation of the phenomenon, and beyond a few vague references to the Gulf Stream and spots on the sun, have nothing at all to say upon the subject. But at last we have a ray of hope. It comes from a remote place known as Fraserburgh, in Scotland, and we have the more faith in it because we know that the inhabitants of our northern counties are shrewd about ordinary mortals, and are not likely to be carried away by silly rumours. The good people of Fraserburgh have traced the rain to the wiles of Marconi. To reduce the matter to plain language, it seems that under the auspices of the Italian inventor, a wireless telegraphic station has been completed at Fraserburgh, and that, according to the local report, "since the erection of the shaft here a day has passed without a heavy rainfall, particularly during the hours of experimenting, and the inhabitants of the district have come to regard the presence of the station with suspicion." The people at Poldhu, in Cornwall, have followed suit, and have gone so far as to petition to have the wireless apparatus removed. Anyone who has had experience of Cornish weather for a few decades will smile at the idea that wireless telegraphy or anything else could possibly make it more moist. But this is no digression. Signor Marconi does not smile at the idea; he laughs outright, and says: "If anyone can prove that I am spoiling the English weather, I shall have great pleasure in dropping my work in this country, and sending my instruments to Australia or Egypt, where rain is very much wanted." Still, we must confess our sympathy with the people at Fraserburgh and at Poldhu. It is so satisfactory when a grievance exists to find some one who one can put "on toast." Hitherto we have had no one upon whom we can wreak our vengeance when bad weather sets in. We, some of us, went so far as to call the weather "beastly," or "abominable," or "wretched," and we have known some who have, under stress of irritation, un-

stronger language than that. But we have always felt want of some one who could be made to suffer personally for the loss and inconvenience brought about by inclement weather, and if Signor Marconi is brought forward to fill this gap in our midst he will add to the debt of gratitude which we already owe him for his wonderful inventions.

* * *

Origin of Cine-Photography. A few weeks ago there was some discussion in our columns as to the genesis of the cinematograph, and we had occasion to refer to a very early contrivance for projecting different pictures of a picture upon the lantern screen for the purpose of giving the idea of motion. We have since that time discovered in a book, which bears date 1744, a copperplate engraving which is so ingeniously drawn, that two separate episodes in one story are contained therein, and must credit the artist with thus forestalling, by nearly a century and a half, the idea of the "living picture." For quite evident that the same genius which prompted the artist to represent two phases of a movement would have been capable of suggesting any greater number, and possibly the labour of engraving the metal plate alone stopped his hand. The volume referred to is "The New History of the Bible," by the Rev. Thomas Stackhouse, published in London at the date already given, and the particular picture referred to is illustrative of the story of Jonah. At the right-hand side of the composition there is represented a town of some importance with a marine parade in front, and a sea with extremely curly breakers. In the far distance is a ship with its one sail flying up in the breeze, and having a good time generally. This, of course, is the vessel with Jonah on board when they started for their sea trip before the crew found out what a bad cargo he was. A mile nearer the ship is shown with the sail down, and a villainous black cloud overhead, which is fringed with straight lines, which indicate rain. A still nearer view is once more given of the vessel, and this is large enough for us to distinguish the men on board who seem to be engaged in once more turning up the sheet—for they have got rid of the inclement prophet. There is the old gentleman struggling in the water with the huge fish, which seems to be a cross between the conventional sea-serpent and a gigantic periwinkle, about to swallow him. This monster of the deep is once more shown in the foreground—indeed, it is quite the principal object in the picture. It has its mouth wide open, for it has just ejected Jonah, who looks not at all the worse for his uncomfortable experience in the interior of seaside lodgings. It will thus be seen that we have in this masterly design all the elements for a cinematograph picture, the ship being shown three times, and Jonah and his host twice. So that we must give the Rev. Thomas Stackhouse, who was Vicar of Beenham, in Berkshire, the credit of being the first cinematographer. At the same time we are somewhat puzzled to know why this learned clergyman undertook the compilation of this extraordinary book, which runs to two folio volumes, each of about hundred pages. Probably it consists of the sermons preached by the author, for it partakes of the character of the old-fashioned discourse, in that it gives biblical stories in reconstructed sentences. Mr. Stackhouse does not improve upon "that well of English undefiled" when he says: "the Fish disembogued itself of Jonah" on the eastern shores of the Mediterranean Sea. But one cannot wish that he had been on the spot when the prophet was so summarily ejected from his moist quarters, and that it had been possible for him to have employed a cinematographic camera.

Reconstitution of the Meteorological Office Advised.

On Thursday last week the Committee appointed by the Treasury minute of a year or two ago to inquire and report as to the administration by the Meteorological Council of the existing Parliamentary grant, and as to whether any changes are desirable, presented their conclusions. The general public knows the work of the office chiefly through the forecasts of the weather for the next twenty-four hours as they appear in the newspapers daily. No body of persons, perhaps, except agriculturists, fishermen, and the like, are more interested in the weather we are to expect for the next day or two than are photographers—that is, those who are engaged in outdoor work. We have more than once alluded to the unreliability of the forecasts as at present issued by the Meteorological Office, to which an annual grant of between fifteen and sixteen thousand pounds is made. The report issued by the Committee shows that for the decade ending 1902 the percentage of complete successes were 55.7 and partial successes 27.3. This is certainly not a high percentage when it is considered that in settled weather, when the barometer is high and steady, and perhaps rising, it is not difficult for anyone to forecast fine weather for the next day, and it is in such circumstances that the Meteorological Office has scored many of its successes in their reports. It may not be known to the general public that the Meteorological Council is neither a Government Department nor a private concern. It is, in fact, an association incorporated under the Companies Act. The members are directors of it, appointed by the Royal Society. Nevertheless, it receives and administers the grant from Parliament of the sum just stated. It may be mentioned that the Council was formed in 1867 to take over the work of a department in the Board of Trade after the death of Admiral Fitzroy. The Committee that has just issued its report suggests that the registration of the office as a company under the Joint-stock Companies Acts should be cancelled, that it should be wound up, and the office reconstituted as a department under the control of the Board of Agriculture and Fisheries, to whom the present grant would be transferred. The necessity for a Council of seven having been thus got rid of, they recommend that the office be placed under the control of a man of science as Director of Meteorology, appointed after consultation with the Royal Society, but responsible to the Board of Agriculture and Fisheries, and making his annual report to that department. The Committee also make other recommendations in matters of detail which we need not here refer to. The chief one is, as just mentioned, that the Meteorological Office should be placed under the control of the Board of Agriculture and Fisheries, the bodies most immediately concerned in the weather, and not left to what is practically a joint-stock company receiving a Government grant of some sixteen thousand pounds a year. If the Committee's recommendations are adopted it is to be hoped that there will be an improvement in the reliability of the daily forecasts of the weather on those now issued. They would then be of great use to agriculturists, fishermen—and to photographers, especially outdoor workers.

WE understand that at the forthcoming Newbury Photographic Exhibition there will be a special class with first and second prizes of a guinea and half a guinea respectively for pictorial postcards. The number of amateurs who print their own cards is increasing so rapidly that the competition should prove most popular. The conditions are that all cards sent in shall become the property of the exhibition, and shall reach the hon. secretary, Mr. E. J. Forster, Guildhall Club, Newbury, not later than September 1. No entry form or fee being required.

THE DEVELOPMENT OF FILMS.

THE republication of some of the pages of our JOURNAL of fifty years ago has aroused a great deal of interest, and very considerable wonderment that photography half a century ago had achieved so much, was capable of so much. Instantaneous photographs, photographs of the moon, negatives of large size, taken in the field with all the appalling impedimenta incidental to wet-plate work, when each plate had to be prepared on the spot, and the actual cleaning of the glass to receive the sensitive coating required considerable experience to avoid spots and stains of all kinds, while the modern fripping had its analogue in the slipping and loosening of the film. All these were done—and well done—half a century ago, as in the best of dry-plate work of the present day. But in one direction a vast step has been taken. The wildest dream of the old votaries of the “black art”—an almost meaningless term to the modern camerist—a flexible glass, as celluloid may justly be termed, has been realised in the introduction of the everyday spool that can be bought for a shilling—little more than the bare cost of the glass of the collodion period. The beginning of the twentieth century has, indeed, witnessed the apotheosis of the film, with the concurrent initiation of a revolution in the practice of development. The use of long rolls of films, measured at times actually by miles, necessitated the development of thousands of exposures at one time in one solution; but this striking departure from practice was generally passed over in the marvel at the result, with little thought of its import, until quite recently. If the average photographer was certain of one thing, it was that to get a good negative it was essential to have at hand a supply of solutions of bromide and of accelerator, and would scoff at the suggestion of one solution for every exposure made. The epoch-making researches of Hurter and Driffield had literally no meaning for him, development “with the eyes shut,” as it has been termed, was a mere phantasy of the brain. An appreciation of the fact that in a general way one exposure was right, all others wrong, was slow in coming; the real value of factorial development, even with limitations, to which Mr. Watkins has brought such enthusiasm was not admitted. But now a swing of the pendulum has taken place in the opposite direction, and the you-press-the-button-and-we-do-the-rest system is extended to development. The developing machine bids fair to banish the add-a-little-bromide theory, and photographic manipulation has become still more mechanical.

There is, however, a stout phalanx of workers who still believe that every exposure needs its own development. Yet, singularly enough, in the practice of rollable film development they do not, as a rule, put their theory in practice, for, from inquiries we have made, it is the exception to treat spools of (say) a dozen exposures singly, so that, in effect, the very people who sneer at development by box adopt in their own practice a method which is virtually the same thing. We met an indignant amateur a little while ago who was loud in his denunciation of the methods of a large firm, one of whose operators he had “tipped” to permit him to see the actual development of some of his films of exposures made abroad. “He actually developed the film in lengths, gave them all the same treatment whatever the exposure. They’ll get no more films from me to be developed,” he growled. With the methods of large firms, developing films by the hundred, with the aid of every mechanical appliance possible, we are not concerned. We are writing more

particularly for the every-day photographer, who, himself or for amateur clients, has perhaps a few spools every day to treat, and who desires to get out of every exposure all its potentialities.

We find that there are still a number of photographers who cut up every spool into individual pieces and develop a number at once. It is evident that by this means there is power of making the best out of every exposure, for now we should imagine, would contend that, whether a piece has had, for example, half or double the proper exposure, the correct density, for the two placed in the developer at the same time will be obtained at the same moment; the single-piece method enables the worker to leave the film in the solution just the right length of time, and so obtain the most suitable printing capacity. All honour to those who adopt a plan which of necessity, by the mere act of cutting up and marking for identification each separate piece together with the labour of pinning them up individually, devotes attention and time which we have heretofore described as sinful. Others develop in lengths, holding the end in each hand, and passing the film backwards and forwards through the solution till suitable density is arrived at. Obviously there is no practical difference between the method and the developing machine plan, save that the latter assesses more elasticity of selection in that in case of a general over or under exposure the film can be kept in the action of the developer a greater or shorter time, as judgment dictates, and so a better general average may be obtained. The plan, too, is perhaps as economical as the other for when the film is kept in the solution by a loose roll or other method a very small quantity can be used. This mode of working the factorial system, of course, cannot be adopted. When the images begin to appear the large average of correct exposures will be chosen to calculate the time the film must remain under the action of the solution.

The third alternative is to cut the films into lengths of such size that they will go into a dish of such ordinary capacity as would be found in an average dark-room, will not involve the waste of an undue amount of liquid, say, a 12 x 10 or 15 x 12 dish. Here, with the dexterity arrived at by practice, it is surprising how many pieces of film can be developed at once, the chief difficulty being the curling up of the films in the liquid, which, as our readers are aware, is with the non-curling films more marked than with the old style, especially with spools of six, which emphasise the tendency. When they are placed in the developer after preliminary soaking in water, the curling tendency is reduced the greater the amount of the alkali employed, the pyro-soda being particularly helpful. The drawback to the plan is the liability of getting the film into kinks which are apt to produce unpleasant markings that are quite conspicuous when the film is dry.

The drying of the film is not a mere perfunctory matter. If it be suspended direct from the wash-water there is a tendency for tears of liquid to form, which make unsightly spots on finished film. A common plan is to draw the film, back and front, over the edge of the dish and so wipe off much of the water. One photographer of our acquaintance draws his films over the back of his hand. Another employs a particularly soft sponge for the purpose, while still another invariably presses the film between sheets of hard blotting paper, a plan which emphasises the drying to be more quickly carried out, the finished negatives being then very even and workmanlike in appearance. We will conclude by referring to the practice of one worker who turns his films out in a very short time. He passes every one through a weak bath of formalin made by adding about 5 per cent. of the commercial solution to water, and then blots off the superfluous moisture. It is surprising how much heat a film so treated can withstand without injury.

DISCURSIVE REMARKS ON ORTHOCHROMATIC PLATES.

II.

ate the testing of colour-sensitive plates has received considerable attention, and some very curious and contradictory results are to be met with. One pins his faith to the action grating spectrum, another to the direct vision spectrope, whilst a third believes in colour charts and natural tests, and each damns the other's method of testing and declares that his is the only orthodox method, and the others quite heterodox. Personally, I believe in all three, if the tests obtained are read correctly, and if the experiments are carried out on absolutely fair and equal lines and one does not put a bit of lead in the scale. A few discursive thoughts on the subject and a few data may lead to a somewhat more satisfactory position of affairs, or at any rate may induce some one to take into consideration that there are always two sides to a question.

The diffraction spectrum has one great advantage, and that is that the colours are more normally distributed, yet on the other hand this very advantage may mislead some to a totally erroneous idea of the results possible with a dye. Till Mr. A. K. Tallent devised his ingenious little spectroscopic camera, the number of those who had a diffraction grating camera might almost have been counted on one hand; probably now those in possession of a concave grating camera are to be numbered on one hand. The advantage of the concave grating is that it requires no lenses, there is therefore absolutely no absorption by intervening glass masses. Tallent's action camera has not only a lens but a prism, and also the alroid of which the grating is made, these must play some part in regard to absorption, but it must be a minor part, and probably only applies to the ultra violet rays, with which, at all due respect to those who say to the contrary, we have to do, when using our cameras by daylight, than they could have us believe. The direct vision spectroscope is an extremely handy little instrument, but it has two disadvantages which it is just as well we should recognise; the first is that the absorption of the ultra violet may be so great as, to use the word of an Hibernicist, to extend into the violet, where an ordinary gelatine plate is sensitive; this must of course depend upon the construction, whether it is a three or five prism arrangement and of what glass it is made. I have three direct vision prisms, which differ enormously in their results, an ordinary Browning-Grace five prism, with comparison prism and scale, which was made for visual work and is corrected for practically the D lines, another a Zeiss, corrected for G line, and a third, much the largest, also of five prisms, of which give different results, although slit aperture and focal length of spectrum are kept constant.

The disadvantage of the Tallent, or in fact any diffraction grating camera, is that the less refrangible end, the red end, of the spectrum is so spread out that sensitiveness in this region may be entirely overlooked; on the other hand, the direct vision spectroscope, this end is so humped together that a totally erroneous value is put on the sensitiveness. To put the thing somewhat baldly, if you have a crowd of five thousand people and pack them into a quarter of a square mile, they make a big impression—this is what the direct vision does—whereas if you spread the same number of people over ten square miles, then the onlooker is not struck with the existence of a crowd, and this is what the diffraction grating does. There is of course a method of comparing the two and of translating the one reading into the other and adding the scales equally between the two, but I propose at a later date to show comparative spectra taken under absolutely identical circumstances in elucidation of this point. I am a strong believer in a practical test and prefer a

colour-chart to a natural object, for the simple reason that one can measure a colour-chart and keep the measurements by one, and this is the method which the man in the street will use, because probably not one worker in a thousand has a spectroscope of any sort. But there are charts and charts. As some one once said, we do not get "spectra hanging on trees," a perfectly legitimate remark, but there is no colour in nature which is not derived from the spectrum + white or + black. The argument that a coloured chart is unscientific and useless because so much white light is reflected from the surface of such paper, no matter what its colour may be, simply shows that an unsuitable chart has been chosen. As I said before, there are charts and charts. If you happen to know a paper-maker, and can get round the right side of him, you will be able to obtain a booklet of examples of matt surface papers of all colours, which reflect very little white light at all. A lithographed chart is useless, as a rule, because the colours are not saturated; glazed papers for the same reason are not good to use. Again, there is no object in nature that does not reflect white light more or less, and the average worker does not buy commercial colour-sensitive plates to expose in a spectroscopic camera; he wants to take coloured objects and scenes with them, and therefore a practical test on a chart, if it is a good one, or a natural object, is not only perfectly legitimate, but may be scientific, because, to quote Dr. Eder, "The yellow, at the Fraunhofer line D, has been estimated by different observers as from 9 to 31 times brighter usually than the spectrum blue, at F $\frac{2}{3}$ G, and from 21 to 87 times brighter than the darker spectrum blue at G, whilst pigmentary yellow is from 6 to 14 times brighter than the blue, and spectrum yellow is from 19 to 40 times brighter than the red, between B and C, whilst with pigments it appears only from 3 to 7 times brighter," and it appears quite as scientific to test the relative ratio of the light reflected from pigments as it does to test the absolutely pure spectrum, which has no admixture of white light or black.

There is of course another important point in testing plates, and that is the light by which they are tested. I have studiously refrained, except in the above just-quoted sentence, from citing any authority, but I must be allowed to again quote Vierordt's table of the visual luminosities of different lights, and also some measurements (Eder) of the relative photographic luminosities, which support this statement and prove that by using one light or another you can put as much lead as you like in the scale and totally falsify results, if this is not taken into account.

VIERORDT'S TABLE.

	Brightness in the Spectrum.				Total Brightness in Candles.
	C.	D.	b.	F & G.	
Standard candle	73	100	104	134	1
Gaslight	74	100	103	125	16
Limelight	59	100	113	285	90
Electric light	61	100	121	735	362
Magnesium light	50	100	223	1,129	215
Moonlight	87	100	155	363	204
Sunlight	45	100	250	2,971	70,000

An examination of this table shows how enormously the different lights vary visually; C is the orange red, D yellow, b the green, and F $\frac{1}{2}$ G bright blue.

Unfortunately, I know of no comparison table of the photographic values of these lights, but Eder gives the

Amyl acetate lamp as visually 1 candle, photographically	1
Lime light	70
Gas light (Argand)	16
Magnesium	80
Electric light	2,000
	25,000—75,000

My point is that unless one knows the actual spectrum composition of the light, it is impossible to form a correct opinion of the colour sensitiveness of a plate, for, obviously, if

we use magnesium, which has the least amount of red, it would give worse results than gas light, which has the most. To carry this argument to a reductio ad absurdum, we need only test a plate by the Cooper-Hewitt mercury lamp, which has no red and very few orange rays, and a colour-sensitive plate would be as bad as an ordinary.

In testing colour-sensitive plates, there is, I think, one point too frequently overlooked, and that is to get a standard for comparison. Now this can only be got by finding an ordinary plate of the same speed or giving relative exposures for different speeds and developing to the same factor. When experimenting with new dyes, I have always been extremely careful to test for general sensitiveness, and see that the dye does not lower or increase the sensitiveness, because some may do the latter. Test spectroscopically if you can; if not, use a good colour chart or natural object; judge from negatives in preference to positives, as the one is not always an exact counterpart of the other; and if for real scientific work, then the densities must be measured.

There is one method of testing, which has been cried down, but which, when properly and scientifically carried out, is extremely valuable, and that is to test for the relative sensitiveness to yellow and to blue. In default of anything better, a Chapman-Jones plate tester may be used, but the best way is certainly that suggested by Eder. He uses a Scheiner sensitometer, which is practically a Hurter and Driffield machine, and interposes between the light and plate a cell filled first with ammonio-oxide of copper, and then with potassium chromate solution; the former transmits practically all the blue-green, blue, and violet, to which silver bromide is sensitive, that is, determines the sensitiveness of the plate if it was an ordinary one; the chromate transmits the greenish-blue, green, and yellow up to red, and determines the colour-sensitiveness of the plate, and the resulting densities are plotted out, and the speeds can be thus directly compared, having first of all determined the reduction in speed of the plate by the interposition of the cell filled with plain water. This would give users of plates some valuable knowledge, and I hope before long, if nobody else does it, to treat all plates in this way. The filters are made as follows:—

Cupric sulphate	...	...	...	25 g.
Liq. ammonia .880	...	...	...	q.s.
Distilled water to	...	...	...	1000 cc.
Cell thickness, 1 cm.				
Potassium chromate	...	...	...	40 g.
Distilled water to	...	...	...	1000 cc.
Cell thickness, 1 cm.				

I have carefully refrained, save in two or three instances, from quoting from authorities, my purpose having been rather to sound a warning note as to too much reliance being placed on individual spectrograms, or a series carried out under conditions which do not approximate to the conditions of everyday work. We cannot in England rely sufficiently on day or sunlight to use this for testing by means of the spectroscope, but I consider it important that for really scientific and reliable testing one or a series of spectrograms should be made by daylight, as it enables those in the know to estimate to some extent at any rate the slit width, which is important.

To those who may be desirous of taking up the subject of the study of orthochromatics generally—and there is a vast field open to those fond of experimenting—the introduction of Tallent's spectroscopic camera has considerably simplified matters, for all adjustments are made; it can be obtained with a millimetre scale; and a Bunsen burner, and three or four salts will enable the principal Fraunhofer lines to be recognised, and others can be put in by interpolation on squared paper, as described in Abney's "Colour Measurement and

Mixture." With the direct-vision spectroscope, which can, by an adapter and flange, be adapted to any camera, unless one uses a lens for projecting the spectrum and scale on to the plate, it is necessary to use a scale in contact with the plate, or scale the plate itself each time. Personally, I prefer a camera with fixed extension for this work, but allowance must be made for the blue and violet end having its focus slightly further from the plate than the red.

The main difficulty is the source of a constant light, which shall most nearly approximate to daylight; all forms of gas, whilst the most convenient, are in this respect the most unsatisfactory; magnesium is utterly unreliable; possibly acetone would be the nearest to our ideal.

One other subject, which opens up an intensely interesting and useful field of experiment with the spectroscopic camera, and which has been practically untouched, is the making of yellow screens. Using a cell of constant width, and increasing the ratio of dye to solvent, and making negatives through the same, and determining the quantity of dry dye per unit area, would give us definite data from which it would be possible to make screens having any desired absorption.

In conclusion, let me state that there is one very great difficulty in front of him who would test new dyes for their colour-sensitising properties, and that is the difficulty of obtaining the same. There is no method of knowing from the chemical composition of the dye, even if you can get at this, whether the dye is likely to be useful or not; the quantities required are extremely small; and dye manufacturers, English ones at any rate, seem to have a rooted objection to supplying gratis or for a small charge, even one gramme, but are quite willing to quote you by the pound—a quantity that would possibly sensitise every dry-plate made in England during the busiest month of the year. German firms are much kinder in this respect, and I hold many kindly letters from the same, stating that they are only too pleased to supply the small quantities required for nothing in the cause of science.

E. J. WALL, F.R.P.S.

THE Free Photo Fraud Again.—There has been a good deal of traffic in Yeovil lately in the photographic enlargement business. A firm of three men have been calling at private houses and inducing women to permit them to enlarge a favourite photograph, "absolutely free of cost." Their generosity is explained on the ground that they wish to advertise their business, and are adopting this means of doing it, trusting that the owner of the enlarged photograph will be so delighted that she will show it to all her friends. A large number of people have permitted the firm to take away photographs for enlargement. Subsequently another member of the firm calls at the house to submit specimens of moulding for the frame of the enlargement. More delighted than ever, the lady naturally chooses something to her taste, and awaits the arrival of the finished article. This turns up in due course, and the lady is charmed with it! The salesman holds it against the wall, suggests that it looks well, and finally, casually observes as he reaches the door, "The price of the frame is 25s., madam." This, we are told, has been done in very many cases in Yeovil this week. It is, of course, a well-known method, and has been described in the Press over and over again. In one case a Yeovil lady was threatened with County Court proceedings on refusing to pay for the frame, and when this threat had evaporated the man went round a corner to "fetch a policeman." He returned in an even worse temper, and was told by the lady that she were a man instead of a woman she would kick him down the steps. Fortunately, this bold woman retains the enlargement, frame and all. Though she did not pay a penny, she will probably hear no more about the matter. That is the way to treat these gentry; they have no legal means of enforcing their impudent claim. We understand that there are two picture-enlarging firms working in the district at the present time. This paragraph refers to only one of them.

THE STEREOSCOPE APPLIED TO ASTRONOMICAL RESEARCHES.*

I.

[From "Popular Astronomy," to which publication we are indebted for the translation.]

We have recently seen the stereoscope, an instrument old in principle, become, in skilful hands, an unexpected means of investigation. This modest apparatus, which seems rather to belong to the entertaining side of natural philosophy, suddenly appears as a new resource which promises to be fruitful in very varied applications. It is based on one of the simplest principles, whether we consider the old stereoscopes of Wheatstone (1838), and of those of Brewster, (1850), or the more perfect apparatus which dates only two years back and which is designated under the name stereo-comparator.[†]

Let us recall how we see objects in nature. Let us suppose an observer whose eyes are normal, to be looking at any object whatever, as O, Fig. 5, at a distance which shall not be too

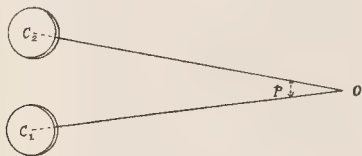


Fig. 5.

great. Each eye being directed toward the point O, the two visual rays form an angle p , which is the parallax of the object. The observer must then turn the right eye C. a little to the left of its normal position, the left eye C₂, a little toward the right. It is the physiological effect accompanying the corresponding tension of the muscles of the eye which produces in us the idea of distance, or, what amounts to the same thing, the sensation of relief. If O draws nearer, we feel that we must make an increased effort to follow it with the two eyes; on the contrary, if it recedes, the eyes tend to take again a parallel position, and we perceive without the help of any other means that the distance is increasing. Yet the perception is limited for the naked eye; experience has proved that for a distance greater than 400 to 500 meters, i.e., about 450 metres, the eye becomes incapable of feeling the sensation of relief. For such a distance the angle p is reduced to 0.5, the normal separation of the eyes being 65 mm.

Then let us suppose that, instead of looking at a real object, two stereoscopic images i_1, i_2 are examined through two lenses, L₁, L₂, placed before the observer's eyes C₁, C₂ (Fig. 6); let us

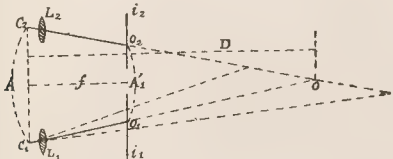


Fig. 6.

suppose at O₁ is represented any object whatever on the first image i_1 . This same object is found again at O₂; for example, on i_2 . If the two points O₁, O₂ are perfectly placed, the eye C₁ will see the object O₁ following the direction C₁ O₁; while the left eye will see the same object in the direction C₂ O₂; the two impressions on the retina unite in one producing the

illusion of a single object O, which would be situated at the intersection of the two lines C₁ O₁ and C₂ O₂. If A is the distance of the eyes, A¹ that of the two corresponding points O₁ and O₂, the distance D at which the object O seems to be found in space, is obtained by

$$\frac{D-f}{D} = \frac{A^1}{A}, \text{ whence } D = \frac{Af}{A-A^1},$$

indicating by f the distance of the two images from the eyes of the observer. The lengths f and A are constant for the same apparatus and the same observer: let us note that if the images include several details for which the distance A¹ is the same, the different points will appear to be removed the same distance into space. If A¹ is greater, the corresponding point will appear in a plane more distant than the first. One can easily demonstrate this by arranging so as to vary the distance of A¹; for this purpose let us represent the two corresponding figures O₁, O₂ by two points, one of which, O₂, is fixed, and the other, O₁, movable by the aid of a micrometer screw. We seem to see but one point suspended freely in space; bringing O₁ nearer to O₂ it seems as though the point O travelled along the line O₂ L and was approaching us; on the contrary removing O₁ further from O₂, the point O appears to us more and more distant on the same line.

It is seen at once that this very simple arrangement may serve to obtain the distance of any object. Let us project the image of the points, which we have placed in the focal plane of the lenses, on the object examined; let us move the movable point O₁ until the virtual point O, which can be made to change by the aid of the micrometer screw, seems to be at the same distance as the object whose distance we are trying to find. This being done, the apparatus gives A¹, and, knowing the constants of A, the distance D is found from the relation given above. Such is the simple principle of the stereoscopic telemeter. A piece of apparatus constructed in this way would necessarily be of very limited usefulness. The distance between the eyes is, in fact, a very small base of operation for determining considerable distances. It was to meet this difficulty that Helmholtz invented his reflecting telemeter (1857), in which the course of the luminous rays is directed according to the following designs (Fig. 7).

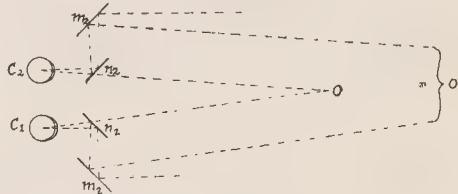


Fig. 7.

The luminous rays come from a distant object O after having undergone two reflections by two groups of parallel mirrors, which adjust them to the distance the eyes are apart. To the eyes the object O removed to a great distance will seem to be at the point O, the intersection of the two straight lines C₁ m₁ C₂ m₂, along which the eye receives the luminous rays coming from O, and respectively parallel to the directions Om₁ and Om₂, going from the object to the mirrors m₁ and m₂. Everything takes place as if the observer's eyes were themselves spread apart to the distance of the mirrors m₁ m₂; in other words, the base of operation for perceiving the relief is multiplied by the ratio of the distance of the two mirrors to that of the eyes. Dr. C. Pulfrich of Jena has taken up this idea in his stereoscopic telemeter and made considerable improvement; instead of the simple mirrors of Helmholtz we find here two telescopes twice bent, whose eye-pieces can be

* From February No. 1904, Bulletin of the Astronomical Society of Belgium. Translated from the French by Miss I. Watson, Department of Modern Languages, Carleton College, Northfield, Minn.
[†] These notes are taken from a series of articles published by Dr. Pulfrich in the "Zeitschrift für Instrumentenkunde," 1901, Nos. 8, 9; 1902, Nos. 3, 5, 6, 8, Berlin: J. Springer.

adjusted exactly to the distance of the eyes, and whose objectives are separated to a distance of one and a half metres, in the largest kind constructed by the firm of Zeiss. So that, if for simple vision the stereoscopic effect reaches to an estimated distance of 450 meters, the new apparatus will extend to about 10 kilometers; in order to make it the most practical possible, movable points are not used, but a series of fixed references; they are placed at the focus of each of the objectives and, stereoptically combined two by two, they appear like a series of points, farther and farther removed and forming a scale of distance. The distance is read immediately by noting between what references any object seems to be. It is needless to insist upon the great advantage that one may gain from this apparatus, especially in topography.

It is remarkable to be able to estimate distances of several kilometres with the aid of a base having a length of not more than one and a half metres, yet it is desirable to be able to determine still greater distances; for instance, if it were desired to measure that of the shooting stars, or of taking measures of the aurora borealis, it is certain that the base ought to be 10 or 20 metres at least in order to make the same conditions as for a landscape. And if one wishes to apply the same means to determine the distances of celestial objects—moon, planets, comets, even stars—the dimensions of the earth itself would not be sufficient to furnish a proper base.

To avoid this difficulty Mr. Pulfrich has constructed an ingenious instrument which he calls the stereo-comparator.

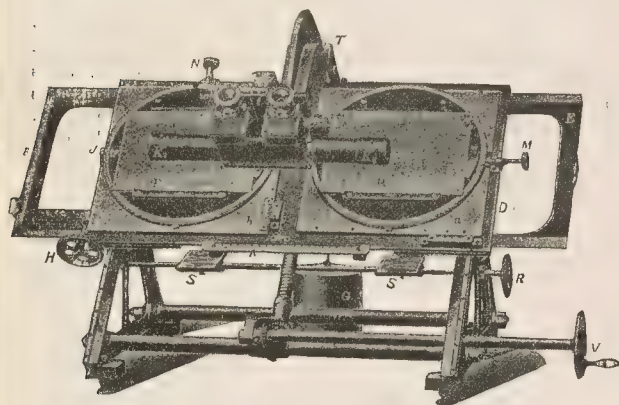


Fig. 8.

(Fig. 8.) It serves the same purpose as the stereoscopic telescope, but instead of making the measures on the object itself which is to be studied, operations are made on photographic images which are examined with the aid of a binocular microscope at a great distance from the objective. If one should unite in an ordinary stereoscope the photographs taken with the help of two instruments whose optical axes are parallel and are at the distance of the eyes, one would evidently experience the sensation of projection such as there is in reality. If the two objectives are separated farther, for instance up to one and a half metres, the combination of the two photographs will give rise to an increased relief just as in the telemeter. But nothing hinders us from increasing indefinitely, so to speak, the distance between the two positions from which are taken the views to be combined in the stereo-comparator. The photographic instruments are arranged with this purpose, as Fig. 9 indicates; in 'C' the photographic chamber is supported by a mounting similar to that of a theodolite. It turns about a horizontal axis, AA, to which is attached on the one side a graduated circle L_1 , and on the other side a bent eye-piece OP; the axis AA can move in azimuth by rotation around a vertical

axis V, a rotation whose amplitude is read by the aid of horizontal circle L_2 . A standard with three levelling screws and furnished with a level makes possible the setting of the instrument. In front of the eye-piece may be placed a Prand prism P, turning about the axis of the eye-piece and reflecting the luminous rays at a constant angle of 90 deg. with the optical axis of the telescope. The observer placing his eye at the eye-piece O sights along the line PP' perpendicular to the optical axis of the photographic system, an axis itself determined by cross lines traced on a glass plate arranged in front of the sensitive plate. The two instruments are oriented, so that the focus of each eye-piece is seen the image of the prism covering the objective of the other eye-piece. When this condition is fulfilled, and the inclinations of the lines of sight to the horizon are the same—their inclinations being read by the

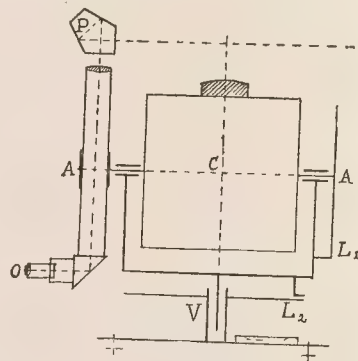


Fig. 9.

graduations R_0 of the circle L_1 —one is certain of obtaining two photographs on plates situated in the same plane, perpendicular to the base used. The operations to be done on the stereo-comparator are of remarkable simplicity. According to conditions, one will make use of a single instrument placed successively at the two posts of observation, or one will use two identical instruments operating simultaneously. The first case will present itself when there is a rise of ground, for instance, or again in stellar photographs; but here the parallelism of the optical axes during the two photographs will be obtained by using a fixed star as a guide. On the other hand, the two instruments will be used when one wishes to obtain stereoscopic views of clouds, lightning flashes, shooting stars, etc.

G. VAN BIESBROECK.

A GREAT compliment has just been paid to British art by the French Government, which has purchased for the nation the picture by Mr. H. Hughes-Stanton entitled "Poole Harbour from Studland, Dorset," exhibited in this year's Paris Salon.

THE Cyko Camera Distribution.—Messrs. J. J. Griffin and Sons, Ltd., inform us that a large number of photographers desirous of taking advantage of the opportunity they are offering for the advantageous purchase of Cyko cameras, have been deterred from so doing by their inability to examine the instrument at the warehouse in Fardinia Street, Lincoln's Inn Fields, London. For their convenience, therefore, the under-mentioned firms have been appointed agents, from whom the cameras may be obtained, and all particulars relating to the prize competition therewith. This cancels Condition 3 of Messrs. Griffin's offer:—London: City, Benetfink and Company, 107 and 108, Cheapside; West End, London Stereoscopic Company, 106-108, Regent Street; Aberdeen, J. Henderson, 164 Union Street; Bournemouth, F. W. Hornby, 132A, Christchurch Road; Bradford, T. C. Bridges, 6, Charles Street; Bristol, Hodder and Co., Ltd., Wine Street; Cambridge, Beall and Son, 25, Sidney Street; Manchester, J. T. Chapman, Albert Square; Reading, Tunbridge and Wright, 84, Broad Street; Salisbury, Atkins and Son, Market Place.



Example of Low Power Telephotography (reproduced by permission of Colonel R. W. Shipway).
See article, "Some Notes on the Telephoto Lens and its Use," by Edgar Clifton, F.R.P.S., in the Jubilee Number
of the BRITISH JOURNAL OF PHOTOGRAPHY.

THE ARTISTIC ASPECTS OF PHOTOGRAPHY.

[A paper read before the Royal Photographic Society.]

I.

THE vagueness of the title is not free from guile. At the same time, it admits, upon compulsion, of very precise definition. It is therefore a title that will serve our purpose in whatever emergency our subject may lead us. By a process of elimination we may get nearer to its meaning. Thus: Scientific aspects are not in our way to-night. To commercial aspects we may thankfully give the go-by. Social, political, and topical aspects may be bundled together and passed by on the other side. Allowing scant service even to pictorial aspects, in the narrow sense of the word, we shall have arrived in the end at some notion of what the artistic aspect of photography really signifies. It may surprise some that the artistic should be thus deliberately separated from the pictorial. The divergence, however, is none of my making. Certainly, their union, when it does occur, is the perfection of wedded conditions; but this only proves that the two things are not synonymous terms for the same thing, as is very generally supposed. The pic-

torial is a matter of the intellect; the artistic a matter of the emotions. The one born of the head, and the other of the heart, inasmuch as this, that the man who works can tell you exactly the whys and wherefores of his pictorial methods; but of his artistic movings he may be almost unconscious, or at least have no answer beyond "It pleases me thus, I know not why."

In other words then, artistry—to use a convenient substantive in default of one that should exist in our language, but does not—artistry is, in the main, very little different from good taste. Good taste is a desideratum of value all the world over, and saves us, in common life, even as a sense of humour saves us, from snares and pitfalls, degeneracy and suicide. In the world of pictures, however, where it is absolutely indispensable, good taste assumes a more important rôle than it plays in common life. Treasured and cultivated it becomes so powerful as to be, in reality, the artist's refuge on all conceivable points connected with picture-making—his final mentor and guide in all his ideas. A photographer should be as jealous of his taste as a surgeon is of the cleanliness and keenness of his scalpel.

To neglect it, to vilify it, to cause it to bow before convention, tradition, or fashion, is to stultify it utterly sooner or later. Without such good taste, such artistry, to drop the paraphrase, the happiest pictorial compositions will be but dry bones—handsome skeletons if you will; but dry bones still, lacking warmth, breath, and soul. It might be quite easily proved, however, that in the photographic world, handsome skeletons of the kind indicated readily find admirers and customers. Such a fact should have no weight with him who has any regard for the artistic aspect of his subject—such a fact, indeed, is in close connection with the commercial aspect. Buyer and seller work and react one upon another. The style of thing that is praised, noticed by the Press, bought, or even talked of in one season, is usually imitated and reproduced in the next. This, too, is purely commercial.

The fact that a photograph is much discussed is no proof that it was ever worthy of discussion. Fame and fortune are capricious folk, often paying their visits at the wrong houses. But fame and fortune are wooed by one and all. Even photographers are not proof against the temptation to do the thing that is popular in the face of admonitions from their own taste. Such temptation, however, does not attack the taste which has been cultivated, and is, therefore, strong enough to say "Get thee behind me." Once again then do we see the prime necessity of taste-cultivation. Should the question arise as to how it is to be taken in hand, it would be easy to lay down one or two general ideas, which the student might readily adapt to his own conditions. The process is a simple one, there is no mystery about it whatever. The student must be true to his own likes and dislikes, at the same time that he seeks in nature more and more of the former, and changes as many dislikes as he can into likes. In this connection it may be observed that numerous and strong animal-versions do not as a rule betoken a broadly artistic temperament. The young lady—school of art student perhaps—who is so much concerned about the precise tint of a piece of ribbon that is "to go with" a certain hat and a certain hue of hair and complexion, is more the slave of prejudice than the master of artistic subtleties. The fear of being caught tripping is the mainspring of nearly all artistic yearnings of this class.

It is for this reason that I advance the wisdom of trying to like instead of to abhor, and particularly to love nature in what are popularly supposed to be her repellent moods. A quarter of a century since it was universally held that the countryside is only worthy in the summer time. As a matter of fact, the country usually looks its worst at that time, especially if the summer is hot and dusty. The colour of the landscape in the frosty months; or when springs lays a tender sprinkling of the purest green over all and opens her most charming flowers; or in autumn when green, gold, and brown melt one into the other above and strew the ground beneath; the colour at these times, I say, is infinitely more eloquent, and the skies are infinitely more poetic, than during July and August, when nature has matured, when her functions are fulfilled, and her glorious decline has not set in. Photographers, fortunately, have not overlooked this great truth, and that in spite of the fact that the charm of the colour is at present not within their reach. Whilst in landscape, however, there is little, if anything that is actually ugly, it cannot be gainsaid that where subjects have the human element, or evidences of it, as in figures or architecture, there may occur combinations of items that fall below the perfection found in irresponsible and insensate Nature, and in such cases I would urge the student to the utmost to have regard to his first momentary promptings of displeasure or discontent rather than to wait for that sophistry or that worldly notion that may win him over in a few minutes. Generally speaking, it may be taken for granted that when a man dislikes any natural scene, the balance of

chances are that he is wrong: but that when he dislikes any particular figure or architectural subject, the balance of chance are that he is quite right. A further aim in the training of the taste is that the student should strive to secure those qualities in his work that attracted him in the subject—a task that in photography really resolves itself into one of technical and executive perfection. Above all, he must keep his ideas guileless and free from all taint of the cant of societies and coteries and clear of fashion's allurements. Should he verily see nothing admirable in certain transatlantic portraits of little white noses coming out of great black backgrounds, he should be readier to place his camera under a steam hammer than suffer himself to produce that style of thing for the sole reason that certain men here and certain papers there have, rightly or wrongly, extolled it. It would appear that such a natural and evolutionary course as I have referred to for the formation of good taste, is too irksomely slow for some. Quite recently there has been set afoot a demand for a more systematised and rapid initiation into pictorial secrets. As though, forsooth, there existed any tricks of a trade in truly artistic work, only awaiting demonstration to be understood and put into force. Those who look to societies, to magazines, to lectures, and so forth, for a short and easy way of making pictures, have yet to learn that whatever little crumbs of knowledge may be picked up thus, are scarcely worth stooping for. The large and valuable part of artistic knowledge is subject to no written laws, and hence it follows that theories upon it can never be more than profitless pedantry.

If, for example, the Royal Photographic Society were to lay itself out for an elaborate system of pictorial education for the improvement of its members, what, may we suppose, would actually result? Will those members who are admittedly clever and artistic honestly say that their work would be enhanced by the theorising of this or that man no more artistic or clever than themselves? It would be tacitly agreed that such lectures and demonstrations were for the beginners in the art. But the beginners, I hold, would be better left to their own slower and surer crawlings. In science and philosophy the crammed or rapidly-taught tyro may perhaps make a show of a sort; but in art the newly-taught tyro is an anomaly, for there he can make no rapid notes of concrete facts. There are no dates or quantities to learn off by heart, and he can watch no experiments performed before him. In a word, as all preaching or discussion about art must ever remain mere expression of opinion, and as opinions will be found to differ in every exponent at whose feet the helpless student sits, he will find in the end that he has no course but the slow sifting and assimilating process, which is the work of years. Lectures or debates upon art are splendid tonics and refreshments for the initiated, who can match against such their own experience, or test anew their old convictions. To the uninitiated they are but as the discussion of mysteries in an unknown tongue. A more excellent way, meet for those who are earnestly striving, is that of self-instruction. It is a more effective and more pleasurable way of attaining artistic enlightenment, and it is the only way. Unfortunately it is a way not open to all, for at the very outset the student must be endowed with a congenial temperament. In that fact lies the very fate of a photographer. Millions buy cameras and try hard; but a few only "have it in them," as we say, to make beautiful pictures. With the natural and personal advantages of a congenial temperament, and a receptive and responsive mind, the student may start on his course of training by learning how to use his eyes—one of the most difficult of the things he has to compass—for there is looking and looking; even as a cunning jeweller, on the one hand, and the proverbial fowl on the other, may look at the same pearls and diamonds.

By the mere act of facing the riddle of art in nature, he will

ly assimilate a deal of the knowledge he covets. For he is a curious one in this respect, that the answer comes lying upon the question. Even by such a slow process, the knowledge comes less tardily to the simple starrer, the reader or debater, to whom indeed it seems never. By reason of the honour done to me by my being in this position to-night, I am emboldened to express my best opinion that the special and further fostering of pictorial work of this Society would hardly be accompanied by marked improvement in its exhibited pictures. I am that the cry is a heartfelt and praiseworthy one: "Show me how to select my subjects and how to make attractive pictures." But I am sadly aware also that the only truthful answer to that cry is short and severe to hopelessness—"Teach me." Who else in fact can teach those intangible and subtle qualities that make a picture either good or bad, irrevocable of the handsome skeleton in composition it may possess? Does the aspirant set his hopes upon a trick to be taught; or a mode to be adopted? If so, what manner of trick or mode will I advise him to prefer out of the goodly number that he has himself upon his gaze? Upon such a road of tuition he will find nothing but bewilderment, confusion, and vexation, barring the way to the height he seeks. Let him turn to the path. Let him give up the notion of sending a picture "next year, like So-and-So's fine thing, and let him see himself by his eyes, silently. To look at Nature and to take pictures and then at Nature again is the way. In matters of style and method, it is a mistake to try to persuade oneself against one's own judgment. Respect your own taste and never coerce it. The way to be successful is to be original, oneer if one can; and that can never come of imitating another else. The truest and finest originality is always found in the ordinary and beaten track of natural fact. He who sets laws, conventions, and traditions at defiance; who does something simply because no one has been foolish enough to do it before, and who abuses his materials for the purpose of making folk look twice, is by no means a pioneer. He is only an ill-advised creature playing at topsy-turvy. The student to succeed should be one which actuates the student to produce as nearly as possible, without violation of natural fact or principle, the charms felt in the ordinary view of visible objects, and towards the attainment of this desire there can be no aide, no mentor, but the student's own taste, unsullied by the thought of a short cut to notoriety.

"Keep your ain gait," is the most profitable motto. No lecturer can mix before your eyes the elixir of artistic life; no philosopher has the philosopher's stone up his sleeve. Many have attempted to impart artistry by oral means, but it remains unteachable. What may be taught, however, and what may like this I have now the honour of addressing may, and teach, is, facility of execution, scientific knowledge, and all that comes within the definition of technique. To attempt to promise the moon. The immense value of technical training lies in this fact, that it produces men clever at their work, and without this, the most gifted artist is as hapless as a poet who cannot write his own language. Language must be before ideas. They are the subtler part. They comprise feeling, the unnameable appreciations, the irresistible prompting of the artistic temperament. They come to the student who finds himself growing more clever in the manipulation of his materials. He may have had dreams; but they were imbecile of realisation before. Now he finds that he can begin to substantiate them, and, in turn, his improving execution suggests fresh ideas. He goes to Nature and reads her by the light of his craft, not in the wildly generalised way of his earlier method. Possibilities of pictures present themselves before he went blindfold; for knowing better what can be done with his materials, he recognises subjects that have tired other workers; subjects that, before, he sought in

vain outside their framed presentments. He is now, in fact, a picture maker, but who, except himself, has instructed him?

In the case of the individual who listens to theories, and studies diagrams, things are vastly different. He tries to digest somebody's notions of "balance," of "radiating lines," of "masses" and "curves," and turning to some grand work with a reputation, either finds them all falsified, or fails to find them at all. Especially may this happen in photography, where it rarely occurs that nature answers exactly to conventional requirements. The finest photographs that have ever appeared will not be found to owe much to deliberate selection on conventional pictorial lines. They have been the outcome of individual taste and untrammelled predilections. It will now become apparent why the pictorial was separated from the artistic aspect of the subject. The former may be learnt, but is worth little, at least, in photography; the latter is unteachable; though it may be learnt by intuitive means. So much for the earnest student seeking to form a fine taste. What is the position of the man who to-day can claim success, fame, and sometimes opulence—the finished photographer? Speaking as one to whose lot it has fallen during the last five years to examine critically all the best pictorial photographs of this country, and a great quantity of those from abroad, I must confess that, on the whole, I have been as much shocked as I have been charmed. What has shocked, however, has by no means been found in the modest work, bearing the unknown name. On the contrary, as much of such work as is good enough to find a place in an important gallery is usually characterised by an honesty of purpose frequently wanting in the work of those with reputations. In the eyes of the general photographic world, perhaps, these great ones alone are worthy of the laurels continually offered to them. For my own part I find, making one or two notable exceptions, that the man in the middle position, being neither a raw beginner nor a world-wide celebrity, frequently offers the most artistic work. He has knowledge and experience, and is as yet not so blasé that he must go beyond the bounds of licence and galvanise his sensations into a thrill by some out-of-the-way unlawfulness. Such practices are no doubt of use in keeping the name of the deprecator famous for something; but they are distinctly decadent.

Reverting to a matter already touched upon, we shall find that most lapses from good taste are committed in the name of originality. Far be it from me to deny any man the artistic right to do, and even to display, the maddest thing under the sun, if he truly thinks that what he is doing has a purpose or a charm. Individuality comes about in that very way, notwithstanding the fact that in some cases, individuality is attained by the cheapest possible means, and should cause shame and humiliation where it often results in pride and aggressiveness. But if it is admitted that no great sort of individuality consists in wearing strange clothes, because all other men elect to dress alike, what can be said of the man who would ape a Beau Brummell, and look round for applause? Short of such slavish imitation for imitation's sake, however, it must be granted, of course, that it is salutary to take note of one's neighbour. A hermit life will bring no good. Interchange of opinion, comparison of criticism, all such mutual methods, honestly carried out, make for progress, because in the work and opinion of others, we can find something worth the having, which we ourselves lack, and something unpleasant of which we may resolve to rid ourselves. But all beyond this tends to a baneful diffusion of ideas. The self-centred life is the sterling one, where the ideas are perhaps fewer, but have greater depth of earth wherein to flourish. What is to be deplored is not the original idea, but the desire to be original—a distinction with a difference. And the desire to be original appears, in my humble opinion, to be at the root of all the regrettable tendencies of photographic picture-making to-day.

F. C. TILNEY.

Exhibitions.

CAMPBILL PHOTOGRAPHIC EXHIBITION (GLASGOW).

The photographic exhibition and competition, promoted by the Museums and Galleries Committee of the Glasgow Corporation, was opened last week in the Camphill Gallery. The exhibition, which is an excellent one in every respect, is to last six months, and is the first of its kind to be held in the Camphill Gallery, although many similar exhibitions have been held under the auspices of the Corporation in the People's Palace on Glasgow Green. It is principally confined to pictorial work, but is divided into three sections—namely, a competition section, an historical and processes section, and an exhibition section. In the first-named £20 was offered in prizes, which was awarded at the discretion of the judges, Messrs. Tom McEwan, R.S.W.; William Young, R.S.W.; and J. Craig Annan. There were about 200 entries for competition. The historical and processes section, though small, is a very interesting one, the principal exhibitors in it being Mr. William Lang, Mr. William Young, and the Corporation of Glasgow. In the processes class the exhibits chiefly consist of some very fine examples of three-colour printing from Messrs. Andre and Sleight of Bushey, Hertfordshire. In the historical class there are two cases of interesting books, documents, and photographs connected with the history of photography. The exhibition section contains about 300 entries, including some very fine pictures of mountain scenery from the Scottish Mountaineering Club, Mr. Inglis Clark, the secretary of that club, and Mr. Alfred Holmes, of Bradford. Messrs. Lizars exhibit enlargements from half-plate negatives taken by the Lord Provost, Sir John Ure Primrose, Bart. Mr. J. Comrie Smith, of Giffnock, shows some fine portraiture studies and reproductions of oil paintings; and Mr. D. W. Kyle, Glasgow, has sent several beautiful flower studies. The Corporation of Glasgow show a fine photographic reproduction of the famous Ghent altar piece painted by the brothers Van Eyck. Among the principal professional exhibitors are Messrs. T. and R. Annan, W. M. Warnecke, George Romney, Robert Turnbull, Glasgow; and Messrs. A. G. Milne, Brechin; and W. Crooke, Edinburgh. The most prominent among the amateur exhibitors are Messrs. V. C. Baird, Broughty Ferry; James Craig Annan, Glasgow; Reginald Craigie, London; R. C. Dalgity, Brechin; Charles H. Emanuel, London; Professor Finlay, Aberdeen; T. M. Foulis, Edinburgh; A. Geekie, Coupar Angus; F. J. Mortimer, London; Dr. Charles F. Grindrod, Malvern; W. F. S. Holt, Manchester; Alexander Keighley, Steeton; Arthur Marshall, Nottingham; and J. C. S. Mummery, London. The arrangements for the exhibition were made by Mr. Rainy, assistant curator, assisted by Mr. William Young and Mr. Tom McEwan. Preceptor R. M. Mitchell, chairman of the Museums and Galleries Committee of the Glasgow Corporation, performed the opening ceremony. The following is the list of awards in the competitive section:—F. J. Mortimer, London, "The Winter of Life," £3; T. N. Foulis, Edinburgh, "A Saxony Shepherd," £3; Daniel M. Filshill, Glasgow, "Evening," £2; Arthur Marshall, Nottingham, "The Prie-Dieu," £2; W. Inglis Clark, Edinburgh, "Ben Nevis from Allt a' Mhuilinn," £2; R. Berry, Blackrod, Lancashire, "The Student," £2; Christian H. Curle, Melbourne, "Ringing a Wheel," £1; Fawcett Clapperton, Edinburgh, "A Lowland River," £1; Charles Kirk, Glasgow, "Willow Wren Feeding Young, from Life," £1; W. Milroy, Kingston, "The Balloon," £1; Professor Finlay, Aberdeen, "A Squall on the Bay, Hamilton, Ontario," £1; S. G. Kimber, Southampton, "The Monks' Entrance," £1.

FORTHCOMING EXHIBITIONS.

June-October.—Glasgow Photographic Exhibition. Secretary, Art Gallery and Museum, Kelvingrove, Glasgow.
July 14 to September 30.—Vienna Photographic Society. Secretary, W. Burger, Karmelitergasse 7, Vienna 11.
August 1.—Andover and District Horticultural Society. Photographic Section. Hon. Secretary, W. L. Cradidge, Jubilee House, Andover.
August 16-20.—Royal Cornwall Polytechnic Society Photographic Section. Secretary, Edward Kitto, The Observatory, Falmouth.
September 16 to November 5.—Photographic Salon, Dudley Gallery, Egyptian Hall, Piccadilly. Hon. Secretary, Reginald Craigie, Photographic Salon, 1904, Dudley Gallery, Piccadilly, London, W.
September 20-28.—Newbury Photographic Society. Hon. Secretary, E. J. Forster, Guildhall Club, Newbury.

September 22 to October 29.—Royal Photographic Society's Ninth Exhibition, New Gallery, Regent Street, London. Secretary, A. W. W. Bartlett, 66, Russell Square, London, W.C.
October 1-30.—Berlin International Photographic Exposition, Franz Goercke, Berlin W. 62, Maassen-Strasse 32, Germany.
October 19-22.—Rotherham Photographic Society. Hon. sec., Hemmingway, Tooker Road, Rotherham.
November, 1904. Ilford and District Photographic Society. sec., W. N. Beal, 155, Thorold Road, Ilford.
November 3.—Frome M.I. Photographic Society. Hon. Secretary, B. J. Mitchell, 3, Willow Vale, Frome.
November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Sec., James Dunlop, Myrtlebank, Motherwell.
November 9.—Hackney Photographic Society. Hon. Secretary, Walter Selfe, 70, Paragon Road, Hackney, London, N.E.
November 21-26.—Sheffield Photographic Society. Joint Secretary, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.
November 23-26.—Hove Camera Club. Hon. Secretary, A. Sargeant, 55, The Drive, Hove.
November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., G. W. Simmers, Aberdeen House, Ramsgate.
December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.
December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102 West 101st Street, New York.
December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.
December 13-20.—Southampton Camera Club. Hon. Secretary, S. Kimber, Oakdene, Highfield, Southampton.
December 28-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 138, Glasgow Road, Wishaw.
January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.
February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.
June, 1905.—Northern Photographic Exhibition. Secretary, F. Issott, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

June 30.—"Photographic News" Quarterly. Money prizes, silver and bronze medals for prints. Any subject. "Photographic News" 9, Cecil Court, Charing Cross Road, London, W.C.
June 30.—Kodak. £1,000 in cash prizes for pictures taken Kodak films and plates, etc. Kodak, Limited, 41-43, Clerkenwell Road, London, E.C.
October 1.—Thornton-Pickard. £100 cash prizes for pictures taken with Thornton-Pickard cameras and shutters. Thornton-Pickard Manufacturing Co., Altrincham.
October 10.—Luna paper. £240 cash prizes for prints on Luna paper. Lucien Allegre and Co., 59a, New Oxford Street, London, W.C.
October 15.—Belgian Association Lantern Slide Stereogram Competition. Secretary, M. Vanderkindere, 97, Avenue Brugman, Brussels.
October 31.—Coxin. 68 prizes for users of Coxin. Judging two pictures. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.
November 1.—The "Graphic." £50 in cash prizes. Manag. Photo Competition, the "Graphic," Tallis Street, Whitefriars, London, E.C.
December 31.—Barnet. Nineteen classes. Prizes valued at £2 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.
March 15, 1905.—Ilford. £750 in prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

MESSRS. L. GAUMONT and Co., of 25 and 22, Cecil Court, Charing Cross Road, London, W.C., have informed us that their "Professional Chrono," which was the only bioscope machine to obtain the highest award at the Paris Exposition of 1900, has recently been selected by the United States Commissioner of the St. Louis Exhibition of 1904, as the only cinematograph machine to be used in connection with this exhibition.

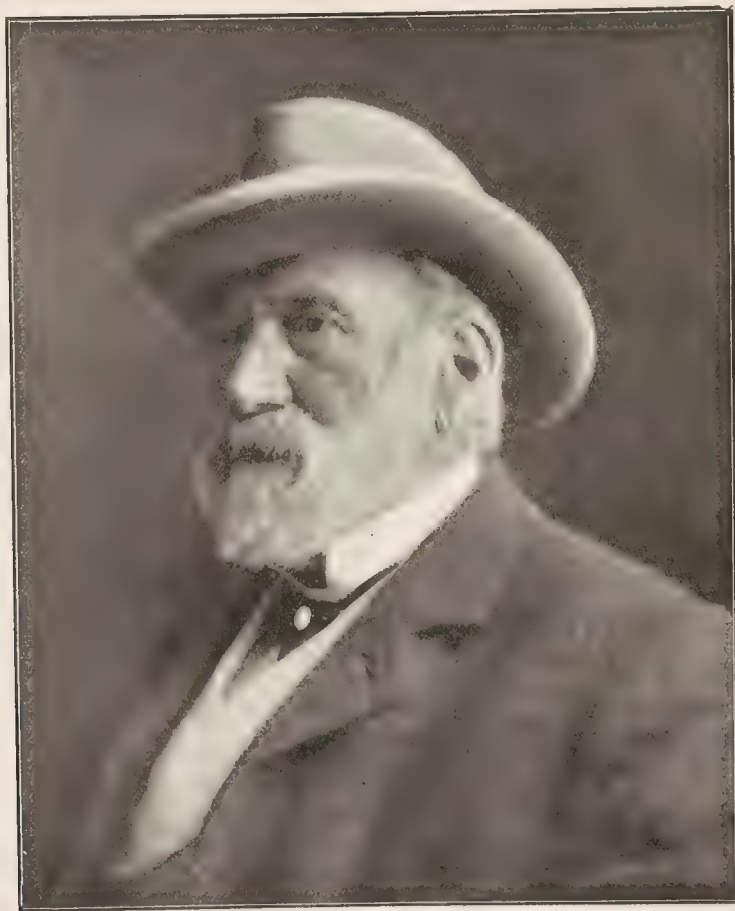
The Beneficent Influence of Hobbies.—The boy who learns to collect and classify fossils or flowers or insects, who has acquired a lot of photography or chemical experiment, and similar knowledge, has laid the foundation of much happiness in life. A hobby keeps up some interest for leisure hours, and lifts one out of the groove of one's everyday work. Suppose a lad has learned to use tools—the struggle for existence is becoming greater every day, and on one or ever be the worse for having learned some handicraft. On the contrary, if a young man has to go abroad to a new land to make his living he may find the hobby of his youth of great utility. Almost any hobby teaches business habits, and instils into the mind that sort of ambition which no one need be ashamed of—ambition to excel.

THE LATE W. BATES.

It is a much regret to have to record the death of Mr. W. Bates, photographer, of Chertsey, Surrey, which took place on the 14th inst., in his seventy-eighth year of his age. The deceased gentleman, in whose company we spent many pleasant hours on the occasion of an annual river trip not many months ago, traced his photographic career back considerably more than half a century, and was, perhaps, one of the oldest photographers in the country, as he certainly was the most urbane, catholic in taste, and cultivated. Skilful with the brush, his leisure was devoted to painting or sketching, and in the charming little Chertsey studio over which he so presided with such skill and success, the backgrounds, frames, and other of the artistic impedimenta of a portraitist's necessary *tridra* were the products of Mr. Bates' facility for design.

To many readers of these lines Mr. Bates will be chiefly remembered as the sponsor and manufacturer of "Bates's Black," but his singular modesty concealed a personality of rare charm and attraction. In earlier years his energies found an outlet in the direction of invention; in later times his portrait work and his painting monopolised his attention. The delightful studio in the old-world little Surrey town of Chertsey has sent out a great deal of excellent portrait work which if it has not often secured the very doubtful privilege of illustrated newspaper publicity has yet deservedly won the esteem and appreciation of a large and refined clientèle. By the death of Mr. Bates photography is distinctly the poorer, for as a man and an artist he was of a very high type indeed.

The business at Chertsey will be carried on by a son of the deceased gentleman, Mr. S. T. Bates, who inherits many of his father's gifts and to whom we wish every success.



THE LATE W. BATES.

Eastman Kodak Company of New Jersey.—The usual quarterly dividends of $1\frac{1}{2}$ per cent. (being at the rate of 6 per cent. per annum) on the outstanding Preferred stock of this Company, and of $2\frac{1}{2}$ per cent. (being at the rate of 10 per cent. per annum) upon the outstanding Common stock, have been declared by the Eastman Kodak Company of New Jersey, payable on July 1, 1904, to stockholders of record at the close of business on May 31, 1904.

MEMBERS and friends of the London and Provincial Photographic Association are reminded that the summer outing will be to St. Paul's Cray Common, Chislehurst, to-morrow (Saturday). The Bickley Hotel, at which supper will be served, is at the entrance to the famous caves recently discovered, and which are well worth exploring. Reserved accommodation will be provided on the train leaving Cannon Street at 2.20. Tickets at special fare can be obtained at the station from the hon. recorder. Return from Chislehurst at 10.6 p.m.

THE PRESS ON THE "B. J." JUBILEE NUMBER.

OUR readers will be interested to learn that the leading newspapers of London and the Provinces have referred in terms of the highest praise and approval to the special Jubilee Number of the BRITISH JOURNAL OF PHOTOGRAPHY, which was published on the 10th inst. We select the following typical examples from the very large number of notices that we have received:—

"A capital Jubilee number."—"Birmingham Daily Gazette."

"Cannot fail to attract the attention of a large circle of readers."—"Aberdeen Daily Journal."

"The text portion of this souvenir number will interest every photographer."—"The 'Publishers' Circular.'"

"Amateur camerists will find the number abundantly interesting as well as instructive."—"Northampton Herald."

"This Jubilee Number deserves its producers' claim for it that it is 'a unique event in photographic journalism.'"—"The 'Referee.'"

"The Story of the BRITISH JOURNAL OF PHOTOGRAPHY' will be read with great interest by all engaged in photography."—"Derbyshire Advertiser."

"The Jubilee number of the BRITISH JOURNAL OF PHOTOGRAPHY is a most excellent one, on which we heartily congratulate our contemporary."—"The 'English Mechanic.'"

"The Jubilee Number of the BRITISH JOURNAL OF PHOTOGRAPHY is a very handsome production, and its contents are of a most interesting character, being contributed by many leading authorities on our art-science."—"Dundee Evening Telegraph."

"The proprietors of the BRITISH JOURNAL OF PHOTOGRAPHY have just issued their Jubilee number—a huge production, full of valuable information, and profuse with half-tone illustrations."—"Halifax Courier."

"The Jubilee number of the BRITISH JOURNAL OF PHOTOGRAPHY appeared on June 10. This capital issue was something of which its proprietors might well be proud. This number was, indeed, a unique event in photographic journalism."—"Book and News Trade Gazette."

"The BRITISH JOURNAL OF PHOTOGRAPHY, established in 1854, has issued an exceedingly interesting Jubilee number, full of special papers and pictures relating to all branches of the photographic art. A feature of the number is a series of portraits of leading photographic experts and inventors."—"Lloyd's Newspaper."

"The BRITISH JOURNAL OF PHOTOGRAPHY has issued a leviathan number to commemorate its completion of half a century of usefulness. The contents are, of course, to a large extent reminiscent, and they include articles by several of the leading spirits in the photographic world."—"Liverpool Courier."

"The BRITISH JOURNAL OF PHOTOGRAPHY for June 10, 1904, is an exceedingly interesting issue which should be in the hands of all photographers. This particular number celebrates a unique event in photographic journalism—the Jubilee of the BRITISH JOURNAL OF PHOTOGRAPHY. The editor and publishers are to be congratulated on its production."—"Pharmaceutical Journal."

"The BRITISH JOURNAL OF PHOTOGRAPHY Jubilee Number was issued on the 10th inst., and is excellent. The number includes an illustrated history of the BRITISH JOURNAL OF PHOTOGRAPHY since its foundation in the year 1854, the interest attaching to the article being increased by the appearance of portraits of the various gentlemen who have filled the editorial chair, the last on the list being, of course, Mr. Thomas Bedding, F.R.P.S."—"Church Bells."

"The proprietors of the official organ of the photographic art in England have marked a unique occasion by the publication of a remarkable issue of over seventy pages, exclusive of advertisements, at the ordinary price. Needless to say, the work is of exceptional value to the photographer, both amateur and professional, and at the same time interesting to the general public. The editor and his staff may be congratulated on the success of their enterprise."—"Oxford Times."

"The BRITISH JOURNAL OF PHOTOGRAPHY has just issued its Jubilee number. The editor is Mr. Thomas Bedding, F.R.P.S., and the issue contains no fewer than thirty special articles on the most popular and prominent phases of modern photography, each written by an authority whose portrait is given. The number also includes an illustrated history of the journal since its foundation in 1854. All photographers, amateur as well as professional, will find this special number very interesting."—"Westminster Gazette."

"The BRITISH JOURNAL OF PHOTOGRAPHY has reached its jubilee, and a special number has been published, containing articles by experts on various phases of the art. Photomicrography, journal photography, picture postcards, a half-century of camera evolution, and colour photography are a few in a list of papers too long to detail in full, and the number as a whole covers an immense field. Rare and contrasts between then and now naturally occupy a good share of attention in this jubilee number."—"The 'Western Daily Press.'"

"The amateur of to-day is apt to forget for the most part the art which he pursues has already a history extending back considerably more than half-a-century. The photographer is reminded by the Jubilee Number of the BRITISH JOURNAL OF PHOTOGRAPHY that its journalism has now a record of 50 years. The number is a special one in many respects, and includes an illustrated history of the journal since its foundation in 1854, and has contributions from many of the leading writers on matters photographic."—"Glasgow Evening Times."

"A copy of the jubilee number of the BRITISH JOURNAL OF PHOTOGRAPHY has been sent to us. It is quite a bulky publication, and votaries of the camera should find it very interesting. The editor, in a prefatory note, candidly admits that the aim kept in view in its compilation was to produce a publication which, when placed in the hands of an intelligent photographer who has not hitherto been a reader of photographic journals, shall so far attract his attention to some branch of his subject that he will become a permanent and interested reader. In other words, it has been prepared and published with an eye to business."—"The 'Dublin Daily Independent.'"

"The year 1854 saw the inauguration of the Crystal Palace and the BRITISH JOURNAL OF PHOTOGRAPHY. It is to-day curious to find that the periodical in question was originally founded and edited by photographic and journalistic amateurs at Liverpool, where it was published for some years before it moved to London and took its present title. This week's number, being a Jubilee one, is made up of mixed reminiscences and congratulations, which are votive offerings from editors of other photographic publications, and from various photographers. The accompanying portraits of the contributors are as interesting as their writings."—"The 'St. James's Gazette.'"

"We have received a copy of the special illustrated number of the BRITISH JOURNAL OF PHOTOGRAPHY, which celebrates the existence of that paper for fifty years. It contains, besides articles on 'Progress of Lens-Making,' 'Photo-Micrography,' 'Three-Century Work,' etc., a history of the journal's life, giving details of its growth from the 'Journal of the Liverpool Photographic Society' in 1854 to the present time; during which period such editors as Sir William Crookes, J. Traill Taylor, and others, whose portraits are published, have raised it to perhaps the leading position in photographic journalism."—"Engineering."

"Last week's BRITISH JOURNAL OF PHOTOGRAPHY was a special number designed to commemorate the completion of its half-century of existence. Founded and edited in Liverpool by a committee of amateur journalists who belonged to the local photographic society, after a chequered life it shifted to London, where for some years it had to struggle for priority with the 'Photographic News,' which journal was, in its palmiest days, looked on as the leading organ. It has so successfully managed to keep out all that have attempted to poach on its particular preserves. That the 'B.J.P.' may look back on its jubilee as the starting time for yet further prosperity will be the universal hope."—"The 'Morning Post.'"

"We have received the Jubilee number of the BRITISH JOURNAL OF PHOTOGRAPHY, which was established in 1854. As might be expected, it is profusely illustrated, and the pictures, which are practically all photographs, are most artistic and splendidly reproduced. Several of the most prominent exponents and practitioners of the photographic art contribute to a number which very well maintains the reputation of one of our most excellent magazines. 'Picture Postcards,' an article by the Rev. T. Perkins, is specially interesting just now, and 'Photographic Lenses of the Past Half-Century,' by Mr. Philip Everitt, is a valuable contribution to the history of photography. The number is readable and informative, and most interesting throughout."—"The 'Times.'"

"The year 1854 is a long way back in the history of photography and the art-science was very different then to what it is to-day. It was in 1854 that the first number of the BRITISH JOURNAL OF PHOTOGRAPHY appeared, and now, in 1904, the journal is celebrating its

...celebrating it in a grand number containing thirty
...by men who lead, or who have led, the progress of photo-
...y. There are portraits of them, too; men whose names we
...as the first men in the photographic world. That Mr. Bed-
...who has for so many years occupied the position of editor,
...have been seriously ill just before the jubilee number appeared,
...feel sure, lamented by all who knew him. But I believe that
...recovering now, and heartily congratulate him, both on the
...and the excellent number in which it is celebrated."—"Pall
... Gazette."

...the proprietors of the BRITISH JOURNAL OF PHOTOGRAPHY com-
...rate this month the jubilee of the paper by the issue of a
... jubilee number. To photographers generally, especially those
...verpool, it will prove of great interest, as it was in the year
...ing the inauguration of the Liverpool Amateur Photographic
...iation that that society put forth this journal, then called the
...pool Photographic Journal, resting their claims to public
...rt upon the widely extending interest in the several branches
...otographic art. There are many still living who, we feel sure,
...appreciate in this history the brief sketch of that delightful
...nality. Mr. H. Greenwood. This number of a paper undoubtedly
...e forefront of photographic journalism, is worthy of careful
...al by all lovers of the photographic art."—"Liverpool Journal
...mmerce."

...the past half century photography has made enormous strides.
...atus and processes have been revolutionised, the amateur votary
...e groping numbers fifty years ago were few and far scattered, is
...embarrassingly ubiquitous, and publications on the art are as
...iful as the most ardent devotee could desire. Considerable
...est attaches at this time, therefore, to the attainment of its
...ee of the BRITISH JOURNAL OF PHOTOGRAPHY. To mark this
...ne event in photographic journalism a special number has been
...d containing thirty thoroughly comprehensive articles on the
...popular and prominent phases of modern photography, brightly
...en and attractively illustrated by competent authorities and
...rimentalists. A notable feature is an illustrated history of the
...nal since its formation in the year 1854, the writer being the
...or, Mr. Thomas Bedding. The production should prove valuable
...professionals and amateurs alike—"Glasgow Evening News."

Photography has now dozens of publications specially devoted to
The oldest photographic journal is, however, still the best. The
BRITISH JOURNAL OF PHOTOGRAPHY publishes this week its Jubilee
number. Fifty years ago taking a photograph was an operation of
ense difficulty. Now every schoolboy can do it. Many thousands,
including schoolboys, can do it very well. The BRITISH JOURNAL
OF PHOTOGRAPHY has always moved with the times. It has numbered
ngst its editors Sir William Crookes (who edited it so far back as
, and it is to-day the most authoritative exponent of photography,
for the professional and the amateur. The Jubilee number con-
s articles on every variety of photographic subject by the best-
own writers. Probably the most interesting is that containing the
iniscences of Mr. G. Watnough Webster, of Chester, well known
over the world in connection with his pictures of Mr. Gladstone."—
"Freeman's Journal."

In celebration of the jubilee of the BRITISH JOURNAL OF PHOTO-
GRAPHY last week's issue, greatly enlarged for the occasion, contains
cially contributed articles by some of the foremost photographic
rkers and writers in the country on the history and progress of
various branches of photography during the past 50 years, as
well as valuable contribution on photographic processes, etc. Many
of the writers have been identified with the JOURNAL for 20, 30, and
on 40 years, whilst a special feature of the number is a history
the paper from 1854 to 1904 by the editor, Mr. Thomas Bedding,
illustrated by reproductions of copies of some of the earliest issues
the JOURNAL, and photographs of the various editors and assistant
editors who have been connected with the paper since it was
established. One of the most readable articles in the number is by
E. W. Foxlee on 'Photography Fifty Years Ago.'—"Lancashire
Daily Post."

THE "B.J." JUBILEE NUMBER—SOME MORE READERS' OPINIONS.

OUR readers continue to send us letters of congratulations on the
"B.J." Jubilee number, of which the following selected extracts are
representative of the favourable criticisms evolved:—

"Congratulations upon your Jubilee number—it is splendid.—T. S.
PRICE."

"Congratulations upon your marvellous Jubilee number; it is,
indeed, a record.—H. SNOWDEN WARD."

"A most interesting number, and I trust the forerunner of many
more.—WILLIAM GAMBLE."

"I think you may feel quite satisfied with the Jubilee number.—
W. R. BLAND."

"I must congratulate you on your Jubilee number; it is quite the
best I have seen of the "B.J."—FRANCIS PHILLIPS."

"Like everyone else I was most favourably impressed with the
Jubilee number. May you be at the helm and eclipse even this when
the Journal reaches its Diamond Jubilee.—HECTOR MACLEAN, F.G.S."

"Allow me to tender my hearty congratulations for your Jubilee
publication. As a reader of seven years duration, it has been a
weekly companion of much value and increasing interest. I have been
pleased with the progressive spirit, and sincerely wish it a very long
and universally useful future.—GEO. TAYLOR."

The British Journal PHOTOGRAPHIC ALMANAC FOR 1861

PRESENTED TO THE READERS OF
THE BRITISH JOURNAL OF PHOTOGRAPHY
With the Publication of December 15, 1890.

LIVERPOOL.
H. GREENWOOD, PUBLISHER, 32, CASTLE-ST.
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PARIS: GEORGE FOWLER, 6, RUE MONTPENSIER
NEW YORK: E. ANTHONY, 501, BROADWAY.
MAY BE HAD THROUGH ANY BOOKSELLER.

Facsimile of Title Page of the First BRITISH JOURNAL ALMANAC
(See "The Story of the BRITISH JOURNAL OF PHOTOGRAPHY"
in the Jubilee Number of June 10).

SOUTH London Photographic Society.—At the last meeting of this
society, Mr. C. E. Kenneth-Mees, B.Sc., F.C.S., gave a paper, illus-
trated with lantern diagrams, on "Slow Plates for Rapid Work."
As the result of many experiments he had come to the conclusion
that rapid plates were only of use in the studio, and contrary to the
generally received opinion, possessed no advantage over slow or
medium plates even for fast focal plane work. By means of strong
development, long continued, he had obtained results with the same
exposure on photo-mechanical plates equal to those on rapid plates
normally developed, but as the developer used was 1 in 4 Rodinal,
the plan is not likely to commend itself to the average amateur. Only
plates that will develop without bromide are of any use on this plan,
and development must be carried to its limit, which, with 1 in 4
Rodinal is about ten minutes. As a result of Mr. Kenneth-Mees'
experiments, several firms of plate makers are investigating the pos-
sibility of raising the height or the development curve of ordinary
plates—a point which the lecturer considered of far more importance
than increasing speed.

FLOATING A PHOTOGRAPHIC COMPANY.

Last week Mr. Justice Grantham and a special jury heard an action brought by Sir William Henry Broadbent, the physician, of Brook Street, against the Earl of Dunmore, Great Cumberland Place; Count Max Hollander, Westbourne Terrace; M. Paul Boyer, Boulevard des Capucines, Paris; and Paul Boyer, Ltd. (in liquidation), of Moorgate Street, for a declaration that an allotment of five hundred Preference shares in Paul Boyer, Ltd., was null and void, for the return of £250, for an indemnity, and for other damages. Further, there was an allegation of fraudulent misrepresentation, and damages were claimed for alleged misfeasance, breach of trust, and contract, etc. The defence was a general denial of the allegations. Mr. Lawson Walton, K.C., and Mr. R. J. Willis were counsel for the plaintiff; Mr. Rufus Isaacs, K.C., Mr. F. Gore Brown, K.C., and Mr. E. Ford for Count Max Hollander; Mr. Eldon Bankes, K.C., and Mr. Martelli for Lord Dunmore; and Mr. Atherley-Jones, K.C., and Mr. Edward Ford for the company and M. Paul Boyer.

In opening the case Mr. Walton said Sir William Broadbent sought to recover damages from the defendants in consequence of his having been induced through their instrumentality to take shares in a company of which they were directors. In Paris there was an enterprising photographer known as Paul Boyer, who was said to have invented some marvellous processes in photography. He considered it would be a good thing if his business could take the form of a company, and be put on the English market. With the assistance of the other defendants this project took practical form, and ultimately a company was registered with the object of buying all that M. Paul Boyer had to sell. The capital was to be £60,000 in £1 shares. Of these 24,000 were to be Preference and the remaining 36,000 Ordinary shares. Lord Dunmore had had considerable experience in connection with company directorship and was chosen chairman while one of the members of the board of directors was Count Max Hollander. On one occasion Count Max Hollander visited Sir William Broadbent as a patient, and in a sympathetic moment, said Mr. Lawson Walton, at the termination of one of his visits, he produced the prospectus of the company and said it was one of the best things going. As a result, Sir William Broadbent signed an agreement by which he was to underwrite five hundred shares, and he gave a cheque for £62 10s. as a deposit on application. But a more complete frost never attended a public appeal in any enterprise of the kind. The people of the United Kingdom and France had prospectuses sent to them broadcast, but there was only one response, and that came from Scotland, the land of the keen and astute. One solitary Scotsman applied, but he did so with that caution which characterised his race, for he only desired three shares. Count Max Hollander also saw another eminent medical man, namely, Sir Thomas Barlow, on the subject of underwriting the company, and with a certain amount of success. Continuing, Mr. Walton said that besides paying the £62 10s. in the first instance, Sir William had to pay a further call of £187 10s., making a total of £250, to the liquidator, inasmuch as the company went into liquidation without doing any particular amount of business. The company was hopelessly waterlogged from the outset, and the defendants had acted most wrongly, to say the least. Counsel then read the various resolutions passed by the board, one being that the directors voted to themselves certain fees. These amounted to a total of £146 to Lord Dunmore and £106 13s. 4d. to two others. This was all done out of the underwriters' money, and beyond that very arduous and responsible work he (Mr. Walton) could not trace that they had ever done anything else in connection with the company. Mr. Walton then dealt with the accounts which had been kept by M. Boyer in connection with his French business before the flotation of the company, saying that the accountants' certificate stated that it was true that the profits of Boyer were £8,000 per annum, whereas it was found that they were less than £2,000.

His lordship remarked that he could not understand how it was that counsel and solicitors had anything to do with the promotion of companies without seeing that the best and fullest information was obtained from the books, etc. The certificate in this case was absolutely false as to its verification of the profits of the defendant Boyer.

Mr. Rufus Isaacs said that no doubt an elaborate system of

falsification of Boyer's books had been carried out. In spite of that had been done, Boyer could not be got hold of. Notwithstanding what our Foreign Office had attempted in the matter and the issue of a warrant by Sir John Bridge at Bow Street, nothing could be done with regard to bringing Boyer to book.

His Lordship remarked that he could not understand why English people could go and placidly put their money into or save French ventures like this before they knew absolutely everything about them. Why, the South Sea bubble was not in it without matter of this kind.

Mr. Lawson Walton, referring to the prospectus of the company, said the stock-in-trade included in the purchase represented a value of £25,000.

Mr. Justice Grantham: Of course, the solicitors had verified the statement in the prospectus.

Mr. Gore Browne said the list was checked and ticked off item by item.

Mr. Lawson Walton said it was perfectly obvious that the value was grossly over-estimating the value.

Mr. Justice Grantham: There can be no doubt, according to the statement made, that he wanted money and that the whole thing was a fraud.

Mr. Bankes said he believed the business was flourishing, but his complaint was that the profits were misrepresented.

Mr. Lawson Walton said they also complained of misrepresentation as to the value of the assets. Proceeding, he said that in the statement produced to the Registrar of Joint Stock Companies the liquidator said the estimated amount of the assets was £511s. 6d., which of course included the uncalled capital. He believed that only 10s. per share was paid.

Mr. Gore Browne said the company had rescinded the contract to purchase, so that the assets did not any longer belong to the company. When the company rescinded the contract they got judgment in the Court of Chancery, but had not succeeded in enforcing it, because they declined to pay a sum of 80,000 fr. registering the company in France.

Mr. Justice Grantham: And this is what English people advised to go into!

Mr. Lawson Walton said there was not a tittle of evidence to show that the property was worth even a small fraction of the value alleged.

Mr. Chantrey, an accountant and liquidator of Paul Boyer, Ltd., said he knew nothing of the signatories. As liquidator he had attended at Paris to take possession of the property of the company, but failed. Boyer had fine premises there which were elaborately fitted up as a photographic business. He could not express his opinion as to the value of the stock, but he considered that the negatives were very valuable, because Boyer was photographer to the French President and had negatives of many notable persons from which he made large sums of money. The British Ambassador was now approaching the French Government to see whether the unfortunate company could not get justice from Paul Boyer. They could get the judgment registered in France without payment of the 80,000 fr. duty he had no doubt that Boyer would pay up.

Mr. Justice Grantham said it would seem as if the French Government, by putting on an extraordinary duty, had made themselves party to a fraud.—Witness said that if he could enforce the judgment he could take possession. Boyer was a fairly substantial man, and in France they dreaded bankruptcy more than in this country.

Mr. Justice Grantham: That is why the Government, being paternal or a maternal Government, protects them by not allowing any one to register a judgment against them.—In cross-examination by Mr. Bankes witness said he investigated Boyer's position as far as he could, and ascertained that he was a member of the Legion d'Honneur.

Mr. Justice Grantham: Does that mean very much in France?—Witness: I am afraid not, because I have taken means to put the matter before the French Ambassador in this country, and no step has been taken to remove him.

In cross-examination by Mr. Rufus Isaacs witness said that if the business was making £8,000 a year the price asked for it was not excessive or outrageous. The minutes of the company disclosed that the directors had taken every step possible to bring M. Boyer to book. The warrant for the arrest of M. Boyer was issued by Sir John Bridge, on the sworn information of Count Max Hollander.

respect to money received by the company. Boyer had not been in his country since. Proceeding, the witness said the French found that Boyer had been guilty of fraud, but he could get further in the matter. Hollander had paid up all the calls on shares. In the whole of his inquiries he did not find any evidence of negligence in the performance of their duty as directors to justify a charge of negligence being launched against them. This was the plaintiff's case.

Mr. Eldon Bankes submitted that there was no case against Lord Dunmore.—Mr. Lawson Walton, in reply, contended that there was no case against Lord Dunmore, and that it would be premature to dismiss him from the action. Lord Dunmore was a party to the formation of the prospectus.

His Lordship said it was such an extraordinary case that he did not hold that there was no evidence against Lord Dunmore. Mr. Rufus Isaacs submitted that there was no case against Lord Dunmore, but his Lordship said he could not stop the case against him.

Mr. Eldon Bankes then opened the case to the jury for Lord Dunmore. He said he should satisfy the jury that his client took more trouble than most directors did to satisfy himself that this was a company with which he could properly associate himself, made very strict inquiries in Paris as to the company. Part of the time his client was away from the country, and he could not be held responsible for acts done in his absence without his permission. He asked them to judge his client's conduct in the case having regard to the facts, and thought they would then see that he had taken every precaution and was reasonably careful.

Mr. Rufus Isaacs then opened the case for Count Hollander and said that much that his friend had said applied to his client as well. His client could only be made responsible if it could be proved that statements to the plaintiff were a lie, and there was no evidence to bear this out. His client also went to Paris and saw the flourishing business that was being done, and satisfied himself that was a good business.

Mr. Justice Grantham said the extraordinary part of the case was that the mischief was done at a meeting at which the only directors present were M. Paul Boyer and M. Lamprecht. These two passed a resolution, but it was extraordinary that the other directors did not look into it afterwards.—Mr. Isaacs said it was apparent that what was done was for the purpose of going to allotment. They told the meeting knowing that the other directors were abroad. The plaintiff was entitled to a declaration that the allotment was null and void, but not to bring his action against the defendants for breach of duty and negligence. Count Max Hollander, as well as Sir William Broadbent, had been swindled by the falsification of the books which was not discovered by the accountant.—Mr. Justice Grantham said that what had altered the complexion of the case was a good deal was the fact that Lord Dunmore, Count Max Hollander, and the solicitors and their families had put money into the company.—Mr. Isaacs said that that was so, and they appeared to have been swindled all round by M. Paul Boyer. It had been suggested in the course of the case that Sir William Broadbent had gone into many transactions with Count Max Hollander, and had lost in all of them. Sir William had made considerable profit in some of the transactions.

Count Max Hollander, picture dealer, Bond Street, said he had carried on that business for thirty years. He first became acquainted with M. Boyer a few months before the introduction of this company through M. Lamprecht. Sir W. Broadbent had had business with him for many years in connection with both pictures and underwriting companies. In several of the latter affairs he had come off successfully. An exhibition of M. Boyer's productions took place at the witness's gallery. It was connected with instantaneous photography. In August, 1898, he (the Count) saw Sir William Broadbent. After consulting him as a patient he opened the business with which this action was concerned. Sir William went to the gallery, and then the negotiations began.

Had you any doubt about its being a sound investment?—No; I put my money in it, and so did my partner. He (the defendant) had nothing, however, to do with the actual promotion of the company. Since the liquidation he had done all he possibly could to obtain redress for those who were so unfortunate as to place their money in the company. He had, moreover, tried every way that

he could to bring Boyer to justice.—Cross-examined: His remuneration was not excessive as a director. On the contrary, he never charged his expenses to Paris when he went there to make investigations. He never heard before this action that the promoter had allotted shares to him in consideration of his services.

Lord Dunmore said that he first heard of Boyer's business in his stockbroker's office. After due inquiries were made in England and accountant's certificates were perused, together with the opinion of counsel, he went to Paris and saw M. Boyer's establishment. As to the promotion of the company, the witness denied that he ever took any part in it, nor did he ask any one to subscribe or underwrite the shares. In the summer of 1898 he had a very severe attack of gout and went to America. He had confidence in his co-directors, and thought he could safely leave the affairs of the company in their hands. He was particularly impressed with M. Boyer, who was "one of the most charming men he had ever met." Being a "Chevalier of the Legion of Honour," Boyer was, he thought, above suspicion.

Continuing, the witness said that when he came back and asked what had happened, and was told that 16,000 shares had been subscribed, he had no knowledge that only one application came from the outside public. He did not know till four years after that Ordinary shares had been allotted to him. It was a piece of great impertinence.—Cross-examined, he denied that he ever considered that his name was put up in the company as that of a mere figurehead.

His Lordship thought there was no case to go to the jury because there was no evidence of fraud, but on an appeal from Mr. Walton he did not insist on this view.—Mr. Walton then addressed the jury on behalf of the plaintiff.—His Lordship, in summing up, held with regard to the limited company that the allotment was not null and void.

The jury returned a verdict for the defendants, but added a rider to the effect that they were strongly of opinion that the defendants committed a serious error of judgment in failing to call a meeting of underwriters in order to lay before them the fact that the condition precedent to the underwriting letter had not been fulfilled.—His Lordship entered judgment with costs for the defendants, Lord Dunmore and Count Max Hollander. Stay of execution was granted on the usual terms.—Mr. R. G. Willis, for the plaintiff, asked for judgment against Paul Boyer.

Mr. Justice Grantham: Oh, yes, that shall be so.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

June	Name of Society.	Subject.
27	Southampton Camera Club.....	Priest Competition.
28	Royal Photographic Society ..	Instruments for Stereoscopic Investigations. Mr. C. E. K. Mees and Mr. S. E. Sheppard.
28	Nelson Photographic Society ..	Flower Photography. Mr. R. Barrett.
28	Birmingham Photo. Society.....	Method of Using Electric Light on the Enlarger Explained.
29	Eveton Camera Club	Enlarger Explained.
29	Cricklewood Photo. Society ..	Evening Club Outing.
29	Birmingham Photo. Society.....	Hand Camera Work. Mr. A. Horsley Hinton.
29	North Middlesex Photo. Soc.	Method of Using Electric Light on the Enlarger Explained.
29	Watford Camera Club	Technical Meeting.
30	Birmingham Photo. Society	Competition—"Animal or Bird Life."
30	Lon. and Prov. Photo. Assoc.	Method of Using Electric Light on the Enlarger Explained.
July 1	Bowes Pk. and District Ph. Soc.	Annual General Meeting.
2		Outing. Leigh, near Southend.

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

JUNE 16.—Mr. Child Bayley gave an instructive and extremely interesting lecture on the Alhambra, Spain, illustrated by lantern slides of great technical excellence, the negatives having been made with a hand camera and developed by the time method. Mr. Harvey Piper who was present was charmed with the pictures and with the lecturer's lucid description and legends, and pointed out the many beauties of Moorish architecture and its difference from our heavier Gothic style.

Mr. Drage was sure that the hand camera had more possibilities than were generally taken advantage of, and quoted Mr. Cembrano as saying that just the same work could be undertaken with a hand camera as with a stand camera.

Mr. Child Bayley, in response to queries, said that permits to photograph in the Alhambra could be had on application, and that 4s. or 5s. per day would cover hotel expenses.

News and Notes.

THE Austin-Edwards Monthly Film Negative Competition.—The prize camera for the current month has been awarded to Mr. Roderick J. McLean, 1, Sussex Place, Widcombe, Bath, for his negative "Castlecombe, Somerset."

IN the Photographic Section of the forthcoming exhibition organised by the Royal Cornwall Polytechnic Society (August 16-20), Mr. H. W. Bennett, F.R.P.S., will take a leading part in the judging and management.

COLLENETTE, Limited.—The above-named Company has been registered with a capital of £1,000 in £1 shares. Object: to carry on the business of photographers, artists, portrait painters, miniature painters, framers, photographic teachers, importers, and manufacturers of and dealers in chemicals and other preparations and articles, compounds, oils, paints, colours, pigments, and varnishes, dye-ware, paint, and colour grinders, makers of and dealers in photographic, electrical, and scientific apparatus and materials, etc. No initial public issue. Table A mainly applies. Registered office: 30, King Street, Manchester.

MR. WILLIAM ANDREWS, photographer, died at Wexford on Saturday evening, 11th inst., after a very brief illness, of peritonitis. He had been connected with the county for about forty years, and was well known in his professional capacity all over County Wexford. Mr. Andrews was a nephew of the late eminent German artist, Professor Gluckmann, who practised in Dublin half a century ago, and it was under that great artist that the late Mr. Andrews studied and served his apprenticeship. The deceased, too, was most popular all over County Wexford, where his genial disposition made him many friends. The funeral to Crosstown cemetery on Monday was large and representative.

POISONING by Cyanide of Potassium.—At the time when cyanide of potassium was the almost universal fixing agent for (collodion) negatives there were few suicides by this poison until that of the late Whitaker Wright. Since then there have been several. On Friday last an inquest was held at Malvern College concerning the death of Gerald Harris, 17, the son of Colonel Harris, of Saltburn, who died on Thursday from the effects of cyanide of potassium. It was stated that the deceased had been a student at the College for four years. A year ago he was warned for irregularities. Some improvement followed for a time, but on Tuesday he was again spoken to and told that he would probably have to leave the school. He was greatly upset, and next morning took poison. A verdict of "Suicide whilst of Unsound Mind" was returned.

AUTOMATIC Picture Gallery (1904), Limited.—This Company has been registered with a capital of £3,000 in 2,900 Preference shares of £1 each and 2,000 ordinary shares of 1s. each. Object: to acquire the business of the Automatic Picture Gallery, Limited, to adopt an agreement between E. H. Frith, of the one part, and the said E. H. Frith, J. H. Birch, and F. G. Kerly of the other part, and to carry on in the United Kingdom, the United States of America, and elsewhere, the business of exhibitors of stereoscopic views, owners and manufacturers of machines for automatic delivery or other action, exhibitors, showmen, advertisers, dealers in photographs, pictures, prints, and engravings, etc. No initial public issue. The signatories are to appoint the first directors. Qualification, £50. Remuneration, £50 each per annum. Registered office, 20, Denman Street, London Bridge, S.E.

ENDOWMENT of Scientific Research.—Mrs. Percy Sladen, of Northbrook Park, Devonshire, in the desire to perpetuate the memory of her late husband, Mr. Walter Percy Sladen, sometime secretary and vice-president of the Linnean Society, has undertaken to devote the sum of £20,000 to the promotion of scientific research, particularly in the subjects in which he was chiefly interested. She proposes to assign this sum under the name of the Percy Sladen Memorial Fund to certain trustees, in the first place of her own appointment, who are directed to employ the income arising therefrom, in their uncontrolled discretion, to "any research or investigation in natural science, and more especially in the sciences of zoology, geology, and anthropology." They are also empowered, if they think fit, to accumulate the income for the purpose of fitting out, or assisting to fit out, any expedition designed to further such research.

GUM Bichromate at the Royal Photographic Society.—The Secretary of the Royal Photographic Society informs us that M. R. Demachy, of Paris, has consented to give a second exhibition of prints by the gum bichromate process. The increasing attention that is being given in this country to the gum bichromate process suggests that the exhibition will be still more popular than which M. Demachy gave here a few years ago. The exhibition will be opened at 66, Russell Square, on Wednesday, June 22, and public will be admitted as usual on presentation of address, between the hours of 11 a.m. and 7 p.m. It is hoped that the prints may be retained until about the middle of July. Everybody interested in the gum process and in pictorial photography is invited to view the exhibition, which will include some sixty examples almost entirely new to this country.

THE annual conversazione of the Society of Arts will take place at the Royal Botanic Gardens, Regent's Park, on Monday evening, June 27, from 9 to 12 p.m. The central portion of the Gardens will be used. The Gardens will be illuminated with coloured lamps and also by the Kitson incandescent oil light. The conservatory in the club house will be open. The reception by Sir William Abner, K.C.B., D.C.L., F.R.S., chairman, and other members of the Council will be held at the entrance of the conservatory, near the Broad Walk from 9 to 10 o'clock. A selection of music will be performed by a string band of the Royal Artillery in the conservatory, and by a band of H.M. Irish Guards in the Gardens, commencing at 9 o'clock. A vocal and instrumental entertainment, under the direction of Mr. H. Tipper, will be given at intervals in the club house. Tickets will only be supplied to non-members on presentation of a letter of introduction from a member. Light refreshments (tea, coffee, ice, claret cup, etc.) will be supplied.

TUESDAY, June 21, was the longest day—a day upon which British people are supposed to be entitled to a longer spell of sunshine than at any other time of the year. The longest day celebrated its 100th anniversary without splendour. According to the almanacs the sun was shining for rather more than sixteen hours and a half. The fleeting moment in which he was revealed to the naked eye of the Londoner hardly altogether made up more than a couple of hours. Save at its birth and its death, the longest day, like many other lengthy things, was excessively dull, and although we have had a hotter and better spell of weather since, it was hardly the sort of day the photographer who relies on the mechanical exposure table would regard favourably. Gleams of sunshine at early dawn and dewy eve were rather tantalising than satisfactory to a town which had been all day vexed by itself under a grey pall of cloud. With the assistance of an efficient north-west breeze these clouds contrived to keep the thermometer in a chastened condition all day long, and there is no every evidence that the clerk of weather has repented of his unbecomingly natural conduct during the summer (!) of 1903, and we shall probably not hear of quite so many postponed society excursions on account of the unpropitious weather.

Patent News.

The following applications for patents were made between May 1 and June 4, 1904:—

Focussing Cloth.—No. 12,611. "Focussing cloth." James Henderson.

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Correspondence.

Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.

We do not undertake responsibility for the opinions expressed by our correspondents.

THE B. J. JUBILEE NUMBER.

To the Editors.

Gentlemen,—One of the features which particularly struck me in connection with your marvellous "Jubilee Number" was the difference of opinion as expressed by two of your contributors. For instance, in an enterprising article by Mr. W. R. Bland, the suggestion is urged to utilise the medium of gum bichromate; on the other hand, Dr. Emerson writes that the process is dead.

Perhaps Dr. Emerson will supplement his statement with information to the basis on which he arrives at his conclusion.—Yours, etc.,
J. PAGE CROFT.

Madant Chambers, New Street, Birmingham.
June 18, 1904.

To the Editors.

Gentlemen,—Your very interesting "Jubilee Number" has arrived, and if it has had the same success everywhere as with me I am sure its desires will be filled to overflowing, and I hope the success of the BRITISH JOURNAL OF PHOTOGRAPHY will go on increasing, as well as its subscribers, and if we are almost sure not to see its hundredth anniversary of existence, I hope you will see its seventy-fifth year at least. I have been much interested in Mr. J. A. Sinclair's letter in the "Jubilee Number," but I must confess that he has not convinced me about the universal superiority of the hand camera over the tripod camera, and I maintain my sayings about usefulness of both, according to the results which are wanted, and if the first view taken in Milan was better obtained without tripod, the other one taken in London might just as well have been obtained with a tripod, as I think that the stoning business of a tripod user is almost played out everywhere now, even in backward Spain, and I think the elegant tripod over a black box to look at the finder is now as well known, and attracts as much attention as the old-fogey tripod user. Furious as it may seem, I have noticed that the use of tripods with cameras is on the increase, at least, here in France, and fully one-third of the hand cameras seen carried are accompanied by a small telescopic tripod. There must surely be some reason for it. As to rapid plates being equal and superior to slow plates, I would like to know why several firms insist upon inflicting on us many as eight different speeds when one only (the most rapid) is the best if not too slow, yet I should think that different speeds necessitate much larger expense than only one speed. This is another foolish or archaic delusion to be added to the fallacy of a tripod camera as against a hand camera.—Yours very truly,

ALBERT LEVY.

Asnières (Seine),
June 13, 1904.

PSYCHIC PHOTOGRAPHY.

To the Editors.

Gentlemen,—Until recently I was under the impression that spirit photography had ceased to be looked upon seriously, but now it seems to be a recrudescence of the subject.

Under any circumstances, what possible explanation can be found for so-called spirits seeking out a photographic plate and reducing their size in order to accommodate themselves to it without the intervention of any lens? as stated in some of the correspondence on the subject.—Yours, etc.,
E. D.

June 17, 1904.

To the Editors.

Gentlemen,—I have followed with interest the correspondence in the "B.J." on the above subject. There are some points good enough for the ordinary morning paper, but not for a photographic journal. I read last week, and have read before that spirit negatives can be taken without a lens or camera. If the thing is a negative it is produced by light or some kindred energy, and if there were no lens the energy in question would fog the whole plate. Will some photo-

graphic spiritualist explain the new system of securing photographs without either camera or lens? I read, I think, in F. Marriot's book that the spirit requires a longer exposure, and therefore after capping the lens after the exposure for the human sitter, it must be left some time for the spirit to impress the plate with its image, the cap being no impediment. If the cap were an impediment, surely the front and bellows were no impediment, and why was not the plate fogged? I could quite understand there being some radio-active image drawn on the inside of the dark slide, which it took time to get impressed on the plate. Why, Mr. Editor, do you not take the thing up, and investigate it in the interest of your readers? I should like to see three persons photographing with stereo cameras at the same time and from different directions, all taking away their plates, and developing at home.—Yours truly,
L. M.

June 20, 1904.

To the Editors.

Gentlemen,—Permit me to say that the extract from my paper on the above was not made by me, though my name appeared at the end. The reporter has summarised it very fairly, but, probably through pressure of time and space, from the first half only. In the discussion which followed, in showing two of the five photographs taken at various times of my niece, I explained that one was in fulfilment of a promise she had made to me through a medium in Glasgow, and that the child was seen and described by a clairvoyant at the time she was being taken in London. About twelve months later she was taken with me again, dressed as before, but holding her head and hands in a different position, and this time she was also seen and described by a lady who was present, and a moment afterwards by the photographer when he entered the studio. I pointed out that in the later one the pattern of the carpet had been reflected in the astral or luminous light, which gave somewhat the appearance of double printing. This your reporter has humorously rendered into "where astral carpets are in general use."

In America spirit photography is much more in evidence than with us, and in "Unseen Faces Photographed," by Dr. H. A. Reid, of Los Angeles, Cal., a number of cases are given, accompanied by the photographs, where the spirit visitors have been recognised as friends and relatives. One gentleman, a professional photographer of thirty years' standing, after a most careful and critical examination, had, in March, 1900, two portraits taken. He took his own plates and developed them himself in another studio, the medium, Mr. Wyllie, never touching them in any way. Mr. Disler, the sitter, in his sworn affidavit, says, "Imagine my surprise and great joy when, upon developing, I saw the correct picture of my spirit mother, two grandfathers, grandfather, and a spirit control."

In my paper I had explained that a photographic medium was one who supplied a magnetic or luminous aura which was made use of by the unseen workers, and, of course, with constant use this would permeate his camera, making it much easier to obtain manifestations than with that of a stranger. Some forty years since a spirit control gave the following explanation, quoted in "The Veil Lifted":—"Spirits impress their image on the plate by depositing thereon repeated layers of magnetism. According to their respective powers of affording this, so is the impression more or less distinct. The magnetism must be of the same texture or affinity as that possessed by the operator; it is accomplished by a rapid vibration of the spirits' magnetic emanation in depositing layer after layer, and the process is this: The operator, by frequent manipulation, saturates his material with his aura, etc., etc." Each psychic photographer seems to have a slightly different method, and produces a distinct class of work, but they one and all appear to have their respective spirit guides, who assist the invisible sitters to render themselves visible on the plate. One operator in America finds that he gets more satisfactory results by leaving the plates for a fortnight before proceeding with the developing, which tends to bear out the explanation given from the spirit side.

The following statement has been made by one of your correspondents respecting Mr. J. Traill Taylor: "We were in each other's confidences, more especially regarding my method of manufacturing shams. Conversations we had during his later years (the italics are mine) tended to convince me that he wavered in his opinions regarding certain results."

You, Sirs, by the timely and welcome reprint of his lecture given

in 1893, have conclusively proved what his views were two years previous to his death, and there is before me a most interesting address which he gave on this very subject in May, 1895, summing up his further experiences as follows:—"Here, however, is the point: these pictures were true and genuine throughout so far, at any rate, as concerned all those who were present; my tests were too good to admit a doubt of this. I, therefore, can afford to look with the greatest charitableness upon editors and photographers who, not having had opportunities of acquiring a sufficiency of knowledge, relegate these photographs to the limbo of fraud. I myself did so at one time, and can, therefore, scarcely blame them for doing likewise. Where blame rests is in their not scientifically investigating a subject which ought to be replete with interest to a photographer." There is no wavering about this, and within six months Traill Taylor passed on and took his first view of the spirit spheres.—Yours faithfully,
June 21, 1904.

H. BLACKWELL.

HISTORICAL.

To the Editors.

Gentlemen,—I notice with much pleasure the commencement of some articles on orthochromatic photography by Mr. E. J. Wall, anything coming from him on the subject of colour sensitive work will be read by the interested with much attention.

In the first instalment of his series, I observe that he credits the late W. K. Burton with being the first to suggest that the emulsion film should be dyed with ammonium picrate to obviate the employment of a separate light-filter. To the best of my recollection, this suggestion was made by Major-General Waterhouse in or about 1883, in connection with collodio-bromide emulsion (orthochromatic), and I am under the impression that at the time General Waterhouse attributed the idea originally to Albert of Munich. Burton certainly was not the first to advocate the use of ammonium picrate in connection with orthochromatic work.

I am writing away from home, so cannot refer to my historical notes on this subject. If I am wrong in my history, perhaps Mr. Wall will be good enough to correct me.—I am, Sir, yours faithfully.

June 20, 1904.

G. T. HARRIS.

Answers to Correspondents.

*** All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.

*** Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.

*** Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & Co., 24, Wellington-street, Strand, London, W.C.

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PHOTOGRAPHS REGISTERED:—

- F. Platt, 25, Mint Street, Kendal. Photograph of Thos. Gūpin.
J. P. Lessels, 15, Crown Street, Aberdeen. Photograph entitled:—"The Smile that Won't Come Off." Photograph entitled:—"The Smile that Won't Come On."
J. T. Barnard, 12, Wansbeck Street, Morpeth, Northumberland. Two Photographs of Last Cattle Market in Morpeth Market Place. Photograph of Oldgate Bridge, Morpeth. Photograph of Sanderson's Bridge, Morpeth.
F. Gleadow, Heathfield, Stonegate, Leicester. Photograph of Mountain called "Le Corps qui Regarde," in Mauritius. Photograph of Head of the "Corps qui Regarde," Mauritius.
C. H. Thwaites, 12, High Petergate, York. Photograph of Mr. T. Tertius Noble.
Flowers & Nixon, 200, Bank Street, Alexandria, N.B. Photograph of the Kenton Public School Football Team.
L. Hart, 25, Triangle, Clifton, Bristol. Photograph of the Bishop of Clifton and Clergy.
H. R. Roberts, Temple Bridge Studio, Llandrinodod Wells. Photograph of Llanyre Bridge, near Llandrinodod Wells.
Blake & Edgar, 38, High Street, Bedford. Three Photographs of the Unveiling of the Bedfordshire Soldiers' Memorial at Bedford.
T. Dann, 88A, Brighton Road, Redhill, Surrey. Photograph of View of Earlswood Asylum Stream. Photograph of View in Myles Wood, Redhill. Two Photographs of "Dollies' Tea Party." Photograph of View of Gutton Hall, near Redhill. Two Photographs of View from Redhill Common. Photograph of View of Gutton Town Hall, near Redhill.

BOOK WANTED.—"PRIM" asks: "Can you inform me of a publication

where I can find all about prisms?" In reply: All works optics deal with prisms. Dr. Von Rohr's is a good work, is about the latest published.

BARNARD.—Some of the portraits you send show much promise in lighting, posing, and retouching. Your carbon work appears good, and taking into consideration the unfinished state of others, we do not think you should have any difficulty obtaining a fairly good salary as operator.

"G. W."—We do not think we can recommend you to start a studio the strength of the prints you submit, unless you have private income. The photographs, however, show promise, you have not yet mastered the difficulties of retouching. Most of the portraits sent have lost all trace of modelling, and appear quite textureless.

"P. J."—We have nothing to add to what you were told in previous reply. If you print from negatives from which, through imperfect washing, the hyposulphite of soda crystallises out, you must expect to get stained prints. You should have thought every professional photographer knows that. We do not reply to correspondents by post.

UNEVEN TONES.—W. Wood asks: "Could you kindly assist me in tracing and avoiding the marks on photos herewith?" They show themselves in the paper before printing, and when mounted and burnished they show very prominently." In reply: The marks show on the paper before printing there is no value in avoiding them. Try another make of paper.

COPYRIGHT.—"E. F. R." writes: "Some time ago you expressed opinion in the JOURNAL that if I registered certain pictures photographs I could restrain the sale of a guide containing pirated pictures, although the guide was published before registration. I should be obliged if you could give me authority on the subject." In reply: If you refer to page 725 of the volume for last year you will find an article on the subject, and authorities quoted. We do not reply to correspondents by post.

OPINION WANTED.—J. H. BAKER asks: "Will you, please, tell me if it is a fault to show the sun's disc in a photograph like the one sent for registration? Do you think a good picture could be done in carbon from the negative, say in a green or blue tone? Would the green or blue look well, and, if so, which?" In reply: The picture perhaps looks a little more effective with the sun shown. A very good carbon enlargement could be made from the negative. Sea green, we should say, would be the better of the two colours mentioned.

REGISTRATION OF DESIGN.—"C. G. T." says: "I have designed a mount to hold cabinet photos. The outside measurement is 3 1/2 x 2 1/2. The mount has been very much admired, and consequently, should like your recommendation as to where to register the same to an advantage. Also, whether you could name any wholesale houses or manufacturers that would buy the patent?" In reply: The design must be registered at the Patent Office Design Branch, Southampton Buildings, W.C. You had better submit the design to some of the wholesale houses, such as Maron's, or Houghton's.

BOOK WANTED.—"C. H. T." asks: "Would you be good enough to tell me the author and publisher of the most reliable book of all kinds of photographic lenses? I require more of an Encyclopædia that explains treatment of lenses under various circumstances and climates. A book with a clearly defined index, readily specifying the purposes of various lenses. To sum the matter up, I need a book in methodical order containing advice on all kinds of lenses and their merits from all experts." In reply: The latest and most complete work on optics is that of Dr. Von Rohr. We know of no Encyclopædia devoted to optics—indeed there is no such work.

COLOURING.—"IGNORANT" says: "(1) I should be much obliged if you would tell me the proper medium to use for painting brown enlargements in oil colours. Will ordinary oil colours do? What must I mix them with, and must the photo (which mounted on canvas) be prepared with anything before commencing work? (2) Should the portrait be varnished, and if so, what? (3) How long should an ordinary 18 x 14 enlargement take to paint and dry?" In reply: (1) Ordinary oil colours, used by artists, mixed in the usual way. (2) If the enlargement is on glossy paper no preparation is necessary. It might, you like, be sized. The picture may be varnished or not. This is a matter of taste. (3) This, of course, depends upon the time expended in the finishing. The paint will dry in a day or two.

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PRICE TWOPENCE.

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THE BRITISH JOURNAL JUBILEE NUMBER.

Special Jubilee Number of THE BRITISH JOURNAL OF PHOTOGRAPHY, which we published on Friday, June 10, met, we are pleased to say, with a most cordial and favorable reception at the hands of the photographic community—indeed, the success achieved was so striking and unanimous as to cause even ourselves, who had anticipated the Special Number would secure a wide degree of appreciation, the liveliest feelings of gratification and pleasure at the chorus of commendatory approval meted out to the issue.

Several extra thousands of the Special Jubilee Number have been printed, and they are selling rapidly at the ordinary price of twopence per copy, or by post twopence-penny. The number consists of a total of 132 pages, forms the largest ordinary issue of any photographic journal ever published in the United Kingdom. The contents include thirty special articles by the foremost photographic authorities of the time; a history of THE BRITISH JOURNAL OF PHOTOGRAPHY since its foundation; and about thirty original portraits of celebrities connected with photography; thus forming a unique and most interesting souvenir of the Jubilee of the oldest photographic journal in the world.

This souvenir number of the JOURNAL is in such demand, and is shortly likely to be scarce, readers at home and abroad who have not yet secured a copy are urged to do so without delay.

EX CATHEDRA.

The Jubilee of "The British Journal of Photography."

The "Wiener Frere Photographen Zeitung," in its issue of June 15, gives expression to the following appreciative remarks concerning our Jubilee Number, and we thank the Editor for his good-will:—"In the year 1850 the paper was known as the "Photographic Journal," and from the 1st January, 1860, it has borne the name of the BRITISH JOURNAL OF PHOTOGRAPHY. We have already had occasion to indicate the value the BRITISH JOURNAL has been to photography, and we wish to point out that we were its first congratulators in our January issue of this year, when no one else thought of the fiftieth birthday of this, the oldest and best professional photographic paper in the world. The Jubilee Number, which lies before us, bears witness again to the importance of the BRITISH JOURNAL, for it brings together in a volume weighing almost 400 grammes a collection of technical and historical papers relating to the development of photography and the BRITISH JOURNAL during the last fifty years. This is completed by a succession of biographies and photographs of the editors and contributors who have hitherto been associated with the paper. Among them is that renowned man of learning, W. Crookes. We will shortly give a more thorough review of this Jubilee, but meanwhile we convey to the Editor a repetition of the good wishes which we already expressed at the beginning of the year."

* * *

Photography as a Demonstrator.

At the present time it is a little difficult to imagine how science could be illustrated, or at least as it is, without the aid of photography. A photograph conveys a better and more truthful impression than does the most skilful drawing. At the final conversazione of the season of the Royal Society, last week, photography as an illustrator was, as usual, largely to the fore in several branches of science. One very interesting lantern demonstration with the modification of the cinematograph of plant movements was given by a lady, Mrs. Dukinfield Scott. The pictures were taken at intervals, which varied according to the rapidity of the motion of the plants, and extended over several days, and sometimes weeks, and the pictures, as shown on the screen, gave an excellent idea of the movements and the flowering of different plants. There were on view photographs from the high Andes of Bolivia and Peru, coloured lantern slides demonstrating the optical properties of mineral sections, colour-photographs of moths and butterflies in various stages of development. Sir Wm. Abney, whose method substitutes spectrum colour for the three colour glasses, showed examples. There were photographs

of weather phenomena, buildings struck by lightning, of solar and meteorological changes, cloud photography, etc. The lantern was in strong evidence during the evening on the ground floor, illustrating a great variety of subjects. When attending a conversation of any scientific society, and seeing how largely photography is always in evidence, one naturally wonders how science would now get on without it as an illustrator.

* * *

Betrayal at Jena.

"Photographische Kunst" on May 31 drew attention to the fact that the firm of Carl Zeiss had summarily dismissed four employés for betrayal of trade secrets. They had offered important drawings to a competitive optical firm in Brunswick, which, however, immediately informed the firm of Carl Zeiss of the fact. It appears that all four were married men with families, and enjoyed good salaries, with prospective rights to pensions, etc. Further particulars of this occurrence are published in the current number of our contemporary, according to which three of these workmen brought an action against the managers of the firm for unjustifiable dismissal without notice. The managers made a counter-claim for £150 damages. The following account of the proceedings is given in the "Leipziger Volkszeitung":—"It was proved that the workmen had been in receipt of less wages, whilst on the staff, than when formerly doing piecework. One of the men, who had latterly been in receipt of a weekly wage of 46s., had actually earned £25 less. The Court held that the firm must pay the three workmen 92s., 84s., and 72s. for loss of wages during the time for which they should have had notice, but it also granted the counter-claim for £150 against the workmen for damages, because the firm would have to instruct others to take the workmen's places. The Court did not find that trade secrets had been purloined; at most there had only been damage or injury." Evidently the law in Germany is more favourable to the employer than in this country. If the decision here had been that the men were wrongfully dismissed, we think the masters' case would have broken down completely. Unfortunately full particulars of the case are not given, and it is thus impossible to form a definite opinion of the case.

* * *

The Advantage of Small Cameras.

In the first May issue of the "Photographische Mitteilungen," the optician, Karl Martin, of Rathenow, published an article concerning the focus of a lens, and explained the effect on perspective the angle included might have. In the current number J. Switkowski, of Lemberg, whilst agreeing in the main with the writer of the article, wishes to point out that there are circumstances in which gain may attend the use of a lens of short focus. Especially is this the case, he says, when your means limit you to one lens only, in which case it is preferable to restrict the focus of the lens to the length of the plate. If the angle of the picture is found to be too wide, the defect may be remedied by cutting down the print. But it might be pointed out that a smaller and cheaper camera would serve the purpose, in which case a wide-angle rectilinear could be added to the outfit, without perceptible addition to the outlay. It is also the more rational course, as it would be necessary to trim the greater part of the prints taken with the camera of larger size. The other point which attracts our attention is the recommendation that the shorter focus lens has greater depth. The writer points out that it makes very little difference if a photograph be enlarged four or six diameters, if the negative be sharp, and it is implied that the shorter focus gives an advantage in definition. It is quite true, as stated by

J. Switkowski, that the depth of definition of two lenses varies inversely as the squares of their foci, but will prove that two photographs, made with similar lenses of different focus, and taken from the same standpoint, will show any difference in definition, when the same amount of subject in both is enlarged to a given size? Apart from something might be said about the grain of the plate, which case the longer focus lens would have the advantage. We quite agree with Herr Martin's recommendation to use a lens of shorter focal length than the diagonal of the plate, unless circumstances make it imperative.

* * *

Spy Mania in France.

About a month ago, it will be remembered, we cautioned English photographic tourists on the Continent to be careful where they used their cameras, lest they subjected themselves to the indignity of arrest and detention by too vigilant official anxious for promotion. In the *Standard* we read, last week, that another English tourist has been arrested as a spy at Brest. It is stated that he was arrested by M. Werdes, the Special Commissioner at Brest, whose subordinates, it is said, had been watching him for several days. As in Colonel Gordon's case the one referred to in the previous caution, the British Embassy received no information about the matter. The telegram to the "Standard" last week, it is mentioned that Captain Gye, the British Consul at Brest, will doubtless take up the case. It is this second arrest, occurring so soon after the other, which induces us to once more recur to this spy scare, and again caution our readers who may be projecting a tour with their cameras in France to be on the alert as to where, and how, they use their cameras; for, as a rule, a holiday trip is none too long and it is very undesirable that any portion of it should be curtailed by the tourist being arrested and confined, even a day while inquiries are being made. We again reiterate what we have said before, that English tourists with cameras, will do well to be provided with passports, although none may be necessary for the country visits. It proves the tourist's identity, and, to a great extent, proves that he is on innocent intent. In the event of an English tourist being arrested as a spy, the best way will be at once to communicate with the British Consul of the place, and if he be provided with an English passport, he will no doubt be quickly liberated, as the Consul will be assured of the holder's bona fides, whereas, without long inquiries may have to be made before he regains his freedom. A passport, as we said before, may be obtained at the Foreign Office without trouble, and at quite a nominal fee—sixpence, if we remember rightly; but it is so long ago since we obtained one that we almost forgot the exact cost. A passport, when obtained, does for a time. It does not require renewal whenever a foreign tour is made.

* * *

Photographic Manufactures in Germany.

The report of the Vereinigte Fabriken Photographischer Papiere, Dresden, and that of the Frankfurt Chamber of Commerce, relating to dry-plates, both give an unfavourable account of business during the past year. The principal manufacture of the Dresden firm is albuminised paper, but although the best has been done to push the sale of other articles to replace the falling-off in receipts for albuminised paper, the net profits this year have fallen to £21,400, against £28,200 last year. This shows a difference of nearly 25 per cent. The Frankfurt Chamber of Commerce states in its report:—"The year 1903 did not bring with it the anticipated improvement in the photographic trade. The industry suffers mainly from

causes. Professional photographers, who are the large consumers, have been subject to very keen competition in all large towns at the hands of stores. These so-called "studio" studios, in which usually about a dozen or more photographic assistants are employed, offer photographs at very low prices. This they are enabled to do because of the extent of their business and the advantage they are in buying material. From this wholesale kind of business the quality suffers, of course, and most of the photographs are of low standard. However, the low prices attract the public. The second cause we have already mentioned in a previous report. We refer to the absurdity of prices, and it has intensified meanwhile. Many even the smallest consumers at prices which scarcely yield a profit. Although the old makes of high quality still command higher prices, which are willingly paid, yet important reductions have to be made. Fresh efforts are being made to come to an understanding as to prices for the home market; but it remains to be seen whether these will be successful. In opposition to the fall in prices, there is increased cost of production. Raw materials, especially glass, are markedly dearer, and this is the case with labour. Good work-women are very difficult to find, and beginners' wages have increased at least 20 per cent."

* * *

Chantrey Trust and its Administration. For many years past there has been considerable discontent in art circles as to the way the Chantrey Trust has been administered by the Council of the Royal Academy. Francis Chantrey, it may be mentioned, left between two and three thousand pounds a year to be expended in the purchase of works of art of the highest merit, that his name might become associated with a National Gallery of British Art. The House of Lords, last week, the Earl of Lytton called attention to the subject and moved for the appointment of a Select Committee of the House to inquire into the matter, and, if necessary, to make recommendations. In his speech the noble Earl was hard upon the R.A., and said the selection of pictures, in the opinion of almost every one, was a mere by-word and a mockery, adding that a large number of the pictures purchased were small ones, worth from £20 to £50, and in twenty-seven years, with the exception of three bought from the Grosvenor Gallery and one from the New Gallery, the whole of the purchases had been from the Royal Academy exhibitions. The Trust, he said, had become a sort of prize fund for the exhibitions of the Royal Academy. Earl Lytton further said that Henry Cole had provided the gallery in which the purchases were exhibited, and they did not include a single picture by such artists as Alfred Stevens, Ford Madox Brown, Rossetti, John Hunt, Burne-Jones, Cecil Lawson, Whistler, the sculptor Legros, and many other artists. In the discussion which followed, the Earl of Wemyss defended the Council of the Royal Academy, but he admitted that many pictures had been purchased under the Chantrey Bequest which he did not like. In conclusion, he said that the Royal Academy were not opposed to an inquiry. Lord Davey, as one of the Trustees of the Chantrey Bequest, bore out the statement of Earl Wemyss as to the Trust and the manner of its administration, and said it might encourage British artists by purchasing pictures of promising but young unknown artists. Other noble lords spoke, and in the end a motion was agreed to, and a Select Committee is to be appointed. It is to be hoped, therefore, that good will result. When such a handsome sum as between two and three thousand pounds a year is at the disposal of the Trust for the furtherance of British art, it is most desirable that the money should be expended to the best advantage, consistent with the wishes of the generous bequeather.

Personal Reflections.

There is one phase of popular photography which most persons are apt to lose sight of entirely, we mean the good service it does in making people use their brains more than they otherwise would. A man buys a camera, and unless he be of the button-pressing-and-somebody-else-to-do-the-rest species of humanity, he is bound to inquire into the why and wherefore of everything concerning it. He gets a little knowledge of optics, of chemistry, of art principles, and so forth. The great mass of people know nothing of these things, and if we read the newspapers we shall find constant evidence of this melancholy fact. Here is a recent instance. At one of the police-courts a man was accused by his neighbour, who is a dentist, of indulging in what is described as an extraordinary form of annoyance, and the assistance of the court was invoked to put a stop to it. The neighbours happened to be on unfriendly terms, which is by no means an uncommon case, and the dentist's neighbour hit upon the following device for showing his unfriendliness to him. "He had been able with the operation of large mirrors, standing in position in the back garden, to observe the movements of Mr. —'s household, and more especially what went on in that gentleman's study and operating room." The result of the application of the complainant's solicitor was that a warrant officer was sent to expostulate with the offender upon his childish conduct, and we may suppose that the annoyance has ceased. But we are inclined to believe that a great deal of the complaint was imaginary. Any one who knows anything at all about the laws of reflection will know that a man standing in a back garden could see much more of his neighbour's doings by means of direct vision than he could by the aid of mirrors. We can certainly imagine a case where a window was too high up for an observer to look into, but even then it would be far more simple to get a ladder than to fix a large mirror at the correct angle upon an aerial platform, without which it would be useless. Further, we cannot imagine that any one in his sober senses would have the remotest wish to look into a dentist's sanctum at the time he was engaged therein. Most persons have a wholesome horror of anything which reminds them for a moment of an enforced visit to one of these gentlemen, whom we all regard with great esteem in their private capacity, but assiduously hate in their professional guise. We could well understand the dentist's annoyance if his neighbour had flashed unmeaning heliographic messages into the atelier, which, of course, could easily have been done with a very small piece of looking-glass, but here we are confronted with the difficulty of "large mirrors standing in position in the back garden." We feel convinced that if the magistrate, or the solicitor, or one of the other persons in authority, had been an amateur photographer, and had had just a little optical knowledge, this bubble would have been pricked before it was allowed to make its appearance in public.

THE Ipswich Camera Club, which was founded only in March last, has had a very successful season, so much so that the committee have decided upon a two day's exhibition of pictures in the autumn, and have engaged the Art Gallery, Ipswich, on November 15th and 16th for that purpose. There will be an open section, divided into four classes, as follows:—(1) Landscape, seascape, and river scenery. (2) Figure studies and animals. (3) Architecture. (4) Lantern slides (sets of four). In each of these classes a silver and bronze medal will be awarded. The section restricted to members of the club embraces seven classes for enlarged and direct prints, and there will be presented seven miniature silver medals and seven miniature bronze medals. Full particulars may be obtained of the Honorary Secretary, 37, Henley Road, Ipswich.

THEATRICAL PHOTOGRAPHY.

FROM the rapid increase of the number of playhouses in London and its suburbs during the past few years, we may assume that theatrical enterprise is much encouraged, and that the stage and all that belongs to it is a centre of attraction to a goodly number of persons. This is further evidenced by the voluminous critiques in the newspapers of any new play, a column or more being often devoted to the subject, while some event which may affect the lives and happiness of a great number of human beings, a tragedy in real life, is passed over, perhaps, with twenty or thirty lines of type. The illustrated weeklies are not slow to follow the lead of the dailies, and it is not uncommon to find in these publications photographic reproductions of stage scenes, or of groups of actors, or single portraits of those who take the principal parts. For our present purpose we embrace these pictures under the term "Theatrical Photography."

It must be admitted that most photographs taken on the stage of set scenes with actors in position are very far from being satisfactory in every way. The art editor of a newspaper, through whose hands hundreds of photographs pass every week, said in our hearing that he had never yet seen a decent photographic reproduction of a theatrical scene. He complained that all the important details were glaringly exaggerated, the expressions on the actors' and actresses' faces were lost, and the shirt fronts of the former were the most prominent features of the pictures. It may be worth while to endeavour to discover the reason why such photographs should meet with this strong denunciation.

There are, we think, several reasons to be deduced for this failure of the camera to give a satisfying picture of a theatrical scene. First, we have the colour difficulty, and although this could be overcome by the use of a screen and a properly prepared plate, the time of exposure would be so prolonged that the inclusion of figures in the composition would be next to impossible. The next great difficulty is found in the method of lighting the stage. Scene-painters depend for much of the beautiful effects which they produce upon the judicious lighting of the various parts of their work. Lights are cunningly hidden behind wings, ground pieces, sky borders, etc., and without such aids half the pictorial effect would be lost. In a first-class theatre the lamps, which of course are of the electric-incandescent kind, are in triplicate—white, red, and green—and either white or coloured light can be cast upon different parts of the scenery in order to obtain the effects desired. But when a photograph is demanded, coloured light is switched off, and the whole stage is flooded with as much white light as it is possible to pour upon it, often with the additional aid of the magnesium flash. The pigments of the scene-painter are in this way submitted to an ordeal never contemplated by him, and tints which beautifully blend with one another under normal conditions are rendered crude and antagonistic, so that they stand out with a hard relief which is most disagreeable to the beholder. The photograph, in fact, gives much the same result as if the artist had been restricted to the use of black and white, without the power of softening or modulating either.

Another cause for the artificial appearance of a photograph taken on "the boards" applies chiefly to scenes of a domestic character. The size of the room or other place represented is necessarily measured by the space available on the particular stage upon which the play is mounted. At a large theatre the proscenium opening may be 50 ft. or more. This would be admirable for the interior of Aladdin's palace, but when the same area is devoted to the humble cottage home to which Claude Melnotte carries his astonished bride, it "fits too much." We lose sight of

the incongruity in the interest which the action of the play arouses, but it is there all the same. But the camera is quite insensible to such considerations, and it depicts the scene with merciless brutality. The characters look like tiny dolls set in a large and rather remarkable warehouse and the most noteworthy feature about them is that they are strongly lighted from the front, whilst the painted background, of a chastened and subdued quality, streams in at the lattice window at the back.

Yet another obstacle to artistic effect in these stage pictures which the camera intensifies is the straightness of the floor. This is obvious enough in an interior scene such as that just described, where the space is far too great to be broken up by tables and the little knick-knacks which fill up the chinks and corners of a room in real life. There is the straight line formed at the top of the footlights at the immediate base of the picture, and this is duplicated a few feet back, where the canvas sheet touches the floor. In a landscape scene these hard lines are fatal to picturesqueness.

We thus see why, in the souvenirs which it has become the fashion to give away to an audience on the one hundredth performance of a play, the pictures, generally admirable in quality, are not photographs of the scenes taken on the stage, but are from drawings. Excellent examples of such work were found in the souvenirs of many of the Shakespearean revivals by Sir Henry Irving at the now defunct Lyceum. But it is now becoming more the custom to make the theatrical souvenir contain a series of portraits in character of the various performers taking part in the piece. And the same wise course is being followed in those periodicals which have become so numerous of late years, which give their patrons a pictorial record of any new play which is produced. The scenes as a whole are ignored, the characters being photographed, by skilled hands, in groups. And the fewer the members of the group, the more satisfactory generally is the resulting picture. As all photographers know, it is far easier to tell a pictorial story—unless one has the brush of a Hogarth—with two or three figures than it is with half a dozen or more. And there is this enormous advantage in limiting the numbers: the picture may be taken, not on the open stage, but within the more convenient boundaries of the photographic studio, where the lighting is under strict control, and where the painted canvas is not.

One of the best of the illustrated theatrical publications is our Parisian contemporary, "L'Art du Théâtre." Printing, paper, half-tone blocks, all are of the best, but we find here the same faults as those to which we have already adverted. The scene-painting is no longer protected by the soft-toned lighting for which it was intended, and the photographed reproduction depicts it as hard, patchy, and unlike reality as possible. It may try to hold the mirror up to nature, but the photographed reflection plays it false. It is only fair to say that these remarks apply only to the pictures of set scenes, the portraits and groupings by the Parisian photographers being beyond reproach.

The most striking scenic effects are produced when, as in a painting, the background is made subordinate to the crowds of figures grouped in front of it, and when those figures are skilfully disposed by the artistic instinct of a good stage manager. Many such scenes habitués of the opera house can call to mind, and here again the question of lighting is all-important, the use of the lime, or electric arc, light giving certain groups of figures the necessary relief and contrast. We cannot hope to reproduce such a scene by photography, unless we possess the power of hypnotising the entire company to make them keep as still as statues for some considerable time; for the reproduction of such a work would require all the care and time

necessary in making an effective photographic copy of an painting. If we could banish the figures the scenery could be reproduced by the tri-chromatic method—but the picture would lose all its charm.

If we turn to the back pages of one of our illustrated weeklies of two decades ago, we can find many excellent woodcuts of scenes at the theatres, and we are bound to confess that they give a far better rendering of those scenes than do the patchy photographs of to-day. The best theatrical work done by the camera to-day are ballet and variety scenes, such as we see exhibited outside the Alhambra (not that of Granada, but its namesake in Leicester Square). Perhaps the reason for this is that we are not familiar enough with fairyland to be hypercritical. The difference between real foliage and painted greenery is at once detected in a photograph taken on the stage, but we can only compare painted fairyland with other paintings of fairyland and we have not sufficient knowledge to pass an opinion on it.

AN INQUIRY CONCERNING PHOTOGRAPHY AS A BRANCH BUSINESS OF STORES.

[Translated from the "Photographische Chronik."]

We are induced to give our readers a translation of the following report, which may be of value in estimating the extent of a recent phase of commercial competition which has excited much feeling amongst German photographers:—

From the report which appeared in No. 3 it will be seen that the members of our Association at their last year's meeting

Berlin ordered an inquiry to be made concerning store photography, and the Association of German Photographic Assistants concurred in its desirability. It was to be expected at such an inquiry—like most others of a private character would not give a complete picture of the relations which exist in the store photographic business. For this reason the Photographic Association of Berlin spent some time in trying to induce the Minister of Commerce to direct a return to be made giving the desired information. But this could not be conceded, and the Association was directed to take suitable steps to obtain for itself the particulars sought for.

The presidents of the State Association of German Photographers and the German Photographic Assistants' Association constituted a commission, and the following results have been deduced from their work, which has just been completed. Of the question sheets which were sent out to business houses, 49 with answers were returned from 18 towns, whilst those sent to employes at the departments of stores 160 were returned answered.

The 49 stores in question had in their photographic departments 309 employes, of whom 57 were operators, 85 retouchers, printers, and 24 general assistants; 46 were employed as helps, and there were 8 apprentices. The number of women engaged was 95. The average hours of work were 10, exclusive of breaks, and 8½, 9, and 9½ hours were only exceptional instances. The term of notice was generally a fortnight, and in only 10 to 12 cases was a month's notice usually given. Few fines were inflicted, and then only for lateness. The answer to the question "How many portraits are taken daily?" was not answered with much exactness. As far as could be ascertained, about 735 portraits were taken daily in the 49 businesses, and the average for each would be 15. But the number of portraits taken in each studio is very different; for instance, one house in Berlin, on an average, takes 120 portraits daily, whilst in other small businesses only about 8 are taken. The minimum prices for cartes-de-visite and cabinets are 1s. 9d. to 1s. 11d. and 4s. 6d. to 4s. 9d. per dozen respectively. The maximum prices vary considerably, and

range from 6s. to 8s. for cartes-de-visite and 12s. to 18s. for cabinets. In a few establishments the receptionists are paid premiums for securing higher prices and large orders.

The following particulars concerning the 160 employes were taken from the question sheets returned by them:—

15 employes ranged in age from 16 to 19 years			
71	"	"	20 " 25 "
31	"	"	26 " 30 "
15	"	"	31 " 35 "
11	"	"	36 " 40 "
5	"	"	41 " 45 "
1	"	"	46 " 50 "
2	"	"	51 " 55 "
1	"	"	56 " 60 "

Nearly half the employes who answered the question concerning their age are therefore between 20 and 25 years old. The question if married, was answered in the affirmative by 38, and in the negative by 118.

One hundred and fifty-three sheets gave an answer to the important question concerning income, and the following classification may be made:—

25s. monthly... 1	80s. monthly... 9	150s. monthly... 9
30s. monthly... 1	85s. monthly... 3	160s. monthly... 3
40s. monthly... 1	90s. monthly... 15	175s. monthly... 1
50s. monthly... 2	100s. monthly... 27	180s. monthly... 1
60s. monthly... 6	110s. monthly... 10	200s. monthly... 7
65s. monthly... 4	120s. monthly... 26	250s. monthly... 3
70s. monthly... 8	125s. monthly... 2	300s. monthly... 1
75s. monthly... 4	130s. monthly... 6	350s. monthly... 1
	140s. monthly... 2	

The average wage, therefore, is about 110s. per month. Of the 153, 10 receive the average wage, 62 earn more than 110s. per month, and 81 have to satisfy themselves with less than the average. Most of the employes, 81, receive their money fortnightly, 49 receive it monthly, and 23 weekly.

The answers concerning the hours of work, in this set of returns, agree with those received from the different firms:—111 employes worked 10 hours daily; 27, 9 hours; 8, 11 hours; 6, 8 hours; 4, 9½ hours; but only 1, 7 hours. The question, if Sunday work was required, was answered in the affirmative by 84, and in the negative by 73; 87 received payment for overtime, but 53 did not; 153 of the employes who replied named the branch of work in which they were engaged: 51 were retouchers, 36 printers, 28 operators, 16 general assistants, 16 receptionists, and 6 helps.

As already mentioned, it was not to be expected that the returns would give a complete picture of store studios, but the result would have been more complete if a considerable number of employes had not refused to answer. For instance, one of the persons to whom the sheets were confided sent the following reply:—"The filling up of these returns was absolutely refused, and the writer cannot supply the answers, as the information at his command is insufficient." This abstention is the more regrettable as the greatest privacy regarding their identity was promised to those concerned. On the other hand it was a pleasure to see that in some cases the return had been made most conscientiously and always gave satisfactory information. This offers a splendid basis for future action.

THE annual general meeting of the Röntgen Society will be held on Thursday, July 7, 1904, at 20, Hanover Square. The chair will be taken at 8.30 p.m. The Council have arranged that the library of the Society at 19, Hanover Square, shall be open to members, for reference, every Thursday afternoon from 5 p.m. to 7 p.m. Members are invited to send to the librarian any contributions of interest—books, journals, skiagrams, tubes, etc.

THE STEREOSCOPE APPLIED TO ASTRONOMICAL RESEARCHES.

II.

LET us now examine the stereo-comparator by the aid of which we shall study the plates obtained. Fig. 10 represents the first style, such as was constructed by Dr. Pulfrich for plates 13 x 18 cm. The plates are arranged on an inclined frame-work in the form of a disc, and they may be oriented in their plane or adjusted in two perpendicular directions by measurable amounts. A bent arm attached to the top of the frame-work supports the optical part in front of the plates; it will be a reflecting stereoscope when one wishes to judge of the plate as a whole; or a binocular microscope when one wishes to study the plates in detail, and to take measurements on them. In the first case the course of the luminous rays is similar to that which takes place in the telemeter of Helmholtz. The arrangement of the binocular microscope is outlined in Fig. 10; O_1 and O_2 are the objectives, I_1 I_2 the eye-pieces of the two bent microscopes; R_1 R_2 represent the location of a system of lenses reflecting the images received from the plates

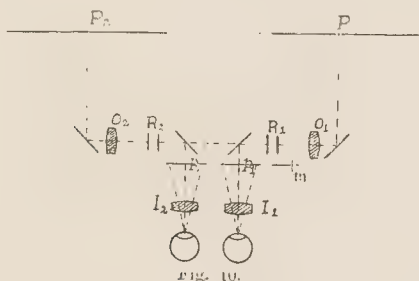


Fig. 10.

P_1 P_2 . In the plane of the images p_1 p_2 a movable mark is changed by a micrometric screw m , which comes into play in the measure of distances. The binocular apparatus is necessary to determine this; but it is evident that it also furnishes the two other co-ordinates, the height and the width of the objects; then a single microscope may be used just as in the comparators already employed for several years in measuring stellar photographs.

We now have at our disposition an apparatus which presents advantages over all the means hitherto at hand. In the first place, the stereoscope wins for itself a very natural satisfaction; look, for instance, at such a view taken in the mountains at the extremities of a base of 45 metres. What striking relief! It is true, one does not realise in examining this picture the impression of grandeur that strikes the traveller going over the gigantic contortions of the Alpine soil. By no means; one might rather imagine himself in the presence of a sculptured model, on a reduced scale, reproducing with wonderful delicacy all the details of the surface. Evidently it can be used to reproduce in relief on a small scale all the details of which stereoscopy has given evidence.

Then let us look at the photographs of the moon; they are slides obtained by Messrs. Loewy and Puiseux, and which have been combined in the stereo-comparator; they represent nearly the same phase of the moon; but it is noticed that, in consequence of the well-known phenomenon of libration, the satellite does not present to us exactly the same face. The whole appearance here is as if, the moon remaining fixed, the observer had changed his position with regard to it, by an angle equal to the libration; at the distance which separates us from the moon, this amounts to a displacement of about 100,000 kilometres in the case considered. Then bringing together in the stereoscope the two images obtained at the extremities of a base of this length, a very clear sensation of the rotundity of

our satellite is obtained. Much more, Mr. Pulfrich has been able, by the aid of the movable point in the field of the microscope, no trace on the curved surface of the moon a series of lines uniting points at the same distance from the observer and to obtain a system of curves on a level, analogous to those traced on the geographical maps and enabling us to follow in detail the structure of the lunar surface.

Let us examine in the same way the two photographs representing Saturn, including the mass of stars surrounding Ophiuchi. These two views taken by Mr. Wolf at the Heidelberg Observatory, June 9 and 10, 1899, when examined by the stereoscope give a legitimate surprise; the planet—with two of its satellites even—appears freely suspended in space very far in front of the background of the picture formed by the group of neighbouring stars, which seem, because of the immense distance, infinitely removed in the same place. Figure 11 enables one to understand the effect. O represents the sun; T_1 T_2 S_1 S_2 respectively the positions of the earth and of Saturn on June 9 and 10, 1899, a period near the time of opposition. The first day the planet is seen in the direction of T_1 S_1 ; the second day it appears in the direction T_2 S_2 . The combination of the two views in the stereoscope produces the same effect as though one were looking at the planet with the right eye at T_1 , the left eye at T_2 , that is to say, as though Saturn were at S .

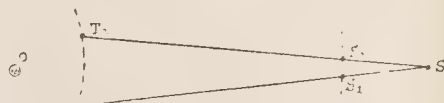


Fig. 11.

In the direct view with the naked eye the base of operation is about 65 millimetres; in the stereoscopic telemeter this distance is extended to one and one-half metres; then we have seen by what arrangement this distance may be increased to 10, 20, 100 metres and even more. Finally we find ourselves enabled to use a base of more than 2,500,000 kilometres, thanks to the revolution of the earth around the sun. It is not surprising that with the eyes spread apart to such a distance one can take account of the disposition of the stars in space. Let us note also that we see Saturn not at its real distance from the earth, but at a point S farther away than S_1 or S_2 , because of the movement of the planet while the earth moves from T_1 to T_2 . If Saturn had remained motionless in the interval the stereoscopic effect would have been still more obvious.

We can examine the comets in the same manner and assure ourselves that the tail is undoubtedly turned away from the Sun; more than that, we shall have a means of gaining exact information of its structure and dimensions. For, let us note in this connection, one can effect pointings on an object with a definite outline like the image of a star, with the same ease and the same precision as on those with blunt or poorly defined outlines, such as the foliage of a tree, the smoke coming from a chimney, the clouds of the atmosphere or the nebulae of the sky. It is a fundamental property of the stereoscope; the importance of this peculiarity will be noted especially in the search for the height of the clouds, for example, when the lack of points of reference necessary for exact setting is the principal cause of the uncertainty which this study admits of with the means used up to this time; it will be equally valuable in the study of the displacements or modifications which the nebulae undergo, a field in which our knowledge is still very incomplete.

On the other hand stereoscopy furnishes a very simple means of comparison of two plates of the same object. One could examine them by transparency by placing them one over another

and find out whether certain details are not different in the two images. But this is an extremely laborious procedure and not very exact, especially when one is studying stellar photographs, for it will be necessary to pass constantly from one plate to the other to assure oneself whether a change thus indicated is real and does not result from a defect or from an alteration of the plate. Here, on the contrary, it suffices to take a glance into the stereo-comparator; at the slightest difference in the two objects, certain parts appear to detach themselves in front of the others, or they announce themselves by a trembling, an instability in the image when they are of different brilliancy or are found only on one plate. This property is susceptible of innumerable applications; we can utilise it to study, for instance, the slow displacement of a star, to prepare and verify graduated scales, characters of lighting, etc. We can also apply it to the examination of the spectrum of stars with reference to their radial velocity; the displacement of the rays by virtue of the Doppler-Fizeau principle will make them appear in planes different from the rays of the spectrum of comparison. The measures that can be taken will be much more exact than by the actual means, since the lack of clearness of the rays or bands is no longer an obstacle to the precision sought for.

We have here also a new means of attaining the knowledge of the proper motion of the stars. Until now a limited number of stars could be examined from this point of view. They are the general brilliant stars easy to observe with the meridian instruments or lending themselves to micrometric measures by their relation to neighbouring stars. But for the greater number of faint stars, for the nebulae, nothing is known as yet. It would be necessary to have recourse to photography and to measure carefully, after a pretty long interval, the positions of these innumerable stars in order to assure one's self of an actual displacement, a work which would require an immense amount of time. What have we to do here? It is enough to take under the stereo-comparator the two plates representing the same region of the heavens; if certain stars have changed their place, they will appear to detach themselves from the mass of other stars which form a flat background, as in the stereoscopic views of Saturn. This applies equally well to the small planets that can be found with the help of two photographs taken at a relatively short interval. These stars strike the eye at once on the inspection of the plate without its being necessary to search laboriously for them. It is, so to speak, impossible not to see them. It is thus that Mr. Wolf, well known for his numerous discoveries of little planets, had submitted to Mr. Pulfrich for inspection two plates on which he had recognised several asteroids after a minute comparison; Mr. Pulfrich, although entirely inexperienced in these researches, discovered at a glance, with the help of his new stereo-comparator, all the objects noticed by Mr. Wolf, and pointed out besides a new asteroid which had escaped the Heidelberg astronomer, who must nevertheless be considered the man the most experienced and the most skilful in this matter.

Finally, the variable stars will not escape the observer either. They distinguish themselves by a sort of scintillation contrasting with the tranquil and steady light of the background. They strike the eye, and even produce a sensation so disagreeable that one cannot mistake them. Quite recently Mr. Wolf published the result of the comparison of photographs of the large nebula of Orion. Thanks to the stereo-comparator he finds in it no less than twenty-four new variable stars, among which several are remarkable. Finally, the defects of the plates, which it is also very important to recognise, become evident in the same way.

Without doubt, before being able to study by this means the proper motions of the stars, and, what is still more delicate,

to determine thus the stellar parallaxes, the art of photography must be brought to greater perfection; there will be many difficulties to overcome, arising especially from the dispersion caused by the atmosphere, and from the difference in the colouring and composition of the light of the stars.

Still the different experiments where stereoscopy has been put in practice have appeared up to this time so convincing that one can hardly prophesy yet where the applications of the new method will end.

G. VAN BIESBROECK.

FADING OF SILVER PRINTS.

The fading of silver prints is a subject that is always with us, but we do not seem to get much nearer to the why and wherefore thereof. Everything used throughout the different processes from start to finish has been blamed in turn. Therefore, anything that will shed even a little light upon the subject should be useful. It has been stated frequently that the mountant has much to answer for as so many unmounted prints have been found in good condition many years after production. To determine not only if the mountant was guilty, but also if possible the part played by light and free access of air, these experiments were undertaken.

On November 10, 1894, three prints were made from the same negative, care being taken to print them to exactly the same depth. The paper used was Ilford Matt. They were toned to purple in borax toning bath, the prints were thoroughly fixed and well washed in running water by themselves, constantly moving, for two hours. The backs of the prints were divided horizontally by pencil lines into five parts, and one of these parts of each print was coated with dextrine, flour paste, starch paste, gelatine, one division being left bare. They were mounted in this way: No. 2 upon clean glass, No. 2 upon card, No. 3 upon card with the centre cut away so that the side edges only were attached to the card. The card used was a high grade one, made for water-colour drawings, supposed to be pure, bought of a good artists' colourman. A strip of card about $1\frac{1}{4}$ inch wide, wrapped in Swedish filter paper was placed perpendicularly over the centre of each, attached top and bottom, and in the case of the glass and cut-out mount, at the back as well, to exclude light. They had no cover glass or frame, but were hung to a lath close together and exposed in the lightest part of a room facing south where the sun (when he deigned to shine) would play upon them part of the day. In particularly bright and settled weather they have a number of times been hung in the open air upon a wall facing south, for days and nights at a stretch. This treatment should be sufficient to try the keeping qualities of any silver print. It did these. On May 18, 1904, nine and a half years after the mounting, the filter paper shields were removed and the prints examined. The story they tell is this: They are now not of equal strength, the print on card is the palest, the one on glass comes next, that exposed on both sides—the cut-out mount—darkest. The difference is considerable, all had faded, and they now are brown instead of purple. There was much yellowing upon the exposed parts and some on the marked portions, especially upon the one with the cut-out mount. I could detect no difference whatever in any of them attributable to the mountant. The part which had received no adhesive was most stained on each of the prints. To ascertain how much of this stain was due to accumulated dirt, etc., on the prints, cold water was let to run upon them, carefully brushing with a badger hair mop. They were then put to soak in cold water to remove them from the mounts, after removal well washed in running water, and dried. The washing removed much, if not all, the yellow stain from the parts that were covered in the cases of the glass and card mounted ones, that from the cut-out mount showing little improvement.

By transmitted light all gain a little of their original purple

tone down the strip that was covered. They are all at least as much stained where no mountant was applied as at any other part, so that it would seem the mountant, other things being equal, tends rather to preserve the print. That the free access of air is the powerful factor in the yellow staining, for the one exposed back as well as front was most stained. (On the other hand it had faded least.) That darkness does not prevent fading but to some extent preserves the original tone, and that the freer the access of air the more the print stained. Perhaps I should have stated before the print on the cut-out mount when the mountants were dry naturally buckled, the strips of card used for exclusion purposes not coming into close contact with the print either front or back, would protect it less from both light and air than in the other two cases. No yellow stain occurred when protected from light and free circulation of air. Lastly, the stain runs right through the paper. It really seems quite impossible to remove the whole of the silver compounds we do not need when we have finished our prints.

A. J. BROWN.

THE ARTISTIC ASPECTS OF PHOTOGRAPHY.

II.

It is, of course, extremely difficult to be original without cutting adrift from the moorings of good taste. In the matter of subject, every available field has already been exploited; in the matter of treatment, the dealers have offered to the million, for a few pence, every variety of material needed for the varied printing processes. Even the designers of picture frames have run through the whole gamut of styles, from unwieldy constructions at one end, to no frame at all at the other, including every material, natural or fabricated, under the sun. The man who would display originality, therefore, is driven, in the matter of subject, to subvert all accepted principles of composition and arrangement. In doing this, he finds vagaries of trimming afford him great help. A group of figures may have their top hair "trimmed" in this manner, whilst their feet and the carpet pattern hold the centre field of the noble work. A profile portrait is constantly trimmed just in front of the ear, as you all must have frequently noticed. I expect to see the day when a full-face portrait is presented by the same half measures. So far as treatment of printing goes, the efforts have been mostly in the direction of perfectly flat, and most often dark, effects upon a roughened paper that exaggerates the already too granular effect of the image. Absolute silhouettes are sometimes offered us in apparent seriousness. Who in their senses would consider it worth while to make silhouettes deliberately by photography? What does such a treatment give? One thing only—hard outline: the very thing that is anathematised by so-called artistic photographers. No tone, no planes, no "drawing," as photographers elect to say, no gradation, no textures, no atmosphere, no modelling, no detail, no quality. The original ones probably grew and flourished at Brighton; the modern ones are in place at Yarmouth. The name of an unpopular French Minister became, in derision, applied to everything cheap and trifling. How well it was applied to this form of art, and how well is it still applicable to the empty flatnesses that disgrace pictorial photography in our galleries to-day! Travelling in an opposite direction to the fatuous reaching after originality, is the equally dangerous practice of apeing certain methods peculiar to the graphic arts. I use the term "peculiar" advisedly, for the most senseless of these apeings is that of the scratchy background to a figure, which, natural, fitting, and desirable as it may be to a worker with a pointed instrument upon metal, stone, or paper, is monstrous when applied to any other form of representation, and despicable into the bargain, when it is applied to photography. I have brought with me a choice example of this precious form of Art with a capital A, which I should be glad if you would

inspect before you leave. When you have noted the scratchings in the background, the shoulders, and the hair, you will not need to have pointed out to you the utter incompatibility of it all with the photographic smoothness and absence of line in the face. Even supposing the background was of a tonal instead of a linear nature, its presence here is highly detrimental to the relief of the head. In sheer ignorance of the principles he is pretending to understand, the artist, as he would no doubt have me call him, has positively produced the very opposite of the effect such a background treatment would be calculated to enhance. If I were to lay my tongue to the precise expressions that I think would properly describe this performance, you would perhaps think it advisable to remove me from this rostrum by constabulary aid.

There are other instances of artistic masquerading which you yourselves can easily call to mind. Some may be less reprehensible than others, some, indeed, may have no guilt beyond a chance resemblance to methods in the graphic arts. The flagrant example I have shown is more than enough to serve as a warning and to afford me personally a vigorous and hearty protest. Amongst other misfortunes that have come in the wake of the curse of originality for its own sake is the wanton falsity of tones. This has developed into a fashion, but of fashion particularly something may be said later on. If there is any one quality in respect of which photography can and should, excel all other pictorial methods, it is that of tonal values. Judging from many works I have seen, and some that I possess, of exquisite beauty in this respect, there is no doubt in my mind that it would be impossible to find effects of light and air, that photography could not represent with more subtlety, more tenderness, and truth than any other known method of monochrome representation. Is it, in fact, however, that each photographic picture produced, with claims to be artistic, can show a due appreciation on the part of its author of these wonderful powers possessed by photography? Do we not see year by year the same utter ignorance or disregard, which is worse, of the most obvious truths in the phenomena of light? The names of several people who have somehow or other won reputations are seen in no retiring or modest characters attached to outdoor scenes that are divisible into scarcely more than two tones. In another place I have observed that tone in a naturally lit scene is, in a musical sense, chromatic—an infinitely gradated gamut—that makes in its happy combinations the rich result that chords of close harmonies make: vastly different from the effect of one note in the treble and another in the bass, which is the metaphorical description of the faulty prints of which we speak. By what right are these claimed to be, and appraised to be, of more artistic value than the glossy silver-print that is correctly exposed and simply printed? Is it supposed that the gloomy Erebus is capable of more poetic import than the natural light of day, or the glorious sublimity of sunshine? If this is maintained, then the true artist, whoever or wherever he is, will on his part maintain that the poetry of such prints is a purely subjective quality in the aberrated minds of those who make them, and is a spurious quantity in the taste of such as affect to admire them. Certainly the light that they represent was never of actinic value enough to take a photograph at all, which begs the question why it ever was taken, if the actual result of the negative was less to be preferred than the ultimate result of the print. It can only be presumed that the camera was set up with the intention of getting something on the negative that would be deliberately submitted to falsification and debasement in the printing. For such a practice there is only one name. It is prostitution; prostitution of one of the most marvellous discoveries of modern science to the whim and caprice of a faddist, who utters it seriously, as art, to the beguilement of the ignorant.

This leads to another point; the manipulation of prints

ticularly those of the gum-bichromate order. That variety print, more than any other, as I have remarked elsewhere, requires the artistic knowledge and the faultless taste. In the hands of an artist it may give charming results; but it is the same time the greatest pitfall of the photographer if he is not tolerably artistic. Generally speaking, the more prints that are amenable to handwork are worked upon, the less do they resemble the negatives from which they were derived. I doubt such manipulation is of great service to the photographer who wishes to turn a bad record of midday tones into something that, by the help of a title, may masquerade as an effect of the shades of evening. Further, gum prints are capable of a certain quality of an atmospheric kind, under the glamour which the truth of tonal values often makes an unnoticed appearance. In the matter of truth of form, there is often just much error as there is in point of tone. If the photographer would insert trees, clouds, and so forth, possessed but a little knowledge, he would be cognisant of the fact that to draw truthfully the characteristic shapes of trees and clouds requires years of careful study and observation. The probability is that he could not boast of so much education; if he could he would perhaps put it to a different use. It comes out, therefore, that the manipulated print, be it murky and indistinct as it sometimes is, usually bears upon it the stamp of unconvincingness, a great crime in art. Even the partial alteration of forms already existing in a most dangerous practice; since the accidental variations of nature, strange as they may seem, are more difficult of representation than the general forms. Invention must be backed up by both knowledge and imagination, otherwise it is feeble falsehood. Looking in view, for the moment, the subject of tone, however, it will be interesting to note the words of one of the most advanced so-called impressionistic photographers of the day, Mr. George Davison. He himself has given utterance to these startlingly true words: "It is worth while noting that some of the simplest facts of light are overlooked by photographers who have been governed by the untrue and misleading conventions and dogmas concerning gradation and brilliancy. For instance, the necessity for points of the deepest black is insisted on, in order to give scope for as long as possible a series of steps up to the points of white, regardless of the fact that this black is generally much too black for the purpose in hand. A little experiment would show how light outdoor shadows should be as a rule. For instance, the darkest shadow of a door, seen at a little distance, is lighter than the shadow side of a white curtain in a room. Consequently it is of first-rate importance in landscape pictures to keep the shadows light. To repeat the impression of outdoor light the whole picture must be luminous and not heavy or dark." For my own part I will not say that here and there a little reservation might not be made as to these remarks. Mr. Davison admits to being influenced by a certain Mr. Francis Bate, of the English Art Club. That gentleman overlooks the fact, and Mr. Davison is inclined to overlook it with him, that the perfect representation of natural light, especially sunlight, involving obviously an impossibility, it becomes necessary in art to compromise, and to take nature in a key low enough to admit of something like true relations in chiaroscuro even using the whitest paper as the brightest spot in the picture. This necessarily places the shadows rather low in the scale. Nevertheless, Mr. Davison's words are, as I have already said, remarkably true. They were spoken more than four years ago. Are they borne fruit? Not a whit! Truly photographers are a stiff-necked generation! We see plenty of sunlight pictures veritably as black as ink, wherein the evidence of actual sunshine exists nowhere but in sun-cast shadows which are darker than ink, unless perchance the print is made in Indian or emerald green.

I do not deny that there are dangers in an opposite direction.

There is such a thing as the "washed-out" print which is perhaps the outcome of the principles advocated by Mr. Francis Bate, to whom Mr. Davison has expressed his own indebtedness. It must be nearly twenty years since I read the little pamphlet in question, but I remember enough to know that it advocates light shadows everywhere, so that the whole picture may be suggestive of light. A picture so executed would, in itself, undoubtedly be fuller of light paint than one painted with plenty of shadows in their true relations, giving a truer sensation of actual daylight. And a peasant, who confronted it might find himself somewhat dazzled, as he is when the sun shines in his eyes across the fields. But this effect upon the spectator is, I hold, an illusion, a trick. It is magnificent; but it is not art. There is another question which is always fruitful of discussion. There is scarce need to name it. I refer to definition and diffusion of focus. To myself I put the case shortly thus: Given every other particular and circumstances good and perfect; which photograph should I prefer, one with keen definition or one with wide diffusion? I should not hesitate to choose the former. Perhaps you will say that I seek "a poor choice in rotten apples," and that the wise selection lies midway between the extremes. This may be granted, but it avoids the point. If it could be proved instead of merely claimed that wide diffusion is productive of more artistic results, no one would hesitate of course. So far as I know, it has not been proved, and hence the supporters of the method are still in the minority. Let us ask ourselves whether this diffusion of focus improves what photographers call "drawing." Who has the temerity to say that it does? Does it improve the modelling? No more than the "drawing"! Does it facilitate the representation of textures? Scarcely. Does it secure tonal values? The very reverse can be proved. Does it produce breadth? Yes, of that sort that it is better to be without! Clear definition, on the other hand, may be shown to be necessary to the perfect portrayal of delineation, modelling, textures, and tones. It may further be demonstrated not to stand in the way of breadth, whilst it certainly is an added truth.

It is claimed that diffusion of focus renders a scene more as the human eye beholds it, but it is difficult to follow and endorse the arguments of those who advance that claim. Much easier is it to demonstrate that the human eye in a healthy condition never saw a scene blurred all over. Should I be thought too presumptuous if I directly combated the favourite theory that the eye only sees one spot sharply and all the rest blurred? I grant that one spot is seen distinctly, but I submit that the vision flits so rapidly and adjusts itself so instantaneously that all parts of a scene are, to the eye, definitely viewed. Moreover, there is scarcely any need of what is known as "accommodation" in viewing things beyond the distance of, say, 50 ft. and right away to the horizon. Take, for example, a line of elms in winter time that stand against the sky at the farthest distance. A diffused focus will melt their forms away to nothing, but the eye will retain them perfectly. They are soft, of course, but sharp, nevertheless. It is the greatest blunder to suppose that an object may not be soft and yet have sharp edges. Distance affects tone only and solely. It has practically no effect whatever on sharpness. A notice board may be unreadable at a certain distance, but what renders it so? Are the letters blurred? Certainly not. Lift the veil of the atmosphere, as can be done by placing the board in a climate of clear air, and there are the letters, legible enough. When photographers learn the difference between veiling and blurring, we may have fewer fuzzygraphs. I am prepared to go a step further and maintain that although the eye only dwells definitely upon one small spot, all that it sees, more and more indistinctly, around that spot is not indistinct because it is blurred, but because it is fainter throughout. The retina is sensitive everywhere, though mostly so at one point. Correspondingly we see brightly at one point and more faintly over

the rest of the field of vision. Diffusion is another means of escape for truth of tone. The less definition, the greater the falsity of tone values. A picture thrown upon a lantern screen and turned more and more out of focus will show the tones going more and more out of key until the whole is a general grey mass. Our enlargements almost always suffer in tonality upon this principle.

What saving grace remains then of this so-called artistic method of photography? For my part I think it nothing more than a fashion, set going in the first place by some well-meaning individuals who thought to save pictorial photography from the stigma of hardness and harshness that had brought the early albuminised proofs into disfavour. At this day, however, there is no fear of such a stigma. The complaint of black trees, hard shadows, and white skies has passed away. Why should the drastic remedy for them remain? If we are well, spare us the nasty medicine! A less scientific consideration of this point lies in the question of breadth of effect being the enemy of detail. There are sufficient photographs about, to say nothing of painted pictures which show this dogma to have been long exploded. Indeed, it should never have been inflated, for breadth cannot be correctly defined as absence of detail. It is to be feared that fashion is too strong a factor in the photographic world, wherein imitation seems to be the sincerest form not of flattery, but of enviousness. The need of taste becomes more urgent than ever; whilst the supply of that need appears to be weaker than ever. Individuality of taste bids fair to be swamped in a blind following of fashion, whilst fashion in turn has a tendency to become more and more independent of taste. This is the deplorable fact in modern pictorial photography. There is no harm in the natural evolution of styles which flow in one direction for a period and then turn into fresh channels. But it is without doubt lamentable to the last degree that an art, or a craft (what you will), proving itself daily to be the deepest and widest influence in pictorial affairs that ever urged over mankind—an influence so insidious, so irresistible, that it has even undermined the most cherished traditions of art—is lamentable that so powerful an influence should not exist with less downright and wanton opposition to the most obvious truths of nature, and, in the matter of arrangement and design, less disregard of those logical and rational progressions of thought that are common to all sensible people of whatever race and age.

The worst form of fashion is that which does not pass or change, but which crystallises into a convention; and photography is threatened to-day with worse conventions than any of the older ones of artistic origin. Fashions that are more upheld by individual vanity than changed by individual taste are disastrous indeed. Under their potency the evolution of photography is pushed and pulled by activities that have more of moral delinquency than artistic single-heartedness. Although there are many men of well-formed taste to stem the tide they are yet too few. The masses gladly follow this tide because to their understanding no wiser course is apparent. They are imitative and therefore lack even the individualism of the leaders whom they think it politic to follow. Thus it comes about that the workers of second rank who fill our exhibitions and magazines display a deal of manner to a modicum of matter, preferring to be fashionable at second hand to being at any rate freshly natural. Sad as all this is, it is remarkable that there seldom appears any protest against the senseless and uninteresting prints that are made and popularised in the name of photography and art. Critical acumen is at a low ebb, and so "anything will do." It does the better too if folks cannot understand it. The reason for this unconventional plain manner of speech on my part is this: I am convinced of the possible beauties of pictorial photography and am deeply interested in it. My own little collection of photo-

graphs, taken by some of my friends, are as choice a set of pictures as any artist need wish to see. In face of these facts it is painful to meet with so much that is of a lower standard coming from hands that should do better. Had I not known what beautiful work is possible within the bounds of good taste I should perhaps have declined the much-esteemed invitation to speak to you to-night. It seemed to me, however, an opportunity to place on record a protest against the trend of the indiscriminate admiration which seems to be growing for works that are distinctly not clever, and not in good taste.

The panegyrics that appear in the Press directed to the work of this or that person, who has succeeded by hook or by crook in being original, has become nauseating. This and other practices put a premium on certain kinds of work and decide the unwary to follow the same path. Sooner or later it will be found that it is a path that can only lead pictorial photography into the contempt of the greater world. It would have done long since but for a few dozen that recognise the claims of good taste. The newly Affiliated Societies all over the country should induce the belief in their members that correct exposure even on a shiny silver-print, is more artistic in every aspect of the case, than the scored sack-clothed expanses of meaningless pigment that parade as art. The roughness of a paper cannot possibly have anything to do with the real intrinsic art of the subject. It has much less to do with it than even the framing and mounting. To set great store by the mere grain of a paper and to count on its enhancing the artistic claims of a picture is nothing short of ridiculous. If the picture is good it will look well on glass or ivory. If it is bad, on the other hand it would probably look less bad printed on some surface having the texture of a well-decayed stone wall. The texture of the mere support is purely a matter of scale. We do not find miniatures on coarse canvas, and we should not look for frescoes on polished ivory. The plea that a strong texture breaks up detail is a confession of weakness. Detail properly rendered is not in want of breaking up. More often the reverse advantage, if any, is that much roughness breaks up an unduly exposed tract of smudge that would be unbearable in a smooth platinum paper.

In conclusion, I must beg you not to think that my remarks are intended to be sweeping. The delinquencies I have referred to are, I admit, often exceptional cases in a series of work from one author; but their occurrence none the less perhaps the more gauges our ideas of his taste. Good taste is what I urge as the salt of good photography. F. C. TILNEY.

SOUTH ESSEX CAMERA CLUB.—A fortnight's trip to Belgium, starting on August 6th, at an inclusive cost of £5 10s., is being organised by the president (Mr. Walter D. Welford), and it is open to members of other societies and lady and gentlemen photographers and their friends. Headquarters will be at Bruges and Brussels respectively, and among the places to be visited are Antwerp, Ghent, Namur, Dinant, Liege, Waterloo, Ostend, Malines, etc. Full particulars may be had from the President, at Warwick Lodge, 166, Romford Road, London, E.

INDECENT PHOTOGRAPHS.—At a meeting of the Glamorgan County Council, on June 23rd, a letter was read, stated to have been received from Merthyr at a public meeting, at which place it was suggested that the County Council should seek powers in Parliament to make a bye-law prohibiting the sale of any indecent photograph. The chairman said he had received a great many resolutions upon this subject passed at different places. As he understood the matter from the Clergy they had no power to make bye-laws which were contrary to the common law. The National Vigilance Association seemed to think that the law was not strong enough. Consequently that was a matter for Parliament and not for the County Council. Alderman Llewellyn moved that the matter be referred to the Local Government Committee who might possibly devise some bye-law that would be applicable. The resolution was adopted.

THE OPTICAL PROPERTIES OF DEVELOPED LIPPMANN EMULSIONS.

Following interesting abstract of a paper published in the *Zeitschrift der Physik*, by Ferd. Kirchner, appears in the *deutsche Photographen Zeitung*:—

The author's investigations relate to the optical properties of the grainless emulsion required for the Lippmann process, the properties may be of considerable importance in the correct rendering of colour. The Lippmann plate, unlike the ordinary black negative, shows a pronounced colour. By transmitted light it may be brown-red, green, blue, or, in fact, any colour of the spectrum. According to the author, colour is dependent upon the kind of developer used, and the fineness of the grain of the silver bromide. With the pyro-sodium bromide-ammonia developer, the characteristic brown-to ruby-red Lippmann colour is always obtained, and with some certainty olive to grass-green may be secured with iodol. By using metol instead of pyro, brown tones, with an admixture of blue or violet, are sometimes obtained. Frequently with this developer the colour is pure blue or violet, especially if the metol solution be old. The author only succeeded once in getting a blue tone purposely, not accidentally, when he used a very old, brown metol developer. Plates perfectly free from grain give red or brown coloration with the greatest certainty, but if the grain is so coarse, that the film may be clearly seen upon the glass, then this colour is obtained with ease. The author has also observed that Lippmann plates in the wet state possess less absorption than in the dry state, and that there is a change of colour in most, especially the blue. The author has also established that exposure brings about a swelling of the gelatine (from 1 to 2 per cent.); not a shifting of shade. Without entering upon the very numerous questions which have been so carefully investigated by the author, and which have great interest in theoretical physics, but which are unimportant to the readers of our paper, we will merely add that the author has determined the quantity of silver in a Lippmann emulsion. As the quantity of silver present is extremely small (about 1 m.g. on a plate) it could not be done in the usual way by chemical analysis. The visual method had to be employed, by taking a standard solution of silver as a means of photometrical comparison. It was found that the quantity of silver present represented one-three-hundred and eighteenth part of the total volume. If the whole of the silver on the plate were collected in the form of a single film, this would represent one three-hundredth part of the entire thickness, in round numbers. As the prepared emulsion, according to the formula supplied by Neuhaus, contains silver to the extent of one-hundredth of its bulk, it would appear that about one-third of the disposable silver is deposited during exposure and development. In conclusion it may be mentioned that the author looks upon the change of colour, referred to above, as a kind of vibratory action. Upon theoretical grounds he thinks it probable that the supposed vibrators are particles of silver composed of groups of molecules analogous to colloidal solutions. The size of the gold particles is known with approximate exactness from the treatise published about a year ago by Siedentopf and Zsigmondy."

A New Developing Formula.—Mr. A. L. Henderson introduced a new formula for a developer at the London and Provincial Photographic Association last week which gave rise to much discussion. The developer consists of:—No. 1: Hydrokinone, 120 grains; metol, 10 grains; adinol, 30 grains; soda sulphite, 2 oz.; water, 20 oz. No. 2: Soda hydrate, 120 grains; gelatine, 40 grains; water, 20 oz. or use mix equal parts of Nos. 1 and 2. Mr. Henderson claims that the gelatine acts as a mechanical restrainer, and that if detail is now in appearing rubbing with the finger-tip will bring it out at once.

PHOTOGRAPHY AS A PROFESSION IN THE UNITED STATES.*

FIRST ARTICLE.

BEFORE I had sat very long in the editorial chair I became very interested in the professional and his work. Somehow or other I got so close to many of them that they felt they could tell me their troubles, their aspirations, and their failures, so before long I began to realise that while it was very congenial employment for a great many people, the occupation of a photographer brought to the average man a very meagre living. In the past six months I have made it my business to probe deeply under the skin, and from actual figures I find conditions to be just as bad as I feared. To make sure of my ground while speaking before a recent convention, I made the statement that I believed that at least 75 per cent. of the fraternity, whether employer or employee, did not have an annual income exceeding \$500, and urged my hearers to contradict me if I was wrong, but it was admitted unanimously that my figures were correct. A good photographer is more than an ordinary skilled labourer. His occupation borders so close on the artistic that it is incumbent on him to be a man of culture to a greater or less degree. In the daily routine of business he meets people who are in their best clothes, and so must dress at least decently. His business calls, therefore, for many little expenses, costly tastes and habits unknown to most business men, and yet the profession as an income-producer has fallen so low that the average man gets out of it a sum that is equalled only by the ordinary day-labourer. While an ordinary mechanic can command from \$3 to \$4 a day, photographic employees are offered—and here I know actual facts—from \$8 to \$10 per week, with seven days' work at that. Only once in the past six months have I known of \$20 being offered, and this was to induce some one to go to a city in the desert plains of the South-West.

The social status of the professional photographer is a decidedly unsatisfactory one. As a professional man—he ordinarily claims to be that—he is decidedly the lowest rung in the social ladder, while as a business man he ranks alongside the village barber. In plain English, his calling does not at present demand from him a sufficiently high education to entitle him to social status equal to what is granted the doctor or lawyer, while his financial condition forbids him ranking with the grocer and hardware man who may be his inferior in scholastic attainments. It is all very well to quote the much-hackneyed lines:—

"Worth makes the man,
The want of it the fellow,"

but in the last analysis dollars and cents determine almost everything. It is money that makes possible the college diploma in the doctor's hand, and it is the same coin that makes the tradesman an influential man in his community. The tramp has no social standing because he is entirely deficient of funds, the millionaire is good enough for any society.

After all, what constitutes a profession? It is an occupation into which entrance is difficult to the average man because those in it demand a long and expensive preliminary training from such as desire to join its ranks. Pretence is persistently made that the barrier is raised to protect the public from ignorant practitioners, but I must frankly confess that to me they are simply glorified trades unions. The mechanic, being unable to make the specious plea of the doctor or preacher, and not having the audacity of the lawyer, is forced to admit the bald truth that he is fighting for self-protection when he combines with his fellows to limit the number of apprentices, and so gets condemnation from the professional who has been in-

* We are indebted to our esteemed confrère, Mr. F. Dundas Todd (editor of the "Photo-Beacon"), for a vantage point of his series of articles on this interesting subject.

genious enough to devise an automatic method that has State authority back of it.

Barriers round occupations are as old as history. The witch-doctors of our savage ancestors confided the sacred mysteries to only a few, so that they should not be more numerous than the community could afford to support. In the same way, the Hebrews made the priesthood a family affair, limiting it to the tribe of Levi, and so automatically kept the number within bounds. But it is needless to follow history and show how the nobility of Europe limited commissions in the army to those of blue blood, how in turn preachers, lawyers, doctors, dentists, and in this country only a few months ago accountants have got legislatures to pass laws prohibiting individuals to practise certain occupations unless granted certificates of qualification by those already earning their living in it.

Photography, since it is not a profession, has no protective training course; not being a trade, it has no prohibitive apprenticeship system; not being a business, it needs no large capital in the hands of the novice before he can start out on his career. It is a free-for-all occupation into which may come the derelicts and rejects from all the professions, the scabs of the trades unions, and the unskilled labourer who cannot find a resting place in the turmoil of the industrial world. It is the haven of refuge for the destitute one whose friends get rid of him by clubbing together and set him out on a new career in good shape by lending him from \$50 to \$100.

Charity is a mighty good thing, especially at home. There is no special reason why photography should be the only dumping ground for unfortunates, no reason that I know of why it should be a dumping ground at all. Just so long as those most interested are willing to stand this kind of thing, just so long will the outside world be willing it should go on, for it relieves them of a whole lot of undesirable people. Before scattering charity broadcast over the world, take care of yourself, your family, your occupation as against all comers. Obey the law of the jungle, which demands protection of the group in which we are interested before everything else. Photography lingers on the stays as a relic of the ancient times when business men fought the members of their own group, and the impetuous condition of the average photographer easily demonstrates how unprofitable is such conduct. It is an anachronism in 1904, for one may search the whole world over for a parallel case and fail to find it until one discovers another lot of photographers.

Truly, it is time to organise, and in next issue I will try to show how it can be done. The plan I will then give was outlined before the convention of the Illinois photographers, adopted enthusiastically, and in ten minutes \$300 was subscribed by those present toward paying the preliminary expenses.

F. DUNDAS TODD.

FREE PHOTOGRAPHS—There was an amusing case at the West Ham Police-court on Monday last when George Senior, of North Woolwich, was charged with assaulting Joseph Crabham, a photographer, of Silvertown. Prosecutor said that on Saturday afternoon prisoner, another man, and two women went to have their photographs taken. Afterwards, without any reason, accused became abusive, and hit witness. He also smashed a photograph frame. Witness denied that he was left alone with one of the young ladies, and that he put his arm round her neck and asked her for a kiss. He did not say he would take her photograph for nothing if she would give him a kiss, "because his wife was in the next room and could see." For the defence, Miss Ansell and Miss Thornton were called, and they said that the photographer put his arm round Ansell's waist and kissed her, and said that he would take her photograph free if she would kiss him. Then prisoner said the photographer was taking a liberty, and there was a struggle, in the course of which the damage was done. Eventually the accused was discharged.

ENSIGN FILM COMPETITION.

Houghtons, Ltd., have handed us the list of prize winners in the recent Ensign Film Competition. The awards are as follows:—

Class I.—1, A. E. Burnett, 31, Collingwood Road, Redland, Bristol (dealer, Tivener and Co., chemists, White Ladies Gate, Clifton); Chas. Avery, jun., 319, Queen's Park Road, Brighton (Barker Son, 319, Queen's Park Road, Brighton); 3, F. R. Sadd, care of Menement, 14, Grove Avenue, Norwich (Row and Taylor, 6, Stephens Street, Norwich); Edgar J. Richmond, Woodfold, Luton Road, Harpenden; Ed. J. Manuel, The Lodge, Westmead, Bridport; A. W. Douglas, Tantalion, Sherborne, Dorset; E. J. Richmond, Woodfold, Luton Road, Harpenden; J. Strebor, 115, Singlewell Road, Gravesend; Miss V. Godfrey, Ivy Hatch, Horsham; F. Sadd, care of Miss Menement, 14, Grove Avenue, Norwich; F. Sadd, care of Miss Menement, 14, Grove Avenue, Norwich; W. Wright, 4, Rutland Street, Oldham; F. R. Sadd, 14, Grove Avenue, Norwich; John Strebor, 115, Singlewell Road, Gravesend; H. Gidlow, 5, Wycliffe Street, New Basford, Nottingham; John Strebor, 115, Singlewell Road, Gravesend; F. R. Sadd, 14, Grove Avenue, Norwich; Dan. Dunlop, 4, Hamilton Street, Motherwell.

Class II.—1, Jas. Walker, Grange Mount, Claughton, Birkenhead (Foulkes and Co., chemists, Birkenhead); 2, J. W. Small, 8, Wynn Road, Forest Hill (G. H. and Son, Holborn); 3, Jas. H. Saunders, 76, Green Road, Burmantofts, Leeds (Leeds Photo Stores, Melbourne Street, Leeds); J. W. Small, 8, Wynn Road, Forest Hill; Fairall, 35, Lynton Street, Brighton; Miss M. Kendall, Greenheath, Kingswear, South Devon; F. A. R. Heley, 29, Casewick Road, W. Norwood; Jas. Dunlop, Myrtlebank, Motherwell; G. Slade, Mount Avenue, Ealing, W.; Miss H. Metcalfe, Metcalfe Park, Enfield, Co. Kildare; G. Slade, 37, Mount Avenue, Ealing, W.; J. Dunlop, Myrtlebank, Motherwell; Miss Hackett, Riverstown House, Birr, Ireland; W. Gundry, Hope House, Balby, Doncaster; Whittam, 6, Plantagenet Street, Cardiff; Sergeant Amir Holland, Ordnance Buildings, Crater Aden; John Oldham, 63, Hardy Street, Liverpool; B. Stoney, Portland Park, Portland, Birr; H. B. Lafford, 4, Wexford Road, Wandsworth Common; A. E. Burnett, 31, Collingwood Road, Redlands, Bristol; W. Gundry, Hope House, Balby, Doncaster; W. Gundry, Hope House, Balby, Doncaster; T. J. Hartnell, Droumhall, Killarney; J. W. Small, 8, Wynn Road, Forest Hill; Dan. Dunlop, 4, Hamilton Street, Motherwell; J. Dunlop, Myrtlebank, Motherwell; Jas. Walker, Grange Mount, Claughton, Birkenhead; Robt. Newcomb, 18, Wantage Road, Newing; A. E. Burnett, 31, Collingwood Road, Redlands, Bristol; Alwyn E. Biscoe, 375, High Road, Chiswick.

Class III.—1, A. E. Burnett, 31, Collingwood Road, Redland, Bristol (G. T. Tivener and Co., Clifton, Bristol); 2, A. M. Walter, Frothampton Vicarage, Tewkesbury (G. H. and Son, Holborn); E. R. Bull, 53, Bovell Road, Forest Hill (G. H. and Son, Holborn); Miss Jessie Peters, Harelands, Rochdale; W. J. Hodgson, All Saints Road, New Shildon; Jas. Walker, Grange Mount, Claughton, Stanley Gorse, 27, Horace Road, St. Helens; Harold Tebbitt, 2, Sidney Street, Cambridge; R. Lewis, 16, Winchester Street, Brondesbury; J. B. Meldrum, Eversley, Durham Road, Bowdon; Miss Peters, Harelands, Rochdale; W. Sharp, West View, Hensingham, Whitehaven; Otto Brown, 14, Dennis Road, Eastbourne; Miss M. Gibbings, Selsfield, East Grinstead; A. McGoogan, 31, Windsor Road, Rathmines; W. Reddam Drinkwater, Kirby, Isle of Man; John Oldham, 13, Hardy Street, Liverpool; H. C. Leat, 2, Richmond Street, Tottenham, Bristol; Edgar R. Bull, 53, Bovell Road, Forest Hill; E. R. Bull, 53, Bovell Road, Forest Hill; T. K. Yardley, 6, Victoria Road, Margate; T. K. Yardley, 66, Victoria Road, Margate; J. Hayward, 14, Albert Terrace, Whitehaven; H. J. Saunders, 6, Green Road, Burmantofts, Leeds; Miss Blakeley, 12, Parkhill Road, Hampstead; F. J. White, 13, Trogin Road, Clapham Road, S.W.; Miss L. Brocklebank, Roughwood, Chalfont Saint Giles; Miss L. Brocklebank, Roughwood, Chalfont Saint Giles; H. C. Leat, 2, Richmond Street, Tottenham; James Seeds, 137, Cavehill Road, Belfast; A. E. Burnett, 31, Collingwood Road, Redland.

Class IV.—1, James Walker, Grange Mount, Claughton, Birkenhead (Foulkes and Co., chemists, Birkenhead); 2, Miss W. Finlay, 17, Penbridge Gardens, W. (A. P. T. S., New Bond Street); Mrs. Swainson, Woodside, Brecon, South Wales (G. H. and Son, Holborn); Miss C. Gillespie, 10, Marlborough Road, Richmond.

rt Smith, Ripley Terrace, Mount Pleasant, Batley; Miss M. T. Thuxton Rectory, Allensmore; V. C. Baird, Broughty Ferry; F. V. Baird, 80, Mill Road, Motherwell; Jas. Knight, 1, Street, Wells, Somerset; Miss E. S. Mead, 14, Kensington, S.W.; Herbert Smith, Ripley Terrace, Mount Pleasant; Robt. Smith, Woodville, Longridge, near Preston; E. G. Lawrence End, near Luton.

APPARATUS FOR PHOTOGRAPHING THE BACKGROUND OF THE EYE.

WALTHER, THORNER, of the University Eye Clinic at the Royal té in Berlin, has recently succeeded in solving a problem that long occupied the minds of oculists, many fruitless attempts having made heretofore to find a solution. His invention is an im-
not one, and is a big step forward in the treatment of eye dis-
Dr. Thorner has devised an apparatus, by means of which it become possible to photograph the background of the eye and a good pictures of the same. His contrivance constitutes a rial improvement of the ophthalmoscope invented by Helmholtz 50, which latter device only admits of looking at the background e eye. Owing to the peculiar construction of the eye, it has impossible heretofore to photograph the interior or back of the It is a matter of great difficulty to illuminate the interior sufly to take a serviceable picture, and even if strong sources ht were used, the exposure would last too long, rendering neces- a fixation of the eye, which, in turn, would entail serious in-
inience to the patient.

means of his apparatus, Dr. Thorner first succeeded in obtaining graphs of the eyes of animals, particularly cats. The interior e human eye being much darker than that of the cat, it required improvements to take good photographs of the interior of human with the apparatus. The result was highly successful, the ges proving perfectly satisfactory.

th the mild light of a kerosene lamp, the eye is first so focussed its back yields a clear image on the photographic plate, a tele- like focussing glass forming part of the apparatus being used his purpose. The focussing having been accurately done, and the put in, the camera itself is opened by pressure on a special and a flashlight composition ignited by means of an electric generated in a storage battery. Thereby the background of the s lighted up sufficiently for a moment to produce a good image e plate. Still, the pictures thus obtained are somewhat un- der- stood, and require special care in developing to obtain the best. A large number of such photographs of diseased and healthy have been reproduced by Dr. Thorner in his recent book, equally esting to the profession as to laymen, entitled "The Theory of Ophthalmoscope and the Photography of the Back of the Eye," ished by August Hirschwald, Berlin.

is possible to distinguish healthy eyes readily from sick ones, eye of a strongly short sighted person being, for instance, charac- ed by a peculiar ring around the sun-like illuminated centre. istists will now be enabled to watch the progress of eye diseases isorders step by step. The apparatus also permits of taking a ure of any separate parts of the interior of the eye.

Studio Gossip.

R. CHARLES SWEET is shortly removing to new and larger pro- s at 19, Battery Place, Rotherhay, N.B.

may be interesting to note, in connection with the Northampton zes, that Mr. Justice Bray, the new judge, visited Mr. Illing- h's studio at Northampton last week, and was photographed in official robes. This is the first photograph the Judge has had n since his elevation to the Bench.

R. R. LANG SMS, photographer, of Brixton Road, recently took a s of forty pictures showing the whole process of conversion to ical traction of the Brixton cable tramway. The engineers other workers on the line were very pleased with the photos, many of them bought copies as mementoes of a record tram- ing feat, the work having been accomplished in less than ten ts—three weeks under contract time.

THE PRESS ON THE "B.J." JUBILEE.

"THIS valuable journal celebrated its jubilee by the publication of a bulky double number, full of interesting articles by experts, detailing the progress made in the various departments of photography since the establishment of this paper, and with an abundance of illustrations."
—"Shields Daily Gazette."

"THE BRITISH JOURNAL OF PHOTOGRAPHY has attained its fiftieth birthday, and issued, in honour of the event, a handsome Jubilee Number. The Editor, Mr. Thomas Bedding, F.R.P.S., is to be con- gratulated on the production of such a number as well as on the regular issues of his admirable paper. All who are interested in the photo- graphic hobby will find matter of instruction and profit in this eclectic number."
—"English Churchman."

"THE BRITISH JOURNAL OF PHOTOGRAPHY issued a special Jubilee Number on June 10th, at the ordinary price, 2d., and if any of our readers interested in the art can manage to procure copies, they will find information of the utmost possible value to them. The evolution of photography is dealt with in a remarkable series of articles by specialists in the respective phases, and should be preserved by those who are interested in the work. The articles dealing with latter day association of photography with periodical literature are specially interesting."
—"The Lady's Gazette."

"THE issue of the BRITISH JOURNAL OF PHOTOGRAPHY of June 10th is a special number, marking the jubilee of the foundation of the journal. It contains 'thirty articles on the most popular and modern phases of modern photography,' written and illustrated by authorities on the various subjects dealt with; those on 'Entomological Photo- micrography, Copying, and Stereoscopic Photography' may be spe- cially mentioned. The rapid strides which photography has made during the past half century are clearly indicated in an article by Mr. E. W. Foxlee on 'Photography Fifty Years Ago.' Both those who use photography in their daily calling and those who look upon the art as a hobby will find many useful hints in the varied contents of this jubilee number."
—"The Lancet."

"THE BRITISH JOURNAL OF PHOTOGRAPHY has just completed its fiftieth year. To mark this occasion, the Editor has issued a special (jubilee) number of the journal, containing not only 'the story' of the journal from its commencement to the present time, written by himself, but a series of most interesting articles by different authors on a great number of photographic topics. THE BRITISH JOURNAL OF PHOTOGRAPHY is the outcome of the photographic energy displayed in Liverpool in the 'fifties, the first number, entitled the 'Liverpool Photographic Journal,' appearing on January 14, 1854. In the 'story' are given facsimiles of the title-page and the first page of this journal, and also that of the first page under the present title. Short biogra- phical sketches of the editors and assistant editors are also included."
—"Nature."

"Fifty years ago is a far cry in most matters, and particularly so in those photographic. True, the period does not comprise the whole history of our beloved art; but it does cover some of the most important of the developments of camera work as we now know it. Half a century ago photography was a mere pastime; to-day it is a giant of power and potentiality. Interesting is it, therefore, to note that the BRITISH JOURNAL OF PHOTOGRAPHY last week published its Jubilee Number, an issue full of matter of comparison and information on things that concern us all. There is little doubt that the old "B.J.," as it is affectionately styled by camera men generally, has done great and glorious work in the advancement of photography, especially as a science. Optics, the chemistry of photography, the construction and perfection of apparatus, have all been exhaustively treated by experts during its long and prosperous career, and it is good to see that in the prepara- tion of this jubilant jubilee issue some of the chief workers of the day, many of them old-timers in the best sense of the word, have been en- gaged. Perhaps a few of the names may be obscure to those who have recently taken up camera work, and who are dazzled with the achieve- ments, skilfully advertised, of men who figure most in bizarre photo- graphy; but, taken as a whole, the makers of this remarkable number are readily recognised as workers who have done much to add to our knowledge of the possibilities of the camera, and, what is of equal moment, are still labouring whole-heartedly for the common- wealth. I feel that I must acknowledge my own obligations to this great cloud of witnesses to the truth that does prevail in photography,

associated, as I have been, with some of them for more years than I care to count. The BRITISH JOURNAL OF PHOTOGRAPHY does not usually call in aid illustrations of its excellent matter; but in this number we have a welcome departure from the old order of things, and galore of portraits of acknowledged leaders in photography, with occasional specimens of their work. It is to be hoped that before the centenary of the journal is reached, pictorial illustrations will be frequent in its pages; and, if the new order of things can be inaugurated now, so much the better for photography! Every amateur should secure a copy of the Jubilee Number, and find therein much of refreshment in his pilgrimage."—"Vanity Fair."

THE "B. J." JUBILEE NUMBER.—SOME MORE READERS' OPINIONS.

"All congratulation on the ever-verdant 'B.J.P.' green issue—a great success."—G. WATMOUGH WEBSTER, F.C.S.

"Heartly congratulations on the success of the Jubilee number of the good old 'B.J.'"—F. MARTIN DUNCAN.

"It is not too late to compliment you and your staff upon the Jubilee Number."—CHARLES R. ROVE.

"My hearty congratulations on the Jubilee number of the 'B.J.P.' which I have enjoyed very much."—CHARLES SWEET, Rothsay.

"Allow me to congratulate you on the issue of the Jubilee number of the BRITISH JOURNAL. My firm have taken the BRITISH JOURNAL from its first number, I think, and the publication has a splendid record."—W. D. VALENTINE (Valentine and Sons, Ltd., Dundee).

"For the past fortnight I have been waiting for an opportunity of congratulating you upon the success of the 'B.J.' Jubilee number, but this I now do most unreservedly, for probably never before in the annals of photographic journalism has it been the good fortune of an editor to offer so interesting a production to his readers."—JOHN A. HODGES.

"May I offer my congratulations on the pronounced success of the Jubilee number? Nothing could be more interesting than the historic retrospect, carrying the mind back to those old days of the 'dipper' and the silver bath, when photography was in its infancy, but still had, as a guide, philosopher, and friend, the same trustworthy mentor, then as now—the BRITISH JOURNAL!"—A. LOCKETT.

HOUSE EXHIBITION AT THE ROYAL PHOTOGRAPHIC SOCIETY.

Probably the most convincing answer to scoffers at the gum bichromate process will be found in the house exhibition of work by Robert Demachy, now open at 66, Russell Square. Granted, we are not all fortunate enough to be Robert Demachys, but still sufficient proof is put forward by this master of the one process in photography wherein the personal equation is in greater evidence, to convince the most sceptical that in capable hands the gum process gives truly perfect results to suit all tastes. The fault of the English "gummist" seems to be that he regards the process as synonymous with "making a messy, dirty print," suggestive, perhaps, of a thumb-marked, badly-smearred crayon drawing. Hence the disrepute into which it has fallen. There are exceptions, maybe, but still the main idea is that, as the gum print *can* be manipulated to almost any extent, it is forthwith manipulated whether the subject demands it or not, totally overlooking the fact that a beautiful and delicate process is being thereby prostituted.

Again, the English gummist seems also to have got the idea into his head that any negative is good enough for a gum print. In other words, if the artist (!) has a negative that falls short of perfection for any other process, he thinks it will serve for a gum print. How often have we seen gum prints by English workers at the London exhibitions, obviously printed from poor, flat negatives, and then "faked" to represent "sketches" or "impressions," or even to masquerade as crayon drawings, etchings, or whatnot. This is a grave mistake. To make a successful gum print a negative is required that, in addition to portraying a good composition, is technically perfect, or at least is so good that it would give a first-class print in almost any other medium. The most casual inspection of

the pictures now on view at Russell Square amply proves. It can be seen at a glance that the prints here are from negative the very highest technical excellence, full of detail, and admirable every way. The figures and portraits reveal at the same time breadth of handling, and disclose a feeling for the charm and dignity of the human model; while the landscapes, some of them fine design and with a true feeling for spaciousness and atmosphere, as dignifies the simplest motives, are produced in a manner that betrays the thorough artist.

The first thing that strikes the beholder on visiting the exhibit is that with a very few exceptions (five) the whole of the exhibited pictures on view are in black and white. The five exceptions are in red chalk. This must be a revelation to the many English workers in gum who will persist in using dirty browns and greens. M. Demachy points out in his introductory note to the catalogue that the exhibited are produced by a single printing only, showing that it is possible to obtain strong blacks and soft half-tones without recourse to multiple prints. The proof of the pudding is in the eating, the splendid platinum blacks, with quite a carbon lustre, the delicate half-tones, perfect modelling, and lack of granularity in the results are quite in the nature of a triumphant Q.E.D.

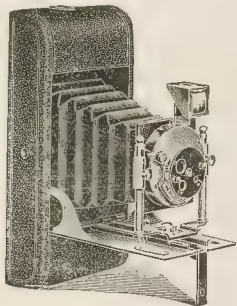
M. Demachy further says:—"I feel convinced that the members of the Society will examine these prints without any preconceived notions, and that they will make allowance for the well-known difficulties of the process. The collection on these walls is the result of two years' work, during which I have, apart from the constant study of values and composition, bent my efforts towards obtaining strong oily blacks and mellow half-tones. No multiple printing has ever been used, and no colour added. In a few cases (specified in the catalogue) when it was felt that the negative was unable to sufficiently vigorous accents, portions of the gelatine have been thinned down or entirely removed with a wire eraser or an engraving tool. It will be noticed that the accents are thus emphasised the positive without the actual marks of the tools being shown."

To specify one or two of the prints that call for attention, particularly noted No. 53, "Portrait of Mlle. M. D." We doubt much whether any other printing process extant would give such rich and luscious velvet black shadows and beautiful half-tones. No. 6, one of the few red chalk prints, "Académie," is a triumph in its rendering of the nude, the high lights being added with consummate skill as to give the very texture of warm living flesh. No. 76, "A Marken Girl." This is a good example of the technical excellence of M. Demachy's negatives. The microscopic fineness of the detail in the lace head-dress should be somewhat of a surprise to many who have seen only the smeary results usually associated with the "gum print." No. 21, "Première Communie." This picture is the opposite extreme of many of the vigorous pictures surrounding it, and has all the quality of a delicate pencil drawing without in any way sacrificing its "photographic" quality, which, indeed, the keynote of the success of all the pictures. No. 54, "Street at Lisieux." This is a splendid architectural study, and doubt whether a better or truer effect could be obtained or equalled in carbon or platinum. All detail is retained, and yet the picture has a breadth characteristic of its producer. No. 10, "Place de la Concorde," may be regarded as almost the greatest height to which the humble snapshot can hope to attain. We have presented a well-selected moment for the exposure certainly, but the charm of the picture lies in its after treatment. It is impossible with the space at our disposal, to attempt a detailed account of the pictures. Suffice to say that they are equal to anything Robert Demachy has ever done previously, which is saying a great deal, and the present show can only serve to enhance an already brilliant reputation. The exhibition, which remains open until Saturday July 9, should be seen by everybody interested in pictorial photography, and, whether antagonistic to gum bichromate or not, venture to predict that everyone will see much that will please and surprise him, while at the same time we also predict that not a convert to this much-abused process will also follow as an even more tangible result.

MR. HECTOR MACLEAN notifies us that he has removed from Croft to Cheam Road, Sutton.

New Apparatus, &c.

Folding Scout Hand Camera. Made by Houghtons, Ltd., 88 and 89, High Holborn, London, W.C.
neat little camera, the latest addition to the already large of folding pocket cameras, takes pictures on roll films size 3½. The model is a great improvement on that of last year, is yet well and substantially made, and will certainly meet the



of the amateur photographer whose means prohibit the purchase of a higher-priced instrument. The camera will easily go into a pocket, which is not always the case with many so-called cameras. Reversible brilliant finder and a good single lens, and the movements include rising and falling front, catch, and focussing scale, rotating diaphragm and ever-set and instantaneous shutter.

Negatives and Masks. Sold by Messrs. J. J. Griffin and Sons, Limited, 20-26, Sardinia Street, Lincoln's Inn Fields, London.
The new border negatives are designed principally for postcard. The designs are very good, and the negatives being on thin glass paper, are unbreakable, and may be printed from either producing with the aid of the masks and discs (enclosed with



(box) results of an artistic character that help rather than detract from the photograph they are enclosing. For those who make their postcards, on either bromide, gaslight, or printing-out cards, negatives and masks will provide a new outlet. They are put up in sets of four negatives and suitable masks, etc., very cheaply.

Printing-out Papers. Made by Helion and Co., 11, Billiter Square, London, E.C.

new P.O.P. possesses many points of novelty that claim attention in addition to the beauty of the results to be obtained. The most noticeable difference between the Helion paper and the majority of those now in use is the absolute mattness of the surface. Yet at

the same time there is a richness given in the darkest shadows that recalls the carbon print without the accompanying gloss. Helion paper tones readily in every ordinarily employed toning-bath, both with gold and platinum salts. The best effects are obtained with the latter, the colours ranging from a rich brown, through sepia to engraving black. Helion stands rougher treatment than most papers. It need not be kept in a calcium tube, like platinum paper. Unlike gelatine paper, it can be washed with hot water, both before the toning and after fixing, without injury to its surface or texture, the time required for the production of a finished and stable print being thus materially reduced.

The picture obtained is, in the first instance, a silver print. The silver, if the treatment recommended by the Helion Company is followed, is (as completely as the reaction will allow it) substituted by platinum. When a properly-toned print is immersed in a solution of mercuric chloride it undergoes no change whatever, while metallic silver would, of course, cause a bleaching of the image. After toning, therefore, the picture is practically a platinum print. While, however, the tone of the ordinary platinotype tends towards grey, that of a platinum-toned Helion paper is, as a rule, inclined towards brown. The platinum bath is a very simple affair. The basis is a 1 per cent. solution of citric or other acid; into this the platinum salt is put. If the solution be strong—say a tube of 15 grains in 20 ounces—toning is exceedingly rapid, and black tints—which, however, must not be allowed to degenerate into greys—are very quickly obtained. The toning is, of course, much more under control with more dilute solutions, and one tube of platinum salts may well be spread out over 200 or 240 ounces of a 1 per cent. citric acid solution. In a large bulk of such diluted liquor hundreds of prints can be simultaneously toned to the same tint. The prints should be examined by transmitted light, and, when deemed finished, be dropped into a basin containing a very dilute solution of washing soda, which, by neutralising the acid of the platinum solution, stops the toning. Uranium, vanadium, iron, or other toning baths can equally well be used, and they result in the production of red, green, or blue prints. While the papers, under ordinary conditions of printing, are particularly suitable for pictures from negatives showing deep contrasts, they may well be used for ordinary or comparatively flat negatives. In printing from such it is well to cover the printing-frame with a layer of yellow tissue paper, or, better, with a sheet of yellow celluloid. The light filter thus employed causes the production of greater contrasts in the print than were present in the negative. The action of the hypo must be allowed to continue in proportion to the thickness of the papers. If not sufficiently fixed dirty yellow blotches will appear on the paper when dry.

THE memorial in Westminster Abbey to commemorate the scientific career of Sir George Gabriel Stokes, the eminent Cambridge mathematician, and former president of the Royal Society, and for many years a member of the Royal Photographic Society, will be formally handed over to the Abbey authorities on Thursday, July 7. It is in the form of a bronze portrait medallion, and has been executed by Mr. Hamo Thornycroft, R.A. As Chancellor of the University of Cambridge, the Duke of Devonshire will make the transfer, and his grace will be supported on the occasion by Sir William Huggins, P.R.S., Lord Kelvin, Lord Rayleigh, and others.

INQUIRIES are frequently made by photographers contemplating a trip abroad as to the difficulties likely to be encountered in passing plates, etc., through the Custom House. As a matter of fact, any real difficulty or annoyance is very rare, and the advice recently given in such a case was, "Don't alarm yourself about the duty question. Declare what you have, and trust to Providence you'll have no difficulty unless you try to smuggle." If, however, the traveller likes to be additionally secure by labelling each packet of plates in the language of the particular seaport or frontier town he will have to pass through, printed tickets in the various European languages may be obtained at most of the photographic dealers. In the case of America, it is often a serious consideration whether it is not best to purchase both camera and materials after arrival in that country, unless an American-made instrument be carried, as the duty payable on taking a European-made camera into the United States is 45 per cent. ad valorem, and 25 per cent. for plates, etc.

A METHOD OF SUITING SCREENS FOR THE PHOTOMICROGRAPHY OF STAINED BACTERIA.

DR. SPITTA read an interesting paper bearing this title before the Quekett Microscopical Club, on June 17. He commenced by saying that as photography had become the handmaid to microscopy, anything which assisted the photographer in the better and more truthful rendering of microscopical objects really benefited the microscopist. It was on this ground that he ventured to occupy the attention of the club with the subject in question. He added that he wished it to be distinctly understood that he did not bring before them the use of screens for increasing contrast between coloured objects as anything new, but as the method for ascertaining scientifically the correct antithetical dye to use, by employing the spectroscope in conjunction with the photographic plate might not be familiar to some of the photomicrographers present, he deemed the subject worthy of a few minutes' attention. Screens were used in photography for two purposes—to improve definition and to increase contrast. He should deal with the latter only. To make what followed better understood, Dr. Spitta carefully called attention to the difference between the human eye and the photographic plate in their methods of perceiving contrast in coloured objects. The eye recognised the difference by contrasting the coloured objects themselves, whereas the photographic emulsion merely recognised differences in intensity of the light from each. For example, red light was merely the name given to the physiological recognition of about 460 millions of millions of taps on the retina in a second of time; whereas if the number of such vibratory shocks increased to about 678 millions of millions, we called the light violet; the photographic plate, however, "cared not for these things," and only showed contrast as an indication of different exhibitions of light intensity; at least, that is what it practically amounted to. Hence, if the photographer wanted to increase contrast when photographing stained bacteria—say a blue bacillus on a white ground—he must reduce the intensity of the blue to make it become as dark as possible. Dr. Spitta then proceeded to show how this could be done by using a certain yellow screen, which turned the blue bacillus into a black, the field becoming of the same yellow as the screen. If now a photographic plate was chosen which was sensitive to the same kind of yellow as the screen, a photograph could easily be taken. Illustrations were given by means of the lantern. Dr. Spitta next showed how necessary it was, after what he had just said, to know the sensitive properties of most kinds of orthochromatic plates on the market, the peculiarities of each being designated by him as its "eye." A lantern slide was here thrown on the screen, showing the audience the "eye" of most of the orthochromatic plates to be procured, using both short and long exposures. It was very instructive, for it showed at what wave-length the sensitiveness commenced and finished for all varieties of emulsion. Step by step the audience were taken through the subject, and shown in detail how they might study these peculiarities for themselves. Dr. Spitta also exhibited and briefly described the form of spectroscope which he had employed in his researches. It was made by Zeiss, and its special feature lay in the projection of the wave-lengths, by means of a scale, of all the different colours in the spectrum, upon the plate at the same time as the spectrum was being photographed. This was a great convenience, and placed the method of comparison upon a scientific basis, for it had often been pointed out how useless remarks were when employed by a lecturer who spoke of effects "somewhere in the blue" or "near the end of the yellow," instead of in terms of the wave-length of the colour at the situation to which reference was made. Real spectra were now thrown on the screen by means of a second lantern fitted with a large bisulphide prism. These, while adding largely to the interest of the subject, also gave the lecturer an opportunity of explaining various details, such as the use of screens, the meaning of absorption bands, and how the eye perceived these effects differently to the photographic plate. Dr. Spitta went on to explain that in dealing with bacteria, the photographer had mostly to deal with three dyes or stains—viz., Löffler's blue, gentian violet, and carbol fuchsin. Lantern slides showing the method of selecting suitable screens for each of these stains were thrown on the screen, and the details carefully gone into, and finally

photographs of anthrax bacilli magnified 1,000 diameters, stained with each of the three dyes, were in succession exhibited, illustrating the effect of photography with and without the contrasting screen. It was unanimously admitted that the improvement in detail and definition was most marked.

FORTHCOMING EXHIBITIONS.

June-October.—Glasgow Photographic Exhibition. Secretary, Glasgow Gallery and Museum, Kelvingrove, Glasgow.

July 14 to September 30.—Vienna Photographic Society. Secretary, W. Burger, Karmelitergasse 7, Vienna 11.

August 1.—Andover and District Horticultural Society. Photographic Section. Hon. Secretary, W. L. Gradidge, Jubilee Hall, Andover.

August 16-20.—Royal Cornwall Polytechnic Society Photographic Section. Secretary, Edward Kitto, The Observatory, Falmouth.

September 16 to November 5.—Photographic Salon, Dudley Egyptian Hall, Piccadilly. Hon. Secretary, Reginald Craigie, Photographic Salon, 1904, Dudley Gallery, Piccadilly, London, W.

September 20-28.—Newbury Photographic Society. Hon. Secretary, E. J. Forster, Guildhall Club, Newbury.

September 22 to October 29.—Royal Photographic Society's Fifth Ninth Exhibition, New Gallery, Regent Street, London. Secretary, A. W. W. Bartlett, 66, Russell Square, London, W.C.

October 1-30.—Berlin International Photographic Exposition. Franz Goercke, Berlin W. 62, Maassen-Strasse 32, Germany.

October 19-22.—Rotherham Photographic Society. Hon. Secretary, Hemmingway, Tooker Road, Rotherham.

November, 1904.—Ilford and District Photographic Society. Secretary, W. N. Beal, 155, Thorold Road, Ilford.

November 3.—Frome M.I. Photographic Society. Hon. Secretary, B. J. Mitchell, 3, Willow Vale, Frome.

November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Secretary, James Dunlop, Myrtlebank, Motherwell.

November 9.—Hackney Photographic Society. Hon. Secretary, Walter Selfe, 70, Paragon Road, Hackney, London, N.E.

November 15-16.—Ipswich Camera Club. Hon. Secretary, R. Sutton, 37, Henley Road, Ipswich.

November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.

November 23-26.—Hove Camera Club. Hon. Secretary, A. Sargeant, 55, The Drive, Hove.

November 24-25.—Isle of Thanet Photographic Society. Hon. Secretary, G. W. Simmers, Aberdeen House, Ramsgate.

December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.

December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102 West 101st Street, New York.

December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.

December 13-20.—Southampton Camera Club. Hon. Secretary, J. Kimber, Oakdene, Highfield, Southampton.

December 28-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 138, Glasgow Road, Wishaw.

January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

June, 1905.—Northern Photographic Exhibition. Secretary, F. Issott, 62, Compton Road, Harehills, Leeds.

News and Notes.

SE Exhibition at the R. P. S.—Our readers are reminded that the show of studies in gum bichromate by Robert Demachy now on view at the Royal Photographic Society's House, 66, Russell Street, remains open until Saturday, July 9.

THAMPTON Camera Club.—On the 27th inst. the members of the club held a print competition, the subject being "Cloud Study." The premier position was awarded by the judges to Mr. C. D. Kay, who wins the bronze medal given by the club.

A new series of animated pictures now being presented by the Bioscope at the Alhambra Theatre are well worth seeing. The edition to striking pictures of the war in the Far East, the Motor Cycle, etc., a very popular and realistic series showing the making of a newspaper is given. The pictures show every phase of the process from the noting of the incident to the publishing of the journal to the public. They are extremely well done.

Mrs. JULIA MARGARET CAMERON, whose exquisite photographs of years ago are now being exhibited at the Serendipity Gallery, 10, St. John's Church, St. John's Grove, has yet another title to fame in those days. She was noted for a succession of superbly beautiful housemaids. Her young women had other duties than those of ordinary domestic help. For the dimly mysterious Tennysonian heroines which her photographs produced are housemaids. To-day housemaids will be more "sh" than ever.

D. PACINI has sent from Rome an account of careful experiments made by him with the object of observing the effects of light described by M. Blondlot and other investigators. Though his observations were made under very favourable conditions, he was unable to detect any increase of luminosity of a phosphorescent substance caused by unknown rays from strained or tempered steel, an arc lamp, a Nernst lamp, sound vibrations, or a magnetic field. Various French observers have affirmed that in each of these cases X-rays are emitted which produce an effect upon the screen.

The Prime Minister has consented to receive a deputation from the British Association for the Advancement of Science at the House of Commons on Friday, July 15, at 3.15 p.m., with the object of discussing the views of educationalists and others, who advocate the granting of an increased endowment of universities and colleges on the part of the State in the interests of higher education and of national progress. Sir Norman Lockyer, president of the association, will introduce the deputation, which will comprise academic, municipal, labour, and general representatives.

ROYAL Photographic Society.—On Tuesday evening (June 28) the meeting of the session was held. Messrs. C. E. K. Mees and Sheppard gave an interesting, and what is likely to prove an important, paper on "Instruments for Sensitometric Investigations. A Historical résumé," their researches showing that they had carried out the sensitometric investigations of Harter and Driffield to a greater degree of accuracy. The paper dealt exhaustively with a new machine for accurately coating plates in small quantities, with the instruments, an enclosed instrument for the Hurter wheel, a standard acetylene light, a developing thermostat for the control of temperature during development, photometers—the Hufner photometer, and some new fittings for the measurement of light. A full report of the lecture will be published in these pages later.

PHOTOGRAPHS with the Two-Foot Reflector of the Yerkes Observatory.—Seven very fine specimens of the work done with the two-foot reflector of the Yerkes Observatory are published in Vol. VIII. of the Annual Publications of the University of Chicago. These are of the giant nebulae of Orion and Andromeda; of the spiral nebulae of the 33 Trianguli and Messier 51 Canum Venaticorum; of the carded-like nebulae in the Pleiades; and of the torch-like nebulae in the constellation known as N.G.C. 6960, and N.G.C. 6992. These two last form part of the same extended nebula, but they present some striking differences in their relationship to the stars. In the first case the

nebula seems to act as a wall or barrier separating a region strewn very thickly with stars, from a sparser field; in the other case no such difference in the number of the stars seems to exist on the two sides of the nebula, which itself appears to lie in a district of few and small stars.

MR. FREDERICK SANDYS is dead. The announcement will have a pathetic interest for all those who have watched an artistic career in which the merits have outstripped the resulting rewards. Of his seventy-two years the most successful were perhaps those that saw him at his black-and-white work on the "Cornhill" and "Once-a-Week." His pictorial skit on the Pre-Raphaelite Movement won for him at once the candid admiration and the friendship of Rossetti. For several months he lived under Rossetti's roof; but the quarrel, perhaps inevitable when the temperaments of the two men is taken into account, came in 1869, and arose out of Rossetti's belief that Sandys adopted subjects for pictures which Rossetti had already sketched out or discussed. As an illustrator in black and white he has, however, established his fame; and in no drawings was he more happy than in those which illustrate some of the pages of Mr. George Meredith's "Shaving of Shagpat." Mr. Sandys was a good talker; he told his stories drily and well; and, of course, his intimacy with Rossetti and other literary celebrities gave him a never-failing interest of theme.

THE National Trust for Places of Historic Interest and Natural Beauty has acquired another beautiful view-point on the Kentish Hills. Two miles from Westerham, and about three miles from Edenbridge, the land, extending to about three acres, crowns one of the southern ridges of Crockham Hill, and is approached on one side by paths cut through the copse wood on a steep bank full of primroses and wild hyacinths, and on the other by a track following the edge of the intervening fields from Westerham Common. The view on a clear day, as one sits on one of the rough timber seats the Trust has erected, is a beautiful and extensive one, embracing most of the Weald of Kent and Ashdown Forest to Leith Hill, Blackdown, and the hills of distant Haslemere. The enjoyment of this beautiful halting-place is owed to the generous donor, who by leaving a sum in money "In Memoriam" with Miss Octavia Hill to be used at her discretion has enabled her to purchase and present the land to the National Trust as a lasting memorial to the benefactress herself, and a means of healthful and quiet enjoyment to all who, loving the beauties of an English landscape, care to visit the spot. This should prove an ideal place for a photographic society's outing.

BIRMINGHAM Photographic Society.—A Garden Party will be held on Saturday, July 2, to which every member is invited, in the grounds of their residence, at Barnt Green, by the President and Mrs. A. J. Leeson. For the entertainment of members there will be tennis and croquet, also unique photographic competitions. Groups of living models will be specially provided for the occasion as follows:—Group No. 1: "Dairymaid and Cow." Group No. 2: Four models dressed in Old English Costume." Group No. 3: "A Country Type." A silver medal will be awarded for the best set of three prints, consisting of one print of each subject. A bronze medal will be awarded for the best single print submitted of either subject. A certificate of honour mention will be awarded for the best print from a cloud negative taken during the afternoon. Three cameras will be provided inclusive of the club cameras, being one camera for each group. A suitable supply of plates will be on hand. The medals and certificate are the gift of the President. The medals will be struck from the new design obtained by competition at the Birmingham School of Art, and not previously issued. Mr. Harold Baker will act as judge. We can commend this original idea of the energetic "Brum" Society to photographic societies all over the Kingdom.

SUN Fête on the Eiffel Tower.—M. Eiffel's famous Tower on the Champ de Mars has of late fallen somewhat out of favour with the Parisians, but last week it regained for a few hours its old popularity. June 22nd was the first day of the summer solstice, and a party of Paris astronomers, mathematicians, and men and women of learning had resolved to celebrate the advent of summer by holding a festival in honour of the sun. Among those present were Prince Roland Bonaparte, MM. Eiffel, Poincaré, Flammarion, and many other distinguished scientific people. After they had

dined at the restaurant on the first floor, M. Flammarion delivered a lecture on the sun, illustrated by solar photographs. Afterwards there was a concert, with songs and recitations appropriate to the occasion. At half-past one a group of enthusiasts went to the top platform and waited to see the sun rise. M. Flammarion has thought fit to state, in connection with the ceremony, that it is absurd to accuse him and his associates of being pagans, and of endeavouring to revive sun worship. Every religion, he said, honoured the sun. Their intention had simply been to revive a pretty cult, which was as old as the world, and which they hoped in the future to celebrate annually. The average photographer is probably more of a sun worshipper than M. Flammarion and his friends.

THE Biograph at the Palace Theatre includes some very fine films indeed of topical interest. Of course, the Gordon-Bennett race and the incidents of the Russo-Japanese War come in for a full share of attention, and the pleasing brown colour of some of these latter is a very welcome relief to the usual hard black and white tones we are accustomed to. The pictures showing the Czar have almost a pathetic interest. We see the "mighty white Czar of All the Russias;" we can look into his face and gaze closely into his eyes. The pictures are so good that one can almost follow the train of thought that prompts his various motions. First one sees this little, tired man at the blessing of officers departing for the war. Priests in gorgeous vestments perform the rites with graceful movements, and the long-limbed officers come striding up easily and carelessly. But the little Czar shifts from one leg to the other, glances at the toes of his boots, attends anxiously to the set of his sword as though he had never hung one at his side before, or hurriedly smoothes his moustaches. He drinks the health of a departing regiment, and he shifts from leg to leg as he stands beside the table on which is set out the wine. Again he glances apprehensively over his shoulder, again he sees to the set of his sword, again he smoothes his moustache. He takes the glass of wine, raises it, and looks into it gravely as though death might lurk there. Then, with a sudden movement, he straightens up and drains it to the dregs. A moment later he is again shuffling aimlessly round the table. Then he vanishes, and he has not smiled once. The audience has watched quietly; there has not been a suspicion of applause. From the grand strains of the Russian national hymn the orchestra changes its notes into a jingling air. The light of the biograph shines out again, and the gallery cheers as Japanese sailors at leap drill on the screen.

In the county of Devon, which for its size, area, and great attractions has singularly few aggressively active photographic societies, since the fine summer came in there has been plenty of good weather for outdoor photography. The summer sessions are now arranged and the Plymouth Photographic Society has started with a most excellent beginning. A large party on Saturday last accepted the invitation of Mr. Frederick Johnson (President) and Mrs. Johnson, and journeyed to Ivybridge. This spot is very well known indeed to the inhabitants of the big towns within a dozen miles of it, but it is by no means as well known to the visiting photographic picture maker as it deserves to be. The party that journeyed with Mr. Johnson on Saturday were not all photographers, as the invitation included friends of the members within its scope, and this judicious intermingling made the jaunt a very pleasant one. The vicinity of Ivybridge, toward the moor, is very elevated country, and thither the party, under the guidance of Mr. Chalwell, head gardener to Mr. James J. MacAndrew, wended its way. The route lay in the magnificent Stowford Woods, rich in all the native varieties of trees, all in their glorious and tender leafage, through which the sunlight glistened and flickered, giving the soft, cool light of a cathedral aisle. It was a glorious day, and all around the birds were carolling in full song. Deep down in the valley ran the River Erme, tumbling with many falls over the granite boulders in its course, the soft murmur of its voice reaching the party, now faintly and now more strong, as the gentle breeze came through the wood. Upward continuously the course was pursued, until the mansion and grounds of Lukesland were reached. This was a veritable floral fairyland, in which rhododendrons, benthamias, and calmasias formed great masses of blossoms. There was profusion of flowers of all the usual kinds found in such places, with many old-fashioned varieties which are far too little seen nowadays. Great masses of bamboo luxuriantly flourished, and

it was difficult to realise that where the party was gathered 900 ft. above sea level. The grounds are famous for the splendid collection of conifers, many rarities of the pine family rearing their crests to the sky. With such brilliance and variety there was much photography done, though the time was all too short. Then the party wended its way down to the ancient village of Ivybridge, to the hostelry, the London Hotel, jutting on a bridge that touches the parishes, where the President had invited the party to join him. Mrs. Johnson at a strawberry tea, with an abundance of the clotted cream for which the district is famous. At the close of the function, Mr. J. J. Johnson, Vice-President, proposed in felicitous phrases a vote of thanks to the President, which was seconded by Mr. Chas. R. Rowe, supported by Mr. H. S. Hill, and very heartily carried. Mr. F. Johnson, in replying, spoke of the pleasure the hotel had afforded him, greatly enhanced by the company of those who had accepted his invitation, and spoke of the very hearty way in which the members had supported him on every occasion he desired their co-operation, and especially at the time of the very successful exhibition. He begged to be allowed to include Mr. Grist in the vote, as the Hon. Secretary had taken considerable pains to make both the events referred to the success that was apparent. After a few words from Mr. Grist, the party made its way to the station in the cool and charm of a delightful summer evening, fitting termination to a very enjoyable outing.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

July	Name of Society.	Subject.
1.	South London Photo. Society.	<i>Luna Paper.</i> Demonstrated. L. Allegre & Co.
5.	Nelson Photographic Soc'y	<i>Trimming, Mounting, and Framing.</i> Mr. F. Whitaker.
5.	Rotherham Photo. Society	<i>Carbon Process.</i> Mr. W. Firth.
7.	Hull Photographic Society	<i>General Meeting.</i>
8.	Watford Photographic Society	<i>Informal Meeting.</i>

FORTHCOMING COMPETITIONS.

June 30.—"Photographic News" Quarterly. Money prizes, silver and bronze medals for prints. Any subject. "Photographic News" 9, Cecil Court, Charing Cross Road, London, W.C.

June 30.—Kodak. £1,000 in cash prizes for pictures taken with Kodak films and plates, etc. Kodak, Limited, 41-43, Clerkenwell Road, London, E.C.

October 1.—Thornton-Pickard. £100 cash prizes for pictures taken with Thornton-Pickard cameras and shutters. Thornton-Pickard Manufacturing Co., Altrincham.

October 10.—Luna paper. £240 cash prizes for prints on Luna paper. Lucien Allegre and Co., 59a, New Oxford Street, London, W.C.

October 15.—Belgian Association Lantern Slide Stereogram Competition. Secretary, M. Vanderkindere, 97, Avenue Brugmann, Brussels.

October 31.—Coxin. 68 prizes for users of Coxin. Judging two pictures. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.

November 1.—The "Graphic." £50 in cash prizes. Manag. Photo Competition, the "Graphic," Tallis Street, Whitefriars, London, E.C.

December 31.—Barnet. Nineteen classes. Prizes valued at £200 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

March 15, 1905.—Ilford. £750 in prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

Correspondence.

Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.

We do not undertake responsibility for the opinions expressed by our correspondents.

THE PHOTOGRAPHIC PROFESSION AND THE "B.J." JUBILEE.

To the Editors.

Gentlemen,—I have been desired by the Committee to offer you our congratulations upon the BRITISH JOURNAL OF PHOTOGRAPHY having passed its fiftieth birthday, and to express the hope that it long continue its career of usefulness under your able guidance. Representing professional photographers generally, we have to thank you in their name for the generous way in which you have shed over the interests of the profession, and we consider that the least of the benefits the JOURNAL has conferred upon our community is the institution of this Association, and for your own personal efforts in the matter we cannot be sufficiently grateful.—Yours very truly,

ALFRED ELLIS, President.

The Professional Photographers' Association,
51, Baker Street, London, W.
June 24, 1904.

A METEOROLOGICAL DISCOVERY.

To the Editors.

Gentlemen,—I have noticed, with some interest, an article under above heading in the "B.J.P." of June 24. I think this excessive continual rain affects the photographer more than anyone else; before, it is only natural that he would do his best to discover the cause of such an "evil," as the article puts it. I really do not think ought to blame Signor Marconi for the cause of such unusual nature. We have not the slightest proof that his wonderful discoveries of wireless telegraphy is the cause of such inclement weather. People of Fraserburgh and Poldhu have our sympathy for the loss and inconvenience brought about by such weather. So have the people of other places, where there is no wireless telegraphic station. I do doubt that Signor Marconi would be only too pleased to remove the dreaded instruments to Egypt or elsewhere, where rain is wanted. Such instruments cause rain?—Yours truly,

C. H. B.

HISTORICAL.

To the Editors.

Gentlemen,—Allow me to thank Mr. G. T. Harris for his very delicate compliment in the letter on page 580 of your last issue. I am glad, however, that he will be disappointed, because I had no intention of giving aught but "a few idle thoughts from an idle hour," and mainly not anything like a series of articles; but I hope within the next few months to prove by results many of the statements made in the last two issues.

Mr. Harris is quite correct as to the first use of ammonium picrate, Albert of Munich placed his collodion emulsion on the market in 1833, and this contained ammonium picrate. In "Eder's Jahrbuch," 1833, II. Theil, page 406, occurs the following passage: "Dr. Albert recommends the picrate salts as light filter for orthochromatic work. He incorporates the same in the sensitive film itself, as he adds to the collodion emulsion a solution of silver eoside in ammonia, in which free ammonia is neutralised by picric acid; by this means also the eosine, which acts prejudicially on the pyroxyline, is removed, and the silver eoside being destroyed."

In page 402 of the same book Dr. Eder states that Dr. Albert, in the summer of 1833, at the famous Vienna School, made exposures with his collodion emulsion, and gave the same exposures as for sensitized gelatin-bromide plates, a hitherto unattained result. The use of ammonium picrate was also recommended by Dr. Jonas, in his paper, Corresp., 1891, p. 318, and Major-General Waterhouse transmitted this paper, but I cannot trace an independent suggestion by him as to this use of the picrate.

I had not in my mind, when writing, collodion emulsion at all, or I should have certainly given Dr. Albert the credit. M. Vidal, I still think, was the first to suggest its use for gelatine plates in the "Moniteur de la Photographie," 1891, p. 183, and it was then recommended by Burton.—Yours faithfully,

E. J. WALL.

Foots Cray, June 27, 1904.

COPYRIGHT IN INDIA.

To the Editors.

Gentlemen,—In your issue of May 6 I notice an inquiry in your column "Answers to Correspondents" from H. C. S., Bombay, with reference to copyright in India.

About four years ago, whilst carrying on business in India, I endeavoured to protect certain photographs of mine from being pirated, and applied to the Patent Office, Calcutta, to have them registered, and received a reply direct from the Government of India, through the official head of that department, to the effect that there was no copyright for photographs in India. A drawing of an article, designs, etc., can be registered at the Patent Office, but this gives protection over the particular article only.—Yours truly,

F. SKEN.

Colombo, Ceylon,

May 30, 1904.

A PHOTOGRAPHIC Sea Trip.—Nowadays we go to Deal and Dover from London almost as quickly and far more comfortably than an older generation of trippers went to Greenwich or Gravesend, and this is exemplified this week, when the Koh-i-noor, of the New Palace Steamers line, makes the first of a series of excursions to Dover and back by daylight. From now until the season's end this excellent steamer is to start four days a week from Tilbury.

NEXT year the meeting of the British Association for the Advancement of Science is to be held in South Africa, and Professor George Darwin, F.R.S., has been elected President. No fitter choice could have been made. The son of the great naturalist is an astronomer and a mathematical physicist of the first order, somewhat unlike his father, who used to say that he could never understand an equation, but otherwise like him in wide scientific sympathies and cautious reasoning. No part of the world has more to expect from science than the Transvaal, Natal, Orangia, and Cape Colony.

ON Saturday, the London and Provincial Photographic Association had an enjoyable outing to St. Paul's Cray Common, the land of birch and bracken. Unfortunately, the sky was dull, so only those who had brought tripods with them could make exposures with any certainty, and the expedition therefore resolved itself into a prospecting tour for future visits. The celebrated caves near the station were visited, and were found very interesting. Supper was taken at the Bickley Hotel, Mr. Oscar Hardee, photographer, Chislehurst, presiding. An elaborate list of the usual toasts prepared by the recorder was unanimously voted as not wanted, but Mr. Drago briefly thanked the chairman for his presence and welcome to the locality. During the evening the hon. secretary, Mr. Grant, Mr. Hardee, and Mr. Furley Lewis favoured the company with music, vocal and instrumental.

SCIENTISTS do not expect popular fame, but our greatest scientist, Lord Kelvin, who attained the age of eighty on Sunday last, has added so much to our knowledge and has achieved so much in scientific inventions that he deserves to be honoured by the "man in the street" as well as by his fellow labourers in science and physics who can estimate his remarkable work. Yet he said not long ago that despite fifty years of experimental investigation he could not help feeling that he really knew no more than he knew fifty years before. Walking through a great electrical works, he said to a workman quite casually, "What is this electricity of which I hear so much?" The man, not recognising his questioner, answered, "I am sure I don't know, sir." "More do I," replied Lord Kelvin. And that expresses his humility in discussing a subject on which he knows probably as much as any living man. It is this Newton-like humility which has endeared him to his colleagues, for he has always been ready to hail with enthusiasm any of their discoveries and to anticipate far greater revelations of what he believes are the evidences of a divine force aiding humanity in its life and work.

Answers to Correspondents.

* * All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.

* * Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.

* * Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.

* * For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

W. H. Chillman, 207, St. Albans Road, Watford, Herts. Photograph of an Advertisement Placard.

H. D. Buttrum, 18, High Street, Stony Stratford, Bucks. Photograph of the Queen's Oak, Pottersbury Lodge, Northampton.

T. R. Hammond, 1, Rose Hill Street, Conway, Carnarvonshire. Photograph of Conway Castle and Suspension Bridge, Showing New Footway.

T. Dann, 83A, Brighton Road, Redhill, Surrey. Photograph of Col. W. F. Cody, "Buffalo Bill." Photograph of Col. Cody and Two Indian Chiefs.

W. J. Reed, 2, Marina Arcade, Bexhill-on-Sea. Two Photographs of Group of St. Peter's Clergy, Bexhill.

I. C. Thomas, 6, Belvoir Street, Leicester. Photograph of Baby "Thomas" in Bath.

FIVE PER CENT. SOLUTION.—"MOORE" says: "Kindly let me know how to make up a 5 per cent. solution—how much of the solid and how much liquid is required." In reply: Dissolve five parts of the solid in, say, ninety parts of water, and then make the bulk up to a hundred. This is what is generally understood as a 5 per cent. solution.

LENS QUERY.—"K. L." (Allahabad) asks: "(1) Kindly give me full particulars of removing spots of lens. (2) Also, let me know the price of the postal guide of London." In reply: (1) We must trouble you to make this query a little more definite. We do not understand what you mean by "spots of lens." (2) The price of the "Postal Guide" is 6d.

ALBUMEN PROCESS.—"G. P." says: "I want to make a few lantern slides by the albumen process. Can I expose in the camera whilst wet, same as collodions, or must they be used dry?" In reply: The plates should be exposed dry. The exposure will be very long in the camera. Unless the pictures are to be reduced we should recommend you to print by contact.

CLOUDS IN COLLOTYPE.—THOMPSON AND LEE write: "Could you kindly tell us the usual method adopted by large colotype firms in putting clouds in the views of their pictorial postcards? We shall feel obliged with any information on this point which you can give us." In reply: The usual way is to put the clouds in the negative. If the skies are dense they should be reduced a bit.

BOOKS WANTED.—"RETOUCHER" asks: "(1) Can you recommend a good book, or books, on retouching? I want one that goes into the work thoroughly. (2) Also, are there any books with lighting and posing studio work?" In reply: (1) "The Art of Retouching Negatives and Finishing and Colouring Photographs," by Rob. Johnson; or "Practical Retouching," by Drinkwater Butt. (2) "The Studio and What to Do In It," by H. P. Robinson, and "Artistic Lighting," by Jas. Inglis. The books may be had through any of the dealers.

VARIOUS QUERIES.—"PUZZLE" asks: "Will you please answer the following?—(1) In toning P.O.P. prints I alum the prints after fixing. Could I add alum to the 'hypo' bath to save the time needed otherwise without affecting the permanence of prints? I find that when hypo and alum are mixed in solution it turns 'milky,' and gives off an unpleasant odour. Is this of any consequence to prints? (2) In a recent issue of the BRITISH JOURNAL OF PHOTOGRAPHY there was an article on 'A Useful Print Meter' (which I have mislaid). Could you give me the name and price of the meter mentioned? (3) Could you tell me of a good (but inexpensive) book on lenses which would help me in purchasing, and also give me a slight knowledge of

uses of different lenses?" In reply: (1) Your present method of working is far preferable to adding alum to the fixing bath if permanency is a consideration. (2) We do not think that a meter is on the market (p. 313). (3) "A Simple Guide to Choice of a Photographic Lens," by T. R. Dallmeyer; "Photographic Lenses," by Conrad Beck.

LENS QUERIES.—"S. E. T." says: "I shall be very much indebted if you will give me advice on the following:—(1) Do you consider a studio 24 ft. by 10 ft. large enough to do the best work in? Do you think it rather short for full-length pictures? (2) The light used would come entirely from the north, there is a building opposite the side light, at a distance of about 15 ft., and is not quite as high as my building. Would this materially interfere with the strength of the side light? (3) Having the focus of the lens, how can I ascertain the distance between the sitter and the camera for a full-length portrait? (4) Considering the length of the studio (24 ft.), what length of focus lens could be used to get perfect definition and no sign of distortion?" In reply: (1) The studio is not too small to do good work in, though it would be more convenient if it were a little larger. (2) It would to an extent, though not very materially. (3) With a lens of 12 in. focus a distance of about 18 ft. is required between the camera and the sitter for a full-length cabinet picture. (4) One of about 12 in. focus for cabinet size.

SALE OF PRINTS.—A. WALKER writes thus: "Having been asked what I would take a whole-plate negative of troupe for said 7s. 6d., but not being able to get more than 5s. I agreed (but at the same time I did not think much of it), so I took two negatives and supplied one for 5s., but while I was they asked me to take two half-plates different positions, which I did; no price agreed for these at the time, but when I saw proofs of same I was asked how much for the two. I said As I could not get more than 5s. the two I thought it better to take that, as I had done the work, but before parting with the negatives I printed five of each, making fifteen prints, and thought I could sell one or two finished prints to some of the troupe, which I did; but what I sold was done openly, and was given to understand the negatives were wanted to make some prints to put in shops and hotels as an advertisement. Nothing was said to me about the troupe wanting to take prints, which it looks like to me, as I have enclosed a copy of what was sent to me to-day on the matter from the head of the troupe. Thanking you for your advice on this, I may say I only supplied three 1-1 plates and four half-plates at each, only being five in the troupe. I am sorry I had anything to do with such people. Also, will you advise me if I could make use of the second whole-plate I have in my possession? I choose to? I may say that there was nothing signed between us. I only sent bill for three negatives, 10s., and the prints were finished before I received the money for plates. In reply: You are certainly in the wrong. You have no right to make use of the prints without the consent of the sitters. You were paid for your work—whether much or little is of no matter. You have no right to use the negatives you have. We should advise you to make the best terms you can with the aggrieved parties. Kindly write on one side of the paper only in future, please.

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No. 2305, VOL. LI.

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THE BRITISH JOURNAL JUBILEE NUMBER.

Special Jubilee Number of THE BRITISH JOURNAL OF PHOTOGRAPHY, which we published on Friday, June 10, met, we are pleased to say, with a most cordial and durable reception at the hands of the photographic public—indeed, the success achieved was so striking and instantaneous as to cause even ourselves, who had anticipated the Special Number would secure a wide degree of appreciation, the liveliest feelings of gratification and assurance at the chorus of commendatory approval meted to the issue.

Several extra thousands of the Special Jubilee Number have been printed, and they are selling rapidly at the ordinary price of twopence per copy, or by post twopence-penny. The number consists of a total of 132 pages, and forms the largest ordinary issue of any photographic journal ever published in the United Kingdom. The contents include thirty special articles by the foremost photographic authorities of the time; a history of THE BRITISH JOURNAL OF PHOTOGRAPHY since its foundation; and about 100 original portraits of celebrities connected with photography; thus forming a unique and most interesting souvenir of the Jubilee of the oldest photographic journal in the world.

As this souvenir number of the JOURNAL is in such demand, and is shortly likely to be scarce, readers at home and abroad who have not yet secured a copy are advised to do so without delay.

EX CATHEDRA.

Light and Chemical Action on Platinum.

Platinum is almost a typical substance of those unacted on by ordinary chemical agents, yet M. Berthelot has recently made an interesting communication to the Paris Academy of Sciences, showing how, under the action of light, the immunity is destroyed. He finds that pure platinum under the influence of strong hydrochloric acid is slowly attacked. The presence of manganous chloride increases the effect, the more as the proportion of manganese present increases. Light, M. Berthelot says, apparently acts in the same manner as atmospheric air when the latter is used as oxidiser for organic compounds: it seems to cause the fixation of free oxygen, which replaces the chlorine of the hydrochloric acid. Gold also, when treated similarly, is found soluble in hydrochloric acid. These facts, however, do not at all militate against the stability of platinotype prints which, so far as the image is concerned, still retain their reputation of absolute permanency as regards the action of time and atmospheric agents.

* * *

New Process for Welding Aluminium.

We have often referred to the difficulties attending the joining together of aluminium surfaces as required, for example, in making the tubes and fittings for lens mounting, etc; and recently a description has been published of the Cowper-Coles welding process, which is stated to be especially suitable for wire rods and tubes and other rolled or drawn sections. The process involves the use of a special machine for clamping together the parts to be welded. The best used is that from an ordinary benzine lamp, and as soon as the parts have arrived at the necessary temperature slight pressure is applied by the machine, which causes the joined surfaces to unite, a ring of metal being squeezed out. This ring consists largely of aluminium oxide, and acts as a supporting and insulating collar, the molten metal being retained within this collar. The great feature of the process then comes into play; the junction is instantaneously quenched by a douch or jet of cold water applied from a special jet attached to the apparatus; at the same instant the handle that turns on the jet interposes a screen between jet and flame.

* * *

Photographs for St. Louis.

Of the photographic section at the St. Louis Exhibition we have heard much, but there are a number of other photographs in connection with the British exhibits at the Big Fair which hitherto have not attracted attention. They serve to show incidentally how dependent our arts and manufactures are upon photography for

picturing processes and results. It is now the common custom for engineers in charge of big works to record by photography daily or weekly progress, and many such pictures, notably those taken in connection with the great Assuan dam across the Nile, have gone to the St. Louis Exhibition. The War Office have sent plans and photographs showing the most recent types of military barracks and hospitals. The Mining Department of the Home Office have sent a number of photographs to help in their large collective exhibit relating to British mining during the past thirty years. The Board of Education (Geological Survey and Museum) have contributed a collection of metallurgical photographs. One exhibit in this department is of extreme interest. What is known as Frosterley marble, which was used in the adornment of several of our British churches and cathedrals for a period covered by half a dozen centuries, had been lost. But its vein has recently been re-discovered, and several specimens, both rough and polished, have been sent for exhibition, together with photographs of the same stone as found in our ancient buildings. We could not very well send samples of our cathedrals across the Atlantic, however much Brother Jonathan would like us to do so. But we send the next best thing possible—photographs of them.

* * *

Trichromatic Illustrations.

A glance into the windows of any of the leading booksellers' shops reveals the fact that coloured pictures, as illustrations to volumes on all kinds of subjects, are very much in evidence, and that such pictures, as well as those used for illustrative purposes which are in monochrome, are either photographs or reproduced by photographic process. Photography is, indeed, becoming every day more necessary to the producer of books, as it is to the publisher of periodicals. As a case in point we may mention Prof. Hall Griffin's "Life of Browning," which will presently be produced by Messrs. Methuen. According to the "Athenæum," "Prof. Griffin has photographed every accessible spot, character, and picture mentioned in Browning's works, including every yard of his walk from the stall in the Piazza San Lorenzo, Florence, where he bought his old yellow copy of 'The Ring and the Book,' to his lodgings." Turning to pictures of another kind altogether, which presumably owe their existence to photographic process, we learn from the "Times" correspondent at Cracow that the Russians are distributing hundreds of thousands of coloured pictures in Moscow and in the rural districts of Central Russia, with the encouragement of the censor. These are pictures relating to the war, and in all of them the Russians are represented as the victors, and the poor, feeble Japanese as utterly crushed. Japanese ships are shown sinking, their towns shattered to pieces by Russian guns, and the Japanese infantry being run down like rabbits. In one picture of the battle of the Yalu the Russians are seen driving the Japs in confusion across the river. There will be stirring times in these districts of Central Russia when the people learn the truth.

* * *

Formaline in the Atmosphere.

Formaline, or solution of formic aldehyde, as it would be termed by the chemist, offers a conspicuous example of photographic conservatism. It is now several years since, on the strength of a report of a foreign philosophical society, where it had been recommended for hardening gelatine for microscopic slides, we suggested a probable sphere of usefulness for it in photographic techniques. Some time afterwards it was put on the market for photographic use. It is now obtainable at any dealers in photographic chemicals; yet we have had the entrée of scores of dark-rooms where not a trace of it was to be

found. For the prevention of frilling, or the hardening of a film to be rapidly dried, it is invaluable. It has been suggested that its use might lead to the deposition in the film of silver compounds from the hypo fixing solution, if it were not well washed out, and possibly it may account for the otherwise unaccountable neglect that has been shown it; but whether there is any ground for such objection can be shown in a moment. Let anyone take a small quantity of used hypo solution in which many plates have been fixed, and add to it even half its bulk of commercial formaline. It will be found, at the end of half an hour, that the liquid is perfectly limpid, clear, showing that no precipitation has taken place, nor, *a priori*, would be likely to take place, in the film. The theory is a figment. At a recent meeting of the Paris Academy of Sciences, M. H. Henriot made an interesting communication, regarding formaldehyde in the air. He found it present in measurable quantity; indeed, to a great extent as a thousand times as much as the ozone present. Most people are familiar with the effects attributed to the presence of ozone in the air, even in small proportion in which it is found; and, granted the correctness of the usual estimations of ozone, it would be reasonable to suppose but that the presence of formaline in a thousandfold proportion must have some action. Whether it has any effects on the film or on a plate is a question worthy of study; we are all familiar with the defects liable to be shown by an over-long exposure. How much may be attributed to this formaldehyde? That this estimate of the amount of formaline is not a fanciful one only, is shown by the fact that M. Henriot proved his results by making control experiments with air contaminated by a known amount of the aldehyde, his results in each case being in exact accordance with one another.

* * *

Iodine and Hypo.

The method of testing prints for the presence of hypo by iodine is too well known to need description; but a further use for iodine in photographic operations is the less usual one of making a solution of a definite strength for testing the purity of a given sample of hypo—in other words, ascertaining the percentage of the actual salt present in a sample of reputed hypo crystals. This is a proceeding most advisable to take when obtaining a fresh supply, say, a fresh cask, of this essential chemical; and it is not the mere satisfying of a pedantic desire for purity that renders this testing desirable. The presence of sulphur has been held to be inimical to the permanency of prints fixed in hypo contaminated with it; and, further, the addition of sulphate to hypo crystals enables the salt to be sold at a lower price, and the adulteration might easily pass undetected. The sophisticating salt, however, possesses one characteristic that leads to its detection if present in large quantity as we know from our own experience is sometimes the case. Sulphate of soda loses its water of crystallisation after being exposed to ordinary atmospheric air for a little time and effloresces to a conspicuous degree. We have seen a hundredweight cask of hypo adulterated with so much sulphate as actually to give it the appearance of having been dredged with flour. This is, of course, an extreme case; but the sophisticated salt is frequently present in quantity sufficient to give an artificial dryness to the hypo, which, though it cannot be called actually a deliquescent salt, will yet tend to cake together when exposed to air, and then become the reverse of "dry" looking. The best method of obtaining pure iodine for this purpose has recently been published by Herr L. de Ronwick, and may with advantage be here placed on record. After reviewing

various methods of obtaining pure iodine for titrating po, etc., he recommends the actimon by the dry way of chromate of potassium on iodide of potassium, feeling assured that the impurities usually present in these two are generally without influence in the final result. Further, it is very easy to purify these salts if thought desirable. A very intimate mixture of one part of iodide with three-fourths of bichromate is heated, and the iodine driven off condensed in a taxed glass bulb, which, upon being weighed with the contained iodine, enables a solution of exact strength to be rapidly and directly made.

* * *

Magnesium and Aluminium The use of these metals in powder for flash-light photography is now of such common occurrence that it might be supposed that there is nothing to learn about them, yet, as our "Answers to Correspondents" column shows, considerable ignorance as to the modes of procedure still prevails. There is one point about their employment which we would emphasise in the strongest manner, and that is the danger of making up what may be termed the pyrotechnic mixtures. It cannot be too often said that the gravest danger accompanies the mixing up, for example, of chlorate of potash with substances capable of readily combining with oxygen. Many of the mixtures are easily exploded by friction, such as the trituration together in a mortar; and one of the most fertile causes of disaster is the slight friction that takes place when the stopper of a bottle is withdrawn or the lid of a cruet removed. Should there be a small portion of the mixture adherent a dangerous accident is almost certain to occur, and too often has one taken place with loss of life or limb. There is all the less need for amateur experimenting in this direction, seeing that there are nowadays on the market many such flash-light powders incapable of explosion by friction, the composition of which, however, is kept secret. But the price is comparatively low, so that little economy would be practised by the use of home-made powders. It is not, however, the storing or mixing up of these compositions that is attended with risk: their actual use is by no means free from danger. Heat, either from electricity or some burning body, has to be applied, and the numbers of accidents that have occurred, even to professional photographers, would surprise our readers could they count them up. The taking of flash-light pictures is often attended by a certain amount of worry and anxiety, and if any hitch should occur at a crucial moment the danger of a chance ignition is, in the hurry of the moment, lost sight of, and then it is that the accidents occur. The whole operation is almost as dangerous as playing with gun-powder in close proximity to a naked light. Anyone would think that foolhardiness, yet there is scarcely any difference between the danger of the two cases. Some operators who, in their own experience or their knowledge of what has happened with others, emphatically decline to use anything but the powdered metal alone. Some firms even will not undertake flash-light work at all on account of the danger. Nevertheless, under suitable simple precautions, the danger is reduced to a small minimum, and all that is needful for success is to see that the powders are in good condition. To assure this they should always be stored in well-stoppered bottles to keep them from the air as much as possible, for partially oxidised magnesium or aluminium will ignite with far less freedom than the freshly comminuted powder. Even the particles of the latter are always liable to an excessively fine coating of grease, which slightly reduces their ready ignition, so that their possibilities in this direction are increased by a preliminary washing with ether or benzol. It may be remarked that the powders should be very fine, so as to render the explo-

sion as rapid as possible; specially finely-powdered magnesium can be bought, but it costs almost 50 per cent. more than the ordinary. The object, of course, is to offer the largest amount of surface in the briefest time. We may describe the method adopted with this end in view by a professional of our acquaintance. He finds the powder has a tendency to clot, as it were, in falling, and to obviate this he mixes a little lycopodium with the powdered metal.

* * *

Rus in Urbe.

There are so few places within easy reach of our busy Metropolis which preserve their natural beauties; unsullied by bricks

and mortar and the moil and toil of commerce, that we are apt to become very jealous of any wanton encroachment upon our already dwindling beauty spots. The painter and photographer are especially interested in the preservation of natural scenery so far as it can be preserved in these machine-driven days, and they will always unite in any protest which may be called for against the advance of the utilitarian despoiler. Such an occasion has arisen recently in that charming riverside pleasure haunt loved by Londoners and known as Kew. Any one who has been there knows what a charming walk there is along the towing-path which bounds one side of the famous gardens. Strolling along that path, with the quiet river flowing at one's side, it is almost possible to forget that within a stone's throw are streets rendered unbearable by the presence of electric tramcars, motors, and bicycles. But there is another reminder of things commercial even closer still, for just across the river is busy Brentford, with its gasworks and other charms. But these have been screened from view by the presence of three green islands, or eyots, and the prospect was unimpaired. Two of them were long ago acquired by the Corporation of Richmond, and thickly planted, for their use was recognised, and their assistance in hiding the ugliness of the Brentford shore was encouraged. But the third island, the highest up-stream, belongs to the Steam Tug and Lighterage Company. It is at present bare, except for the osiers which fringe its margin, but it could easily be planted with trees like the two other eyots so as to add its share to the picturesque, and at the same time hide away a little more of Brentford. But the owners have another purpose in view regarding it. They have applied to the Thames Conservators for permission to enlarge the island and to construct upon it a dock for repairing and building barges. In short, the idea is to plant in the middle of the Thames, at one of its prettiest and most frequented spots, not trees, but a noisy yard which must by its nature constitute both an earsore and an eyesore. Happily, this outrage cannot be perpetrated without the consent of the Thames Conservators. It is for them to say whether this island, which lies immediately opposite Queen Elizabeth's lawn, and close to the riverside entrance to Kew Gardens, shall be disfigured in the way proposed. It would be bad enough if such a course were considered necessary in order to carry out some scheme of great importance to the nation, or even to the district to which the island belongs. But this is a private commercial undertaking which will possibly swell the dividends of the company concerned to a slight extent, while it will utterly destroy the charm of a playground which is common property. Photographers will be among the first to oppose, so far as it lies in their power, this attempt to mar the beauty of the river at Kew.

THE Royal Photographic Society's House Exhibition.—The Secretary of the Royal Photographic Society has notified us that M. Demachy has consented to leave his gum prints on exhibition at 66, Russell Square until Saturday, July 23, instead of July 9, as previously announced. Non-members will be admitted from 11 a.m. to 7 p.m. on presentation of visiting card.

THE PRESENT STATE OF THE PHOTOGRAPHIC LABOUR MARKET.

It will be remembered that, some weeks back, we directed attention to the present state of photography, with reference, more particularly, to employés or those who might be contemplating entering its ranks professionally. We then suggested that parents and others should hesitate before apprenticing young people to a business in which, at the present time, the labour market is very much over-stocked. Also that others of a mature age should duly consider the matter before entering the business. Since that article was written we have been making inquiries in different directions, and we are sorry to say that we find things in an even worse condition than we had surmised they were. We have more than once referred to the fact that the advertisements appearing in our pages—"Situations Wanted" and "Situations Vacant"—week by week, give a pretty fair indication of the state of the labour market. So they do, but only to a limited extent. A better criterion is the number of applications that are received by those who advertise for assistants. Many of these are addressed to our office, and it is surprising the number of letters that come even when what may well be classed as a quite nominal salary is offered.

To give some idea of what some persons will, or perhaps are compelled to, accept for their services we will cull from some of the advertisements that have appeared during the past few weeks. First, "Situations Wanted": "As General Assistant.—First-class Operator; good printer all papers; good reference; ten years' experience; salary 25s." "General Assistant.—Ten years' experience; four years in last situation; salary 30s." Here is another: "Young Married Man with twelve years' experience; good operator, retoucher, etc.; copyist and enlarger; reference to present employer; 30s. a week." We have specially quoted these cases out of many others, because in each the advertisers have had ten years', or more experience, and have good references, and yet they are seeking employment at what, at one time, would have been considered most ridiculous salaries. It does not say much for the future of employés if, after ten or twelve years' experience in the business, the above salaries only can be commanded.

Now, let us take a glance at the columns referring to "Situations Vacant," and see the salaries there offered by employers. Here are a few examples: "All-round Man; must be energetic; Wages £1." "First-class Operator and Retoucher.—Clever at posing, and good with children; good worker in black and white preferred; wages £1 5s." Fancy all these requirements for this sum. "Wanted, General Assistant; good retoucher; salary £1 a week." "Required, competent to supervise operating, developing, thorough all-round knowledge essential." For these qualifications the handsome sum of £1 a week is offered. "Wanted, General Assistant, all-round, and not afraid of work; salary 25s." The "not afraid of work" would suggest that plenty of it is expected for the munificent salary offered. "Wanted, Out-door Operator; must be quick, and understand his business; salary 30s." "Smart Retoucher and Operator, not under 25, for branch; salary 25s."

The advertisements just quoted indicate the salaries that some employers expect to get fully accomplished and skilful employés for, and, presumably, they do get men that answer their purpose for the sums named, for we find, unfortunately, that there are some anxious for employment at those rates. This brings us back to the subject we have more than once dealt with—namely, what

is the future prospect for photographic employés?—more particularly if we take into consideration the assertion, often made, that a man is "too old at forty." It should be mentioned here that in the majority of instances where these low salaries are paid Sunday work is required, hence the employé has to work seven days a week for his miserable pittance, which is far less than an unskilled day labourer is, by his trades union, allowed to accept.

We may add another illustration of the present state of the labour market. Not long ago an advertisement appeared in our columns, and a similar one in those of a contemporary, for an experienced operator to take views for picture postcards. We are informed that the two advertisements brought something like two hundred replies from persons anxious for the appointment. A very large proportion of the replies, we are informed, were from skilful photographers of long standing; and a not inconsiderable number from amateurs who are evidently intent upon entering the profession. Be that as it may, it shows that, apart from them, there are at present plenty of highly skilled workers anxious for employment.

In the foregoing we have only been referring to the male sex. If we turn to the advertisements of female workers we see that things are even worse, as witness the number of receptionists, retouchers, spotters, and the like who at the present time are seeking engagements. In the "Situations Vacant," for females, the advertisements are chiefly for apprentices to learn the business with or without premiums, but without payment in the shape of wages—or with merely nominal ones—for a term of, usually, three years. What is their prospect after they have served their term of apprenticeship? Very poor, we opine.

In the above, it may be thought, we have taken a pessimistic view of the situation, but the fact is it exists. Will it be improved in the future? Improvements are being continually made, alike in processes, material, and appliances, all tending to simplify the working, so that less skill is required in the working of them. All this simplification in working tends to more competition, particularly in the labour market. Of course, the salaries referred to above must not be taken as typical of those paid by high-class houses to gentlemen with high artistic abilities, but here even the labour market is over well supplied, and the salaries now paid are nothing like those that obtained in former times, and there is still a downward tendency in this direction. We once more advise those who contemplate entering the ranks of professional photography to hesitate before taking the step, for if they throw up their present avocations they may find to their cost that in grasping at what may prove a shadow they have lost the substance.

A MAN who takes the worst view of everything is not necessarily a pessimist. He may be an amateur photographer.

MR. JOHN BARTLETT recently read an interesting paper, entitled "Has the Brain a Photographic Function?" before the Photographic Society of Philadelphia. This will be found in another column. He described his personal experiences of a peculiar nature, in the way of visual impressions, which, while perhaps not of value in a photographic sense, might still be interesting. Impressions on the retina, he said, bear close analogy to those on photographic plates. The phenomena which he experienced are seen as things in space, whether originally formed on the retina or propagated by the brain, it would be difficult to determine. Among others, figures of definite geometrical form with frequently intricate patterns, like Turkish rugs, were seen, with beautiful gradations of colour and continual changes of outline. The projection of these images was involuntary, and entirely beyond control. Other views in the nature of pictures were seen, always of a pleasing nature.

NEW METHOD FOR THE PRODUCTION OF PHOTOGRAPHS IN COLOURS.

method forming the object of this communication is based on the following theories:—If a collection of microscopic elements, of a transparent nature and coloured respectively red, orange, green, and violet, be spread on the surface of a glass plate in the form of a single thin coating, it will be found, when the intensities of coloration of these elements and their number be correct, that the coating so made does not appear coloured when examined by transmitted light, and also that the coating absorbs a fraction only of the light transmitted. If light rays in passing through the elementary screens, of red, orange, green, and violet, reconstruct white light, if the number of surfaces or elementary screens for each colour, and the intensity of coloration of these, are in accordance with the relative proportions of those found in white light. This thin trichromatic coating being formed is then coated with a sensitive panchromatic emulsion. If the plate so prepared is submitted to the action of a coloured image, taking the precaution to expose through the back of the plate, the luminous rays pass through the elementary screens, and undergo, according to their colour and the screens they encounter a variable absorption before having any influence on the sensitive coating. By this means a colour action should be effected which acts on the microscopic elements and which makes it possible to obtain, after development and fixing, coloured images in which the tones are complementary to those of the original. If, for example, we take a portion of the image which is coloured red, the red rays are absorbed by the green elements of the coating while the orange and violet elements allow the passage of those rays. The coating of panchromatic gelatino-bromide emulsion will therefore be acted on beneath the violet and orange screens, while the remaining unaltered under the green screen.

Development reduces the bromide of silver sensitive coating, and so makes the orange and violet portions of the image, and the green portions appear after the plate is fixed, because the emulsion covering them has not received light, and so is transparent after fixing; the result obtained in this case is therefore of a green colour, which is complementary to the red rays dealt with. Similar phenomena are produced with other colours, as under the action of green light the green screens are masked and the coating would appear of red colour, with the use of yellow light the image would appear violet, and so on in like manner with other colours. It follows that with a negative showing complementary colours obtained in this way it is possible to obtain with plates prepared in this manner positive prints which will be complementary to the negatives, i.e., reproducing the colours of the original. Also, after development, and before fixing of the negative image that image may be reversed, and, by the known processes, a positive image may be obtained showing the colours of the object photographed.

The difficulties we have met in the application of this method are numerous and considerable, but the results obtained show that those difficulties may be overcome. It will suffice if we indicate a few of the more important conditions, showing the delicacy of the problem before us. A coating must be prepared composed of microscopic screens, orange, green, and violet, which coating it is necessary should adhere to its support, be extremely thin, that the coloration of these microscopic elements or screens should be exactly determined as regards intensity, quality of colour, and the number of elements of each kind. It is also necessary that these colours should be stable, that they do not diffuse, and that there is no superposition of colours or elements, nor gaps between them. It is further essential that the photographic sensitive emulsion should be orthochromatised in a manner which shall not falsify colours, and that this orthochromatism should be in relation to

the nature of the emulsion and the colours of the elementary screens. This coating of emulsion must also be of a special nature to avoid diffusion, and the manipulations, development, exposure, etc., must be of a nature suitable to these preparations. The simple enumeration of some of the conditions necessary to be fulfilled shows how essential are care and method to the success of such processes.

This research is not entirely finished, but we indicate hereunder the practical position to which we have brought the process at the moment. We first separate in potato starch and by the aid of apparatus made for this purpose, the grains having a diameter of from the fifteenth to the twentieth thousandth part of a millimetre. These grains are divided into three parts and coloured respectively red-orange, green, and violet, by the use of special colouring matters and by a process too prolonged to describe here. The coloured powders so obtained are mixed, after complete dessication, in such proportions that the mixture shows no dominant tint. The resulting powder is spread by a brush on a sheet of glass covered with an adherent or sticky coating. With suitable precautions we obtain a single coating of grains all touching and without superposition. We then stop by the same process of powdering the spaces which may exist between the grains and which would allow the passage of white light. This stopping is accomplished by the use of a very fine black powder, as, for example, charcoal. We have by these methods formed a screen in which each square millimetre of surface represents two or three thousand small elementary screens of orange, green, and violet. The surface so prepared is isolated by a varnish possessing a sign of refraction as near as possible that of the starch. This varnish must also be as impermeable as possible, as it is coated with a thin layer of panchromatic gelatino-bromide emulsion. Exposure is made in the ordinary manner, in a photographic camera, taking the precaution always to turn the glass side of the plate to the lens in order that the light may pass through the colour particles before reaching the sensitive emulsion. The necessity of employing emulsions of an extremely fine grain, and in consequence of lower speed, and the interposition of a coating formed of a system of microscopic screens, render the necessary exposure longer than for ordinary photography. Development is performed in the same manner as ordinarily, but, as we have said, if the negative be fixed with hyposulphite a negative is obtained which shows by transference colours complementary to those of the object photographed. If it is desired to obtain correct colours we must, after development, but without fixing the image, proceed to reverse it by dissolving the reduced silver, and then by a second development reduce the silver which has not been primarily acted on by the light. We see then that by simple manipulations little different from those used in ordinary photography, it is possible to obtain with these special plates, prepared as indicated, the reproduction, by means of a single plate and a single exposure, of objects in their natural colours.

A. AND L. LUMIERE.

SIR ROBERT BALL, who was sixty-four years old on the first of this month, has his name enrolled among Dublin's distinguished natives, and belongs, therefore, to that great galaxy of men born in one or other of the capitals of England, Scotland, and Ireland. Good physique comes from the provinces—our police are here credible witnesses—but the brain of England is preponderantly metropolitan. Another astronomer, by the way, is Dublin-born, Lady Huggins, her husband—true to the Capital rule—being a cradled Londoner. Sir Robert Ball has written about another ball a book called "The Earth's Beginnings"; and a surface plausibility for the astrologist may be scented by some in the fact that the very same day, sixty-four years ago, that saw the birth of Sir Robert saw also the birth of Mr. Edward Clodd; and Mr. Edward Clodd, too, wrote a book about "The Childhood of the World."

PLATINOTYPE PRINTING.*

PLATINOTYPE paper is easy to manipulate, the process is quick-printing (taking half or a third the time required by silver printing-out paper), and the prints are absolutely permanent, the image being of platinum—a metal which is attacked by scarcely any known reagent—upon a support of pure paper. An additional recommendation is that a platinotype print can nearly always be saved, however badly over or under printed. The platinotype process will also do ample justice to almost any negative. A small disadvantage of the process is that the printing has to be done by daylight. Platinotype paper was invented by Willis in 1873, improved in 1878, and further improved in 1880. The platinum was at one time added to the paper in the process of development, but it is now upon the paper, and the troublesome and expensive operation of introducing it in the course of development is abolished. The paper must be kept quite dry. It is, therefore, supplied in hermetically sealed tins, and the paper on removal must be kept in proper storage boxes containing chloride of calcium, which absorbs any moisture that may be present in the storage box. This keeps the paper so dry that it requires careful handling to prevent it from cracking, a defect which will show to the end of the process. Everything used in connection with platinotype paper should be perfectly free from damp. Use an indiarubber sheet at the back of the paper in the printing-frame to prevent atmospheric action. The print may be stored in the calcium tube for some weeks, but it is not advisable unduly to delay developing. The sensitive side of the unprinted paper is of a bright lemon colour, upon which the image turns to a purple colour when sufficiently printed. All but the finest detail should be seen, and the print must be examined in very weak light.

The following formulæ are for black tones:—

Ilford Company—

Potassium oxalate	...	...	2 oz.
„ phosphate	...	...	½ „
Water	...	...	14 „

Dilute with equal quantity of water.

Platinotype Company—

Potassium oxalate	...	...	2 oz.
Water	...	...	7 „

Dilute with twice the bulk of water.

Eastman Company—

Potassium oxalate	...	...	1 oz.
„ phosphate	...	...	½ „
Water	...	...	10 „

It does not appear to matter how strong in oxalate the solution is. I have used the first bath, which gives very satisfactory results, three times as strong and at half the strength, but there is little difference between their results, given a correctly timed print. If the developer produces a print of a brownish colour, it can be made to print blacker or blue-black by acidifying the bath with a few drachms of oxalic acid. The developing solution may be used repeatedly, a used bath being, in fact, better than one freshly made. But when using an old developer one must see that there is no scum on it, for this causes little immovable flecks of black to form on the print. The image comes up quickly upon immersion in the developer, but the print should not be removed until the desired strength is reached. It is then put into the following clearing bath without intermediate washing:—

Hydrochloric acid...	...	...	1 oz.
Water	...	...	60 „

One effect of clearing the prints is to turn the bath yellow, and a print is not properly cleared until it ceases to colour the acid bath. Traces of yellow in the bath indicate that the iron has not been cleared from the print. At least three clearing baths are necessary, and the last bath must remain

perfectly clear. The print does not change in the acid bath except in so far as it loses its yellow colour.

The developer, used cold (about 60 deg.), should produce agreeable black tones; too warm or too old and degraded developer or damp paper show themselves in a brownish print.

The cleared prints require washing in three or four changes of water, and may then be dried between blotting paper. The addition of a pinch of washing soda to the washing water, neutralise any acid that may be left in the paper, has been recommended; but in order to be quite sure that no acid remains, the water that drains from the print may be tested with blue litmus paper. The method of producing black tones by a hot bath (for which a paper is made specially) seems to have very little to recommend it; the results are no better than those of the cold bath, and the method is more troublesome. Before leaving the subject of black tones, I must call attention to the platinum printing-out papers, made by Jacob and Hardecastle. This paper, which is slow, is printed out under the negative, and is cleared in hydrochloric acid of 1 oz. water 80 oz. It is necessary to carry the printing much further than is required in the finished picture, as the image is much reduced by the clearing. The process is a long one, and the result is not equal to the developed print.

Sepia tones may be obtained by many methods, but I will refer first to the papers made specially for these tones. The Platinotype Company make a paper for development in a lemon bath. This paper is much more sensitive than ordinary black-tone paper; it requires more careful handling, and should be examined only in the weakest possible light; otherwise manipulation is as simple as that of black-tone paper. Sepia paper is not supposed to keep very well before development, but I have found that when four or six months old it gives very much nicer tones than the new paper. Two prints, one on new sepia paper and the other on paper five or six months old, are before you. The tone of the old paper is cold and desaturated, while that of the new tends towards a hot brown colour. The developer for the Platinotype Company's sepia paper is a special one, sold by the Company. It is used at a temperature of 150 deg. to 160 deg. F. I have, however, developed sepia prints in the ordinary black-tone developer, with apparently satisfactory results. Sepia papers should be cleared in a bath by themselves, and not in the bath used for ordinary papers. Another sepia paper is made by Jacob and Hardecastle, cold development with special salts, but a print on this paper developed with the ordinary cold developer is upon the wall and the result is quite satisfactory.

Sepia prints may also be made by introducing chloride of mercury into the oxalate developer. This method gives a fine range of colours from a dark, rich sepia to golden brown. I cannot speak as to the permanence of prints made in this way, as I believe that when any additional agent is introduced into the oxalate bath, the permanence of the resulting print is more or less interfered with. I think, however, we are justified in obtaining these colours by these methods, provided we take the care of the prints we should bestow on water-colour pictures. The prints will certainly retain their colour for a considerable time, and while they do so they are generally very agreeable. A disagreeable dark brown will be obtained, however, by using a very strong solution of mercury, but with the following formula, introduced by Mr. C. F. Inston, the results are quite satisfactory:—

A.			
Potassium oxalate	...	...	1 oz.
Water	...	...	7 „
B.			
Potassium citrate	...	...	75 grains.
Citric acid	...	...	120 „
Mercuric chloride	...	...	45 „
Water	...	...	7 oz.

* A condensed report of the third of the series of practical demonstrations given before the Royal Photographic Society.

Two solutions are made separately, and used in equal portions. The solutions should be used cold, and should be touched as little as possible with the fingers, as the mercuric chloride is a strong poison. One characteristic of this mercuric chloride developer is its power of bleaching the print, of which advantage can be taken in two or three ways. A slightly overexposed print from a flat negative developed in the mercury gains considerably in contrast, and is much better than developed in the ordinary oxalate bath. The bleaching action takes place particularly in the more delicate parts of the print, darker portions remaining practically untouched. Developers in which the mercuric chloride is present in incorrect proportions give undue contrasts, and sometimes double tones. It is developed in this bath should be cleared in a bath slightly weaker than that used for the black prints, because the mercury reduces the mercury, and, if the print remain long in the bath, it entirely discharges it, the light tones being almost completely bleached. A suitable clearing bath consists of hydrochloric acid $\frac{1}{2}$ oz., water 60 oz.

Mr. Alfred Steiglitz has utilised this action of the clearing bath for the improvement of prints from flat negatives. His method is to over-expose the print, develop in the oxalate and clear in a strong acid bath until all traces of the mercury disappear. The result is a brilliant print with black and white contrasts. Assuming a warm tone is developed upon a paper intended for black tones, the paper is slightly under-printed and developed in a heated bath. The point is illustrated by some prints on ordinary paper, developed (1) in a cold bath, (2) in a bath heated to 96 deg. F. (3) in a bath at boiling point. This experiment showed that whereas in (1) the print has been under-exposed and is unrepresentative, developed cold, in (2) with the developer at 96 deg. F. the print is full of vigour and detail, and the colour is agreeable warm black; while in (3) with a boiling developer the print has the appearance of an over-exposed print. The experiments were made with one print divided into three parts, and they show that almost any print can be saved—further, that if a warmer black than a cold developer gave wanted, one need only under-print and develop with hot water.

Glycerine affords tremendous possibilities to the platinotype process. By coating the print with glycerine, and then applying the developer locally with a brush, it is easy to retard or to eliminate portions of a print. Where very black tones are required, the glycerine may be blotted off. The glycerine-developed print is cleared in the usual bath, which should be helped in its operation by gently wiping the print with a tuft of cotton wool, otherwise the development may continue under the glycerine before the acid can get through. Platinotype prints may also be toned with catechu, the bath being used as follows:—
Packham, who described the process to the Society, said: "A metallic deposit on a platinotype print has a singular affinity for the organic substance known as 'catechu,' which for years has been used for dyeing textile fabrics." There is, of course, a difference between toning and staining a print. It is possible to stain a print by saturating it with almost any coloured liquid, but in toning the paper is generally required to remain white, and the image only to change colour. Packham claimed that catechu would change the colour of the platinotype print, because of its affinity for the deposit, without staining the paper. If, however, a print be allowed to remain in a catechu bath too long, or if the bath be used too hot, there is a staining of the paper. Properly done, the toning gives a pleasant colour. The catechu does not intensify, but rather softens the print. The solution is supposed to be used at 60 deg. F., but it is not absolutely necessary, I believe, to keep it quite so hot. A print toned in this way, if unsatisfactory, may be washed with soap and water and hung in the air, or put into a weak hydrochloric acid bath to restore

its original colour. I have some prints which were treated with hydrochloric acid, and changed from a disagreeable red colour to a more agreeable tone.

Uranium Toning.—This method is rather dirty and disagreeable. The colour is somewhat fugitive, and frequently unpleasant, and one is likely to get staining instead of toning. If one does not like its results, however, the print can be returned to the developer and brought back to its previous state. Uranium toning also intensifies, and a weak print may sometimes be saved by this process. A long range of colours may be obtained, from sepia to red-chalk, and greens and blues are also obtainable. The formula I have used is the following:—

A. Uranium nitrate ...	...	10 grains.
Glacial acetic acid ...	...	1 drachm.
Water ...	...	5 oz.
B. Potassium ferricyanide ...	...	10 grains.
Glacial acetic acid ...	...	1 drachm.
Water ...	...	5 oz.

Mix separately until dissolved, combine and add sulphite of soda, about the size of a pea. The prints soon turn a red colour. Prints intended for uranium toning require special care in development and clearing. The development should not be prolonged, and it is essential that the iron salts shall be completely removed. To ensure this, five baths should be used, or one extra after the last bath appears quite clear of yellow stain. They should then be washed for about an hour in six changes of water. It is best to dry the print before toning. For red tones the print should be a little under-exposed, as considerable intensification occurs in the bath—a somewhat prolonged immersion being required.

For blue tones, the same formula is used, but the print is left in the clearing bath for only ten seconds before being placed in the uranium bath. The print will gradually turn blue, and, when rather darker than required in the finished picture, should be cleared in a weak acid bath composed of:—

Hydrochloric acid ...	...	$\frac{1}{2}$ oz.
Water ...	...	120 "

It is then washed in two or three changes of water. This presupposes that one intends at the outset to get a blue print; but if we desire to convert a brown print into blue, it is immersed in—

Sulphate of iron ...	...	$\frac{1}{2}$ oz.
Water ...	...	20 "

when it will gradually turn blue, and it only remains to wash the print in water. In the first blue process, the reason for placing the print only for a short time in the clearing bath is that a portion of the iron shall be retained in the print, for it is the action of the uranium and iron together that produces the blue tone. The shorter the immersion of the print in the clearing bath, the bluer will be the result, while the longer it is in the clearing bath the greener or browner will the print become.

E. T. HOLDING.

In the discussion that followed the foregoing demonstration Mr. F. T. Beeson said that in order to judge when platinotype paper was sufficiently printed it was necessary to keep a careful watch upon it. A little practice soon enabled one to judge when it had reached the right stage, but after that stage had been passed it was very difficult to tell how much the paper had been over-printed without an actinometer. With regard to the hot bath process, which he had been compelled to use when the cold bath process was not known, it had some advantages, and it was often used by professional photographers. In this process development was very rapid, a quality which, to the professional, was of great advantage. The disadvantage of the hot bath was that, having to be maintained well heated, it rapidly evaporated; and especially was this disadvantage experienced when one tried to work with a small quantity of solution. It was a good plan to heat the solution in a sauce-

pan before the developing was commenced. He advised the use of a porcelain dish, in preference to one made of enamelled iron, and if a piece of asbestos board were placed between the gas flame and the dish, it would prevent the latter from cracking. With regard to the repeated use of a developer, the question was not so much how long the solution had been used as how many prints had been developed by it. He thought it would be dangerous for the beginner to develop too many prints with a small quantity of solution. With regard to the addition of mercury to the developer, Mr. Holding appeared to have found that Mr. Willis asserted some years ago—namely, that the addition of mercury to the developer tended to give a disagreeable brown tone, and a warmer tone in the half-tones than in the shadows.

PHOTOGRAPHY AS A PROFESSION IN THE UNITED STATES.

SECOND ARTICLE.

IN outlining a plan for organising photographers for the protection of their business interests and to ensure a decent living for them by eliminating as far as possible over-competition, as is done in all other professions and trades, I was rather handicapped by this proposition, one that I felt the more I thought of it to be fundamental—that any scheme for the betterment of photographers must protect the very weakest individual who is trying to honestly earn his living by photography. But on the other hand there was another point almost as urgent—namely, the relationship of the public, who must be given something in exchange for the present questionable blessings of free competition among those catering for their trade. All other professions or trades endeavour to balance matters by guaranteeing a better quality of service than previously, and it must be admitted that on the whole this is true, so photographers can do the same.

Here, then, are conditions to be fulfilled. We must protect as far as possible all those now engaged in photography, and we must raise the standard of the work turned out by the average gallery.

It is easy enough to devise a plan to kill off the weak members of the fraternity, in fact I could point out half a dozen ways in less than an hour, but, outside the morality of the proposition, it would be poor business policy, as an equal number would bob up out of the woods in a very little while. No, the remedy lies in limiting entrance into the ranks by insisting upon higher educational qualifications and an expensive training from would-be photographers, just as is demanded from other occupations.

In their present disorganised condition, photographers are in no fit shape to go before State legislatures and demand the enactment of laws creating their craft into a profession by the enforcement of a college career on would-be photographers, and, since it is a mixture of a one-man business and factory system, the help are unable to organise it into a trade. It therefore looks to me that the feasible plan at the present moment is to combine the suitable features of both profession and trade union, leaving higher ambitions to the future when photographers are more perfectly organised.

Again, knowing the shortsightedness of the average man, who thinks more of present needs than possibilities of a few years hence, it is essential that the proposed plan shall give some tangible, immediate benefit, while lack of connection with it shall be seen in present loss. This statement may appear to many to be an outrageous libel on the human race, but the fact is beyond dispute and all human institutions are perennial proof, for government, it is now admitted, was originally in-

stituted, and is to-day fundamentally constituted, for the great purpose of protecting that portion of wealth which is aside for future production for the needs of the race. In other words, the unthinking, improvident many have to be coerced for their own good by the thinking few.

Immediate advantage therefore to the average man who participates in the proposed organisation is an essential feature of the scheme, and this in turn must be the principal factor in the structure once it is complete. We are now therefore in a position to sum up the broad principles that must be kept in mind in devising a plan for the present and future betterment of professional photographers. In the first place it must be restrictive, that is, make entry into the profession difficult by demanding higher education and technical qualifications from would-be photographers. It must be protective, not only of the very best workers in the ranks, but also of the poorer because the interests of those who benefit by competition are best served when there is in the market a goodly number of indifferent workmen looking for positions. The buyer of labour, whether employer or general public, offers such workmen low prices because of their unskilfulness, but when dealing with good workers they insist they can buy the labour of the better workman for so much less, but conveniently ignore the different quality of the service. The strength of a chain is measured by the weakest link, hence there is much wisdom in the policy of the trades unions in protecting the weak workmen, and so necessity has evolved the natural law that commands every individual to defend the members of the group to which he belongs against all comers.

Weighing carefully all these premises I was forced to the conclusion that a plan of giving certificates was the one to be adopted. As regards the employers, the idea first of all to grant from an authoritative source a diploma of merit—as is given to other professional men. The idea is this—a document hung in a conspicuous place, following the example of doctors, dentists, lawyers, etc., has a psychological effect on the community in giving confidence in the ability of the holder. Of course it is no guarantee that the photographer is the best man in town, any more than the doctor's diploma proves him to be a good physician, but it is an assurance that he ought to be, for at one time he knew enough to be efficient, and in this light it is accepted by the public. Confidence between photographer and customer is a great thing, and a certificate of competency is worth much to any man. At first will be necessary to pitch the standard covered by these certificates rather low, but year by year it can be added to so that even the weakest man will be forced to make advance. Improvement is against gravity, it is propulsion and competition that lifts to a higher plane, so the examining board should guide the poorer workman on his upward course by the application of a little judicious pressure. But it must never be forgotten the aim of the scheme is not to kill but to help.

In the same way certificates shall be granted to employers based on their actual ability as reported on by previous employers.

I recommend that all certificates be of three grades at first, namely, ordinary, honour, and extra honour. The ordinary grade should certify the possession of technical skill only, honour certificates will be granted to those who show knowledge of the theory of their craft, as well as possession of skill. As soon as conditions permit of it the ordinary grade should be made to include the honour grade, and then the present extra honour certificate would become the honour certificate of the future.

After weighing all sides of the question I am decidedly of opinion that certificates should be granted for one year only so as to prevent unprincipled individuals from securing a certificate and then for monetary personal gain carrying

some scheme that would be detrimental to the profession as a whole. I would be very, very chary of granting certificates for life to any man.

As soon as it was found possible I would link the employers' and employees' certificates together, by making it a condition that certificated employers hire only certificated help, and the latter work only for those who are similarly qualified. This is the crux of the whole problem, for the instant such a condition of affairs is feasible, the fraternity get a firm grip upon would-be entrants into the profession. In the case of young people they can demand suitable educational qualifications, while they can head off adults who want to start in business by making it exceedingly difficult for them to secure competent help.

A very essential feature of the scheme I consider to be the establishment of an employment bureau with prompt service for the holders of certificates, and no others, this being one of the immediate benefits I have referred to.

In drafting this plan it will be noticed I have tried to combine such features of both professional organisations and trades unionism as seemed applicable to photography as it is at present constituted. It is not set before the fraternity as a perfect plan by any means, but rather as a possibly practical proposition that may work, or at least lead to the evolution of a better one. The fact that it was seized hold of with enthusiasm by the Illinois photographers shows it possesses some merit, and my daily correspondence assures me that photographers feel the need of some organisation based largely on economic principles. Conventions have in the past done much for the education of the photographer to the direct benefit of the public in providing them with better pictures, but the financial status is as bad as it ever was, if not worse.

In the next article I will outline the methods of granting certificates and the qualifications I consider necessary.

F. DUNDAS TODD.

WHERE ARE WE GOING?

[Translated from the "Revue Suisse de Photographie."]

In running through the photographic publications of the last few years, and more especially on visiting the photographic exhibitions, we have been stupefied by what has been submitted to the public. Landscapes, described as such in the catalogues, which appear to have been taken at midnight in foggy weather; heads of young girls with grandmotherly features; portraits of white men disguised as niggers, sweeps, etc. And these are commended by critics as prominent works of art and as—the expression of nature. But we venture to reply that it is usual to dress before going into society, to wash one's face and remove carefully any trace of uncleanness. If in a photograph we represent one cheek like a sweep's, we falsify nature, and there cannot be any pretence of "expression of nature." Again, if by faking we suppress, in a landscape, trees, roads, houses, etc., which may be found inconvenient, and if we add to the bargain, by putting in with the brush, objects which do not exist, we no longer have any right to speak of a representation of nature.

It may be objected that the modern photographer no longer consents to be tied mechanically to his subject, and that he is an artist, who wishes to express by photography the impression he has received in contemplating the subject before him. This is where the shoe pinches. Some object to being called photographers nowadays. The name horrifies them. They are artists, impressionists! But, in painting, impressionism often leads to extraordinary exaggerations, even though the painter has numerous valuable aids to fall back upon, such as harmonious colouring, thorough professional education, and, lastly, a certain licence in drawing, because the work is done by

his own hand. To what extent are not these exaggerations increased in photography? Colours are not available, and the operator is always more or less bound by the drawing of the negative, although certain clever gum workers pretend they can produce a winter landscape from the negative of a young girl, which fails to please them. The ultra-modern photographer is no longer content to present an exact rendering of nature, which he has endowed with personal feeling and great artistic value by the perfection of his work, the judicious selection of the point of view and the printing process. He wishes to create, create absolutely, like the painter. If he feels he has that creative power, why does he not free himself completely from the trammels of photographic apparatus, to which he must remain a slave despite all dodges, and create his pictures with his own hands? But this he cannot; the photographic support is indispensable for rendering "his impressions." A few years ago there was a great fight over the question, Is photography an art? Many demurred, some classed it with the recognised fine arts, and the wisest defined, and still define it, an art, yet one of a special kind, possessing some points of resemblance with painting, but which, nevertheless, is very different. He who seeks to imitate painting, or engraving, by means of photography, does the work of a plagiarist, and degrades the photographic art to mere simulation.

Let there be no misunderstanding, however, as to our intentions. We do not desire in the least to detract from the artistic value of photography; we are only aiming at the abuses of ultra-up-to-date photographic trickery. What is this trickery? We think we can expose it in a few words, by means of the prevailing improper use of gum bichromate. Gum bichromate, in the hands of a clever, conscientious worker, may be very serviceable. Its grain gives a softness of line which in many cases is far from displeasing. But, unfortunately, the process also lends itself admirably to dodging. By its means nothing is easier than reducing or intensifying the shadows in any part of the work. There would be no great harm in this, and nothing to say, if it were not exceeded. But gum bichromate also lends itself with great latitude to brush work, and when it is abused a grain of such size is left that all detail is eaten away. The ultra-up-to-date workers now offer gum bichromate prints in which the whites actually are spotted and sullied with large specks of black. There are no half-tones, and the shadows are black, or grey, without any detail. The entire print is freely worked up "with the brush," and it is labelled "An artistic study." A few years ago everybody's opinion would have been "terrible under-exposure!" To-day, through snob-bishness and fashion, it is thought very fine and quite artistic. Nevertheless, it does not dispose of the fact that in many cases the authors of these "works of art" would be in a sore quandary if they were asked to make a plain, normal negative.

This is the trouble of the gum bichromate and similar processes. They facilitate trickery to the detriment of technique. Nevertheless, technique causes photography to progress, whilst trickery does not. If the fuzzyites and up-to-daters continue to follow the path they have taken, and if they make more adept converts, which is probable, considering the snobbish character of the men, we fear that in the course of a few years we shall see portraits merely representing the end of a nose, one eye, a few high lights "perfectly placed," and the whole surrounded by the blackness of night. Have we not already been able to admire (?) such masterpieces in the most recent exhibitions of "photographic art"? Those who know how to develop suitably a normal negative, without over-exposure, or under-exposure, will then form an abject minority. Moreover, it will not be necessary to take trouble to get a good negative. The brush, sawdust, etc., will supersede with advantage all antiquated machinery.

But is it really believed that the production of these "frames" (we do not speak of photographs now, it is

too vulgar) is the acme of photographic art? We hope not, and we prefer to look upon it as an ailment of infancy, which will soon pass away. We do not fear to see photography emancipate itself from routine. We have warmly praised those who have had the courage to forsake their studios to photograph people at their homes, in their own surroundings, but on condition that they give us a true photographic portrait, not a spurious thing occupying a place somewhere between an under-exposed photograph and a bad engraving indifferently inked up. A small amount of fuzziness in some large landscapes or portraits does not offend us. But we should not go too far, and make light of the public by forcing upon them as "works of photographic art" enlargements from bad negatives, over-exposed and especially under-exposed, printed in gum bichromate (size of grain, 0.3 to 0.5 c.m.). If it pleases, anyone may make fantastic, tricky photographs now and then. It is occasionally very amusing. But do not imagine that such sketches are good photography.

As we are venting our spleen for once and may make some enemies, let us say a word concerning judges at photographic exhibitions. Most of these enterprises take care to add the epithet "artistic" to their names. It is very nice, but we will not repeat—yet there is ground for criticism in the selection of the judges. There we find a long list of painters, sculptors, engravers, and art critics, sometimes celebrated, sometimes obscure; but the names of capable photographers, professional or amateur, are frequently conspicuous by their absence. This is a great anomaly and injustice, but it harmonises well with the up-to-date "artistic" tendency. It seems to us that photographic work should be judged by photographers, people who know its technical difficulties and who can estimate it at its true worth. We do not deny the value of adding to the list a few painters or sculptors who take a friendly interest in photography (there are some, perhaps not many, who are its enemies). But most of this work should fall to photographers. We lay claim to it, and we wish that all the friends of photography would do the same, even to the extent of boycotting all exhibitions where the judges are selected outside the ranks of photographers.

But let us draw our lamentations to a close. We think our readers will find them burdensome enough for once. Yet we repeat that which we said at the beginning of this article: It is time someone raised his voice against the exaggerations of ultra-up-to-date photography.

DR. R. A. REISS.

HAS THE BRAIN A PHOTOGRAPHIC FUNCTION?

[A paper read before the Photographic Society of Philadelphia.]

THE study of the phenomena of vision, although it has no direct bearing on photography, is not altogether foreign to it. Some considerations, therefore, of a peculiar sort of visual impression connected with personal experience may be of interest if they are not of special value to the photographer who may have a scientific turn of mind. The impressions upon the nerve-fibres of the retina, of whatever nature they may be, bear a very close analogy to those upon the sensitive film. A picture is certainly formed there, which endures for an appreciable time, but whether this picture is directly impressed upon the cerebral substance, resulting in what we call conscious vision, cannot as yet be determined.

Impressions once made and seemingly obliterated may be redeveloped, as we, photographically, say, by the stimulus of some corporeal disturbance, in much of their original vividness and reality, but it would be a difficult question to determine whether in the revolution of the cerebral photograph an image is again impressed on the retina resulting in vision, by a reverse or reflex action. The writer sees no reason why the nervous matter of the retina, as part of or in direct communication with the brain, should not facilitate the flow of the nervous current to itself. I suppose most of us have had personal experience of the sort of appearances known as ocular spectra, produced by the impression of a strong light on the retina, and

which force themselves sometimes very obnoxiously upon us, even when we endeavour to shut our eyes against them. However, when they are moderate in their action they become an enjoyable study, passing through many singular and beautiful phases, and presenting a highly orderly and harmonious arrangement of form and colour.

The seat of these spectra is undoubtedly the retina itself, but whether they originate there or are reflexly propagated thither from the brain would be hard to say. Light or some extraneous disturbing force, it would seem, is necessary to act first upon the sensitive end of the optic nerve, but are we to attribute their production to molecular disturbance in the retina itself, or is the retinal stimulus the exciting cause for the cerebration? Might we presume to say that their production is part of that photographic process by which light acts chemically upon the retinal substance, and that there is a gradual restoration of that organ to its normal state of sensitiveness by the fading out of the pictorial impression? It is from this belief that I think my personal experience may be of some interest to photographers, if not to any one else.

But how are these impressions made upon the retina? Are they projected from something without, or are they mentally evolved? The phenomena, which I am about to describe, are seen as things in space like any other material things, but are they visual externalities? Are they not really objects in the mind's eye, though actually on the retina? I do not mean purely subjective and visionary, but real products of the brain or pictures made by the brain. There are certain peculiarities about these spectra which make them essentially different from visions or hallucinations. Often they have definite geometric outlines, and frequently form intricate patterns like the figures on a Turkish rug. The lines are sometimes dark on a light ground, and sometimes the reverse; negatives and positives of the same pattern. Sometimes they are very complex and most beautifully gradated in colour. They change from instant to instant, and do not admit of a very close study, even sufficient to depict them rapidly—else they might be quite a boon to any one designing patterns for the carpet trade; however, they always change on a systematic principle, and seem to have a law governing their formation not unlike the systems of crystallisation, each succeeding one being a variety or modification of its predecessor. They have a sort of fixed axis about which the transformations take place. It seems as though the agency, whatever it may be, had a very definite plan and a consciousness of what it is doing, however much concealed from our knowledge. This definiteness is an evidence, I think, that they are not the product of disturbed nervous condition of the perceptive. There is no co-ordination of action in hallucinations.

These pictures are not reproductions of objects recently seen, or probably ever seen before—memory pictures—but are quite novel in their structure and unexpected in their plan of presentation, and might, as I have said, be advantageously employed, could they be detained long enough to catch their fleeting beauty, for no effort of the will, at least not in my experience, can fix them. But this fugitiveness does not preclude them being observed and described *pro tanto* in general terms. They have an uncontrollable freedom of their own will, and seem to take a sort of malicious advantage of it in changing the combinations. I have frequently tried to fix their shapes by an effort of the will, but they ever changed "into something far more rare and strange" than my imagination had power of conjuring up. They appear to be painted on dark space or on light space by some invisible dexterous artistic hand. I shall not dwell longer on this part of the subject, though I know I could make it most interesting by more accurate description, my purpose being merely to direct attention to a particular phase of the phenomena which some might be inclined to call hypnotic vision and dismiss the subject with a sneer—and who can answer a sneer? These impressions about which I shall speak are not so vivid or eye-hurting in their manifestations as the ocular spectra, but may be studied with quite as much wide-awake observation. Indeed, when they present themselves, as they frequently do, quite unexpectedly and wholly independent of will power, they cannot be distinguished from actual visual impressions, and the beholder may believe that he sees them. And does he not? Though independent of the will they do not persist long, yet endure longer than the geometric figures, dissolving slowly like dissolving views in the magic lantern. I have frequently tried to make the presentations take forms accordant to my fancy, but no—like Glendower, I might summon up spirits from the "vasty deep," but they would not come

I did call them. They presented something always entirely new to my desire, something so unexpected, so delightful, that I suppose the desire to revel in the enjoyment of them weakened the power of the will to control their formation. Like the ocular spectra of some invisible ingenious painter seemed to be embodying

most people are not aware, until they question their experience, that they possess more or less the power of seeing forms and faces in the dark, not in absolute darkness, but when a faint halation of light is present. People not by any means visionary have told me of their possession of this faculty—for it is a faculty—and in many cases of amusement and delight when one is in perfect health and free of spirits, but under depression of mind their occurrence may be unwished for on account of their incongruity to the mental state.

"The mind in grief," as Shakespeare says, "being best pleased with shapes of things," for these images are sometimes of a most curious character, never in my personal experience of a hideous nature, nor in any way approaching the visions which Swedenborg describes as us with. But they are so persistent, so self-willed, so obtrusive at times, that one is tempted to say, "Take any shape but mine." Though produced involuntarily, they continue long enough to form definite shape and relation, and can in a measure be studied from different points of view, each angle of view, strange to say, like a real thing, changing properly the play of light and shade most beautifully. The vision of landscape (I ought not to say vision, but rather imagination) is not as frequent in occurrence as the sight of faces or forms, but the landscape is always more distinct and seemingly more real, though subdued in a soft peculiar light, "a light that never enters the sea or land."

The contemplation of these scenes is most delightful, the play of light and shade varying with every shifting of the eye, that is, they are both linear and aerial perspective. It is this peculiarity which I have persuaded us that they are real. It is only that judgment coming to our aid tells us—I was going to say—that they are the substantial fabrics of a dream, but these impressions are waking visions, not dreams. Call them waking dreams if you will, but do not put them otherwise than by referring them to a proximate cause.

Had I power of the poet I might delight you with a description of some of these wonderful pictures which have occasionally presented themselves, and had I the skill to portray I might shine as an artist. Unfortunately, I have not the faculty and art divine, but I think the great painters must have possessed something akin to this faculty, coupled with the gift to hold and fix the impressions. I remember reading that Goethe speaks of his delight in experience of this identical kind. So intensely, on one occasion at twilight, was a landscape presented to my view over a hazy background of meadow that at first I thought I was looking at a mirage—

"So pure the sky, so quiet was the air,
So like, so very like, was day to day.
But when I looked, no image still was there,
It trembled and it softly passed away."

This quotation is from Wordsworth, and I believe he wrote from his personal experience of this sensorial visual faculty. I am perfectly willing to admit that the imagination may interpret forms in themselves as finite as the expressions of realities; for even the most prosaic amongst us can see faces in casual blots, or pictures in clouds and in fire. But no such explanation is applicable here. These are involuntary impressions in which definite regularity and actual coherence and relations of parts predominate. The imagination is not called in to supplement or to eliminate parts, so as to isolate the image from its surroundings.

It is obvious that a regular geometric pattern or a coherent structure of pictorial intent cannot be suggested to the imagination by anything having no regularity, so that the question will force itself upon us how to explain this strange sensorial vision. What a maze we get into if we should attempt to explain the connection between the mental and spiritual organism, but what a wonderful study it is open. Is there some intelligence working upon our organism distinct from that of our own personality, whether external or internal in us? But this explanation might be objected to as ontological and outside experimental science. Or can the phenomena be explained in purely physical terms, as a quasi-image formed on the retina by the sympathy of the nerve-fibres with the brain, and their

impressions delivered back to the sensorium as that of a reality? Or another solution is suggested. Has the sensorium the power to combine symmetrically separate elements independent of the will to the formation of definite new patterns or scenes, or are these impressions nothing but the revivification of dormant hereditary concepts?

To produce a definite regular symmetric arrangement of lines, angles, lights, and shades, and a disposition of colours for the formation of distinct patterns, or pictures subject to geometric rules, and in accordance with the artistic laws of harmonious colour and composition, seems to imply a conscious producer which the ontologist would call the spiritual essence, or the psychologist mental cerebration. The one referring the cause to some super-sensual agent, the other to molecular chemical action of cerebral corpuscles. But with any explanation we must acknowledge that every event has a cause. Yet if the human will is subject to what appear to us the caprices or a more powerful will, the question of man's responsibility for his actions or credit for his mental achievements comes in to be accounted for. We do not feel specially elated with the consciousness that we may be nothing but inspired idiots after all. Philosophers as well as theologians have generally maintained that man is a moral agent, and that he has perfect freedom of the will, else he becomes a mere unconscious automaton controlled by an overpowering and arbitrary environment.

But what determines the will to a choice? Especially is the question involved when there is no predisposing bias to determine the direction of choice. The mind is a wonderful mysterious entity we are almost justified in calling a spiritual essence, but the impact resulting in visual perception (I mean here ordinary visual perception) is a physical manifestation, and as much a molecular disturbance, whether external or internal, and reflex in its action, as the impact of light upon a sensitive plate. The whole subject is one worthy of a study from a physical standpoint by one more capable of investigation than the writer, and should not be summarily dismissed with the proffered salutary injunction to the narrator:—

"A solemn air and the best comforter
To an unsettled fancy cure thy brains
Now useless boiled within thy skull!
There stand, for you are spell-stopped."

JOHN BARTLETT.

THE ADAPTATION OF THE FORTY-INCH VISUAL REFRACTOR OF THE YERKES OBSERVATORY TO PHOTOGRAPHY.

In the original design of the forty-inch refractor of the Yerkes Observatory no provision of any kind was made for direct photography; there is no guiding telescope to enable lengthened exposures to be given, nor photographic corrector to bring the actinic rays to a focus on the sensitive plate. Mr. G. T. Ritchey has overcome the first difficulty by means of an eyepiece magnifying about one thousand diameters, placed in the side of a double-slide carrier. "Knowledge," in describing this achievement, says:—"A small diagonal prism receives the light of the guiding star, and reflects it at right angles into the eyepiece, and this with its accessories are mounted on a slide, which can be moved to any desired position on the upper side of the rectangular box, and firmly clamped there, so as to assist in finding a suitable guiding star. The star is brought to the intersection of the crosslines in the eyepiece, and is kept there throughout the exposure of the sensitive plate. The observer sits with his eye at the guiding eyepiece, and his fingers on the two screws which move the slides, and thus he introduces any minute corrections of position which he sees are necessary. These corrections may be on account of either the irregular movements of the driving clock of the telescope, or more frequently from the tremours in the atmosphere. The latter irregularity may require correction several hundred times in a minute, and a practised observer can introduce between one and two hundred per minute. The other difficulty—that the instrument is a visual one—Mr. Ritchey has obviated by the use of a delicately tinted yellow screen. This screen utilises the rays of light which are most freely transmitted by a large objective; since it is a well-known fact that while only a small percentage of the yellow rays are lost by transmission through a large and necessarily thick objective, a very large percentage of the blue rays are. Consequently the forty-inch visual

objective, thus used with a yellow screen, and plates sensitised to the yellow rays, is scarcely less rapid, if at all, in photographing stellar images, than an object-glass corrected for blue rays would be. In two hours it registers stars of approximately the seventeenth magnitude, which are at the visual limit of the instrument; and in five hours can register stars of a magnitude fainter. The yellow screen is formed from two thin and transparent plates, finely ground flat and highly polished. One of these plates, which are 8 by 10 inches, is flowed over with a collodion film of a delicate yellow tint, and when the film is dry, this is covered with Canada balsam, and the other plate bound on it as a cover glass by adhesive tape. When in use it is laid close upon the sensitive plate, nothing separating them but the tape. Mr. Ritchey has been most successful in photographing portions of the moon's surface, and close clusters of stars, and in Vol. VIII. of the Decennial Publications of the University of Chicago, several very fine specimens are given, notably one of the lunar crater Theophilus and its surroundings, which perhaps shows the detail on the moon's surface more clearly than any other photograph ever taken. In the photographs of the clusters Messier 13 and 15, the original negatives and transparencies from them show the star images separate and distinct, even at the very centre of the

THE DERBY CONVENTION :

SYNOPSIS OF THE WEEK'S PROCEEDINGS.

Monday, July 11.—Members of the Local Committee will act at the Mechanics' Institute to act as guides, and will arrange short morning and afternoon excursions as may be required. notice boards. At the Albert Hall of the Mechanics' Institute. Official reception by his Worship the Mayor (Councillor Corn Boam), the members of the Corporation, and other public bodies. eight o'clock, the President will deliver his inaugural address, at which the Exhibition of Photographic Apparatus, Pictures, etc., be on view. Musical promenade, refreshments, etc.

Tuesday, July 12.—Excursion to Dovedale—conveyances leave Strand, Derby, 9.0; arriving at Ashbourne, 10.45; leave Ashbourne, 11.45; luncheon at the Peveril Hotel, 1.0; conveyances leave "Peveril" for Ashbourne, 5.0; tea at Ashbourne, 6.0; leave Ashbourne, 7.0; arriving at Derby about 8.45. There will be no meeting on Tuesday evening.

Wednesday, July 13.—At the Mechanics' Institute.—The annual general meeting, election of Council, etc., 10.0; meeting of the Council, 11.0; the official Convention group will be taken by Mr



Dovedale: To be Visited by Members of the Convention on Tuesday, July 12.

cluster, but in the process reproductions given in the volume the smaller and nearer stars are merged together. With nebulae the yellow screen is not so successful since these are rich in their proportion of green rays, which do not come to the same focus as the yellow."

We have received from Messrs. Iliffe and Sons, Limited, 20, Tudor-street, E.C., a copy of "The Photographic Reference Book: a Cyclopædia of Photographic Information on all Practical Points." The work in a second edition of the volume bearing the same title published some time ago, and compiled by Messrs. W. A. Watts, M.A., and Henry Sturme, from the "Answers to Correspondents" columns of "Photography." The present edition is edited by Mr. J. McIntosh, and should form a useful handbook for the photographic worker.

The second edition of "Photography in Colours," by R. Child Bayley, F.R.P.S., is to hand, and in addition to dealing with the theoretical side of colour photography, gives in outline practical instructions for the working both of the Lippmann process and of the various three-colour methods, which were not included in the first edition. Every photographer interested in the process of colour photography will find much to interest him in this little volume, which is written in a very careful and lucid manner.

Barrow Keene. For time and place see notice boards. At Bri Hill, Belper.—Reception and garden party by the President Mrs. Strutt, 2.30. At the Royal Hotel.—Annual dinner and smother concert, 7.0.

Thursday, July 14.—Excursion to Hardwick.—Train leaves Midland Station, Derby, 10.5; arriving at Stretton, 10.53; leave Stretton coach, 11.0; arriving at Hardwick, 12.0; luncheon at the Hardwick Hotel, 1.0; leave Hardwick by coach for Stretton, 4.50; train leaves Stretton, 5.50; arriving at Derby, 6.25. At the Mechanics' Institute.—A paper, by Thomas R. Dallmeyer, Esq., F.R.A.S., on "The photography," followed by an exhibition of lantern slides by members of the Derby Photographic Society, 8.30.

Friday, July 15.—Excursion to Chatsworth and Haddon Hall. Train leaves Midland Station, Derby, 9.30; arriving at Rowsley, 10.20; leave Rowsley by coach for Chatsworth, 10.30; leave Chatsworth for Baslow, 1.30; luncheon at the Wheatheaf Hotel, Baslow, 2.0; leave Baslow for Haddon Hall, 3.0; leave Haddon, 5.15; leave Bakewell for Derby, 5.23; arriving at Derby, 6.30. A paper by H. Snowden Ward, Esq., F.R.P.S., on "Figures in Landscape," illustrated by lantern slides.

Saturday, July 16.—Various short excursions to places in and around Derby will be arranged as may be required. Members

by signifying their wishes to the Hon. Secretaries as early as possible, in order that particulars may be duly posted on the notice boards.

By the courtesy of the Platinotype Company, 22, Bloomsbury Street, New Oxford Street, London, we are enabled to give the appended reproduction of a souvenir postcard of the Newcastle Photographic Convention. The original portraits were printed from negatives exposed by the light of the Company's exceedingly effective y-magnesium portrait lamp, and the prints on the platinotype postcards were obtained by exposure to the same source of illumination. No doubt many of our readers, who are members of the Convention, will take the opportunity of securing a copy of the original postcard from the Platinotype Company. Reading from the top, and left to right, the names of the Conventioners are as follows:—



W. J. Croall.

K. Smith. The late Geo. Mason, C. H. Bothanley, J. Stuart,
Past Presdt. Past Presdt. Past Presdt.

G. W. Norton, W. E. Dunmore, W. H. Smith, P. G. Hibblewaite.
Convent.

E. Sanger J. B. B. R. R. E. J. Wall, Wm. Crooke,
Shepherd. Wellington. Beard. F.R.P.S. Past Presdt.

C. L. E. J. Thomas Bedding, G. W. G. W.
Hardick, Humphery. F.R.P.S., Webster, Watson.
Presdt., Newcastle. F.R.P.S.

J. S. B. F. A. Bridge, Gen. Hon. Sec. Alfred P. R.
Banks. Webber. and Treasurer of the Seaman. Salmon, F.R.P.S.
Convention.

NOTES UPON TIMING DEVELOPMENT.

[A paper read before the Birmingham Photographic Society.]

THE all important point in making a negative is to stop development at the right time to give the desired contrast in the print. Mr. Watkins has conclusively proved during the past ten years, and many of us have verified for ourselves that the time of the first appearance of the image, i.e., the time taken for the first sign of the subject to appear after the application of the developer, is a certain guide to the total duration of development under certain conditions; therefore, by taking advantage of this fact we can produce negatives possessing any desired contrast for printing in the various processes which require different ranges of gradation, and those possessing but little experience are enabled to develop their plates without fear of losing them through error in development. Further, a different make of plates may be used whose characteristics in development may vary considerably, the timing method settles this uncertainty; in the case of enlarged negative making one is very liable to misjudge the actual stage of development, first by reason of the amplification altering the general effect of the tones, secondly the difficulty experienced in examining a large plate exactly at the same distance from the developing light, and in the case of very large plates the almost impossibility to examine the stage of development by transmitted light at all; thirdly, the uncertainty existing with a large plate being more thickly coated than a small one.

All these and many other difficulties likely to cause the less experienced to "come a cropper" just when he is anxious to produce the best negative possible, are safely overcome by the adoption of development by time, and even the most experienced must find that the method is the only definite way to arrive at a given standard.

The "time of appearance" is carefully taken from the moment the developer is applied to the plate to the first sign of the high lights (this is easily obtained by the use of a watch with a large second hand, or, better, still, by the use of a Stanley's Dark-room Clock, the latter being a very useful accessory for other purposes photographic) and then that time is multiplied by a number called the factor, which gives the total length of development. Example: With a pyro. and soda developer (ammonia cannot be used) containing 2 grains of pyrogalllic acid, $\frac{1}{2}$ grain potassium bromide, water 1 oz., alkali q.s., a factor of 5 will give a negative of good contrast for P.O.P. printing, the first appearance takes, say 1 minute 10 seconds, then in 5 minutes 50 seconds from the pouring on of the developer the plate is ready for fixing. If a negative is required to give a good bright platinotype print use a multiplying factor of 6, but for Carbon printing a factor of 7 or 8 is necessary, especially with large negatives.

If the three solutions for pyro. and soda previously given by me are used then 20 minims of No. 1, 5 minims of No. 2, and 40 minims of No. 3 to each oz. of water, the correct proportion will be obtained.

The temperature will make a difference in the "time of appearance," but within reasonable limits will have no effect subsequently, the temp., however, must not be altered during the period of development, neither can the constituents of the developer without losing the benefit of the factorial method.

A pyro. developer containing to the oz of water 1 grain pyro. and $\frac{1}{2}$ grain bromide, a factor of 9 must replace 5, but should 4 grains of pyro. and 1 grain of bromide be taken then a factor of 4 would be correct.

If rodinal is used instead of pyro. and no bromide, a factor of 40 must be used, but if rodinal is used I recommend 25 minims of the stock rodinal to 1 oz. of water and $\frac{1}{2}$ grain of bromide, i.e., 5 minims of the 10 per cent. solution and a multiplying factor of 16.

With this timing method plenty of light may be used to make matters comfortable in the dark-room, there being no need to continuously expose the plate; as soon as the "first appearance" has been noted the dish should be covered over and very gently rocked for the remainder of the time. It will be found that a white porcelain dish gives the "first appearance" most successfully, coloured dishes are not good.

The method of timing development, whilst producing negatives of much more even quality, does not, of course, render mistakes impossible in the mixing of the developer nor in mistiming the "time of appearance," neither will it put right blunders of great extent in the exposure; the two matters of exposure and development are not so

closely allied as many suppose, however, space will not admit of discussing the treatment of under and over exposure at the present moment, but I have no doubt in my own mind that with slightly under and slightly over exposure, it will be found generally advantageous to stick to the time method—when a departure is made bear in mind that over-development of under-exposure and under-development of over-exposure must be rigorously avoided.—J. H. GEAR, F.R.P.S.

SOME NOVEL SUGGESTIONS FOR WINDOW DRESSING.

THE principal advertisement of a retail dealer is his shop window, and yet it is remarkable to notice how very frequently this most important part of the business is neglected. "Houghton's Monthly" gives some excellent suggestions which every retail dealer will, we think, find useful. To begin with, when the amateur is in doubt as to what camera to invest in, he usually makes a tour round to the various shops in his district and makes a close study of the windows. He may have read advertisements of some particular camera that has taken his fancy and he tries to find a shop that has one of the actual cameras in the window. He does not, as a rule, march boldly into the first shop he sees and ask if they have the camera in stock. He is too shy for that, for he does not like to come out without buying something, and if the camera is not all that the advertisement led him to believe, or what his fancy painted it, then he regrets his purchase and becomes dissatisfied. No, what he does is to go and study the camera through the plate glass, and get an impression of it before he goes inside to make a closer inspection. Now, as a rule dealers simply fill their windows with all kinds of stock, and if they have more than one model of any particular camera on show it is rather unusual. Consequently there is only one view of it to be obtained. What we would suggest is that, instead of the whole of the front of the window being filled up with a heterogeneous mass of accessories, a certain amount of space should be devoted to the display of one camera, or one or two cameras under varying conditions. Suppose we take a standard camera like the Sanderson for an example. One camera could be shown open, another closed, another with the bellows extended to the fullest, another with the wide angle movement in use, the front might be raised as far as it will go in another model, and dropped similarly in yet another example. If your stock is a large one you can show the half lens in use, have the back of the camera towards the window, show different sizes, types, accessories, and everything relating to it. Have a number of neat little cards written describing each camera or each movement, and above all have the price plainly marked, either on the showcards themselves or on a special card at the back of the display. Prints and enlargements taken from negatives made with the camera should always be liberally displayed, because the prospective buyer will go more by what has been done by others than by anything he is told that he can do. Of course all this takes time and trouble, but if you get a good result it will more than repay you for the little extra work. Again with box-form cameras there are a number of different ways of showing them, and, although they do not lend themselves to the display so well as a camera like the Sanderson, yet it is quite possible to make even a guinea camera seem the one thing desirable, provided that you go the right way to work. Specimens, and if possible striking specimens, have an enormous value in deciding the sale of a camera, and you cannot use them too freely. If you have any good local ones so much the better, only let them be good and technically perfect. One of your customers may be willing to lend you a negative, and if you think it is good enough, get one of the carbon or bromide manufacturers to make you an enlargement and display that. Your customer will bring his friends to see it and will become an unconscious advertising agent. We can always assist you if you want to make a special display, and can send you showcards and specimens of all descriptions. We shall have some more to say on this subject later on, but if you think that our remarks are worth adopting it is advisable to start now, because the holiday season has commenced, and you may be missing business.

THE B. J. JUBILEE.

THE following, from the pen of Dr. Moritz von Rohr, appears in the "Zeitschrift für Wissenschaftliche Photographie":—"On the 10th June this year the BRITISH JOURNAL OF PHOTOGRAPHY celebrated the fiftieth year of its existence. The following particulars concerning it may be of interest. The paper was founded as a monthly periodical under the name of the 'Liverpool Photographic Journal.' With the fourth volume a fortnightly issue was begun, and simultaneously the name of the paper became the 'Liverpool and Manchester Photographic Journal.' The larger size of to-day was adopted in 1859, on the issue of the sixth volume, and the name was then changed to the 'Photographic Journal,' but only to be altered in the following year to its present designation. With No. 217 of the 1st July, 1864, it became a weekly publication, and in October, 1892, a monthly supplement known as the 'Lantern Record,' was added. This was continued for ten years, when the supplement was suppressed and the weekly issue increased in size from 16 to 20 pages.

"The object of this paragraph is to express to our contemporary the hearty congratulations of the 'Zeitschrift für Wissenschaftliche Photographie.' Our German photographic periodicals cannot look back upon so many years of existence. If we except the 'Photographisches Archiv,' which has ceased to exist, the oldest papers are no doubt the 'Photographische Correspondenz' and the 'Photographische Mitteilungen.' But our congratulations do not relate to the age of the paper alone, but also to its important position.

The paper is not only large in size but contains valuable material for it not only gives information concerning all photographic processes, which appear in the domain of the English language, but also the more important which appear abroad. How large the circulation of the JOURNAL must be may be gathered from the fact that the 'Almanack,' which is also published at the end of each year by the same Editor, has reached a total of 25,000 copies published and sold. But this importance is not a growth of recent date. If I confine myself to the sphere of my own studies and occupation, that of optical questions relating to photography, I cannot value the importance of this paper too highly. Its direction by the first Editor, G. Shadbolt, was really excellent. To him the honour is due that he secured the co-operation of that eminent optician, Thomas Grubb, and at least induced that doyen of theoretical opticians, R. H. Bow, to take an interest in the work. We must also not forget to emphasise the fact that it was through the energetic action of the photographic Press that the wide-angle lens, free from distortion, evolved itself so successfully in the sixties in English-speaking countries. In this respect the action of this paper was of no small value. It was, in fact, through the lively exchange of opinions that the formation of so important a theorem as the Bow-Sutton law relating to rectilinearity became possible. Let us then express to the BRITISH JOURNAL OF PHOTOGRAPHY our best wishes in the words—

Vivat, crescat, floreat!"

Herr J. Gaedicke, the well-known and respected Editor of the "Photographisches Wochenblatt," also sends us his warm congratulations in the following terms:—"The oldest paper devoted to photography, which has continued to appear without interruption to the present day, could look back upon a life of fifty years on the 1st January last. We refer to the BRITISH JOURNAL OF PHOTOGRAPHY. It celebrated this Jubilee in a most worthy manner by the publication of a Jubilee Number on the 10th June. That this number has only just appeared, is due to the fact that the Editor, Mr. Thomas Bedding, has been suffering from a serious and long illness, to which he refers in the preface. The Jubilee Number is about three times as thick as usual and contains twenty-nine original articles by the more important contributors, together with their portraits. Besides this, the Editor contributes a history of the JOURNAL since its foundation and the portraits of the successive editors are also given. The paper was founded by the Liverpool Photographic Society, and was called the 'Liverpool Photographic Journal.' The first number appeared on Saturday, January 14, 1854. On the 1st January, 1859, the paper was called the 'Photographic Journal,' and on the 1st January, 1860 it was again renamed the 'British Journal of Photography,' which title it has retained till the present time. Among the editors of former

we find Sir William Crookes, then a young man. The late Traill Taylor conducted the paper admirably for the longest period, but with an interlude of seven years, which he spent in Africa. He died in 1895. The present Editor, Thomas Bedding, was Traill Taylor's assistant in 1891 in editing the paper, and after the death of the latter was appointed Editor-in-Chief. This respected paper, in the fifty years of its existence, represents a veritable history of photography, and it is the richest mine where evidence may be found to prove that many things offered now as novelties were known long ago. For instance, Forrest wrote on the 3rd February, 1888, that George Thomas photographed New Brighton Fort at a distance of three miles with a telescope, the actinic focal difference being $\frac{1}{4}$ in. We have the new telephotography. The paper has constantly maintained its prominent position of devotion to the whole field of photography, and has not taken any notice of the division of papers into amateur, professional, and pictorial. We congratulate our honourable colleague upon this Jubilee, and hope that in the next fifty years the importance of the paper will remain as high as hitherto."

The proprietors of the BRITISH JOURNAL OF PHOTOGRAPHY have recently published a Jubilee Number to mark the fiftieth year of its publication, though it has not always been known by the title it now bears. It was first started on January 14, 1854, as the 'Liverpool Photographic Journal,' and after going through many evolutionary stages, it assumed its permanent title of the BRITISH JOURNAL OF PHOTOGRAPHY on January 1, 1860, at which time it was in the able hands of Mr. Henry Greenwood, who retained control until his death in 1884. This Jubilee Number contains thirty special articles on the most popular and prominent phases of modern photography, written by competent specialists, besides an illustrated history of the journal since its foundation. In this history we find a list of the editors, among whom are many well-known men who have since made their names in the world of science. Among these we may mention James Alexander Forrest, 1854-1886; George Shadbolt, 1857-1864; George Pearson, Samuel Highley, Sir William Crookes, James Martin, John Traill Taylor, W. R. Bolton, and last but not least, Thomas Bedding, who at present fills the editorial chair in such an able manner. Such an event as the publication of this Jubilee Number is unique in the history of photography, and marks an important epoch in the science. We heartily congratulate our contemporary on the success it has so readily achieved, and trust that it will continue to flourish in the future as it has done in the past."—*The Chemical News.*

Photography fifty years ago appears to have been only possible for those with untiring energy and a long purse, we gather from the pages of the BRITISH JOURNAL OF PHOTOGRAPHY Jubilee Number, issued June 10. This is a special issue something like a beautiful album, though placed on sale at the usual figure (2d.), and any one is sufficiently interested in our hobby to read practically the history of photography, should certainly secure a copy of the same. Apart from the excellent value, one can gather from its pages the steady progress that has been made, understand how in the days of an outfit consisted of something like a small cart-load (should I escape work be desired), and the enormous amount of risk one had to undertake. All the old workers and best photographers who are now to tell the tale appear to have been more than pleased to contribute their mite for the benefit and encouragement of the present-day worker, and we feel certain that, after a careful perusal of the many odd pages, no one will dare to consider anything a trouble when they realise the difficulties that had to be contended with and surmounted not so long ago."—*The Hull News.*

The Jubilee Number of the BRITISH JOURNAL OF PHOTOGRAPHY will be found full of interest by all photographers, amateur and professional. As might be expected, the majority of the articles deal with the historical aspect of the art, and the lay mind, if it does not fully understand the technical terms and descriptions, is at least enabled to grasp the fact of the great difference that exists between the methods of the present day and those of the time when the first number of this well-known and esteemed journal was issued. To those practising photography at the present time, accustomed to all the easy devices so lavishly supplied, the difficulties which beset the early students will appear insuperable. However, they have here the personal evidence of some of those forerunners that convinces them,

for the number includes contributions from photographic experts, who have been identified with the journal for thirty, and even forty years."—*Sheffield Daily Telegraph.*

"We owe an apology to the BRITISH JOURNAL OF PHOTOGRAPHY for not previously offering our congratulations on its Jubilee Number; but we see that we are not alone in being unable, from press of matter, to insert contributions with the promptitude which is desirable. It is not too late to call attention to the admirable history that this number affords of the development of photography and of the progress of the JOURNAL; whilst the biographical details relating to successive editors and contributors are of very great interest. We are glad to see a notice to the effect that 'advertisements are inserted absolutely without condition, expressed or implied, as to what appears in the text portion of the paper.' Advertising agents, in their anxiety to 'do business,' are unconsciously doing their best to depreciate the value of legitimate advertisement, and to injure the reputation of those journals which do not strictly maintain the distinction between the advertising and the editorial departments."—*The Gardener's Chronicle.*

"Accept my heartiest congratulations on the Jubilee Number of the dear old B.J. It is in many ways the most interesting number I have seen since I first began to scan its pages twenty years ago. May we all live to enjoy the Centenary issue.—Yours cordially, JOHN A. TENNANT, Editor, 'The Photo-Miniature' (New York)."

A NEW SUGGESTION FOR HOLIDAY PARTIES.

At first sight a holiday spent amidst scenes of work appears somewhat unromantic. Coalmines and factories, steelworks and quarries, are not considered so picturesque as the cloud-swept mountain range, or the eternal stillness of the placid pool. An industrial centre is a strange place to one who has not been brought up in its midst. It is often said that the manufacturing districts are horrid places. But is this true? They have a beauty of their own which is soon revealed if a short stay is made in one of them. There is a wild grandeur in the flame that shoots up from the blasting furnace. The clang of hammer on steel at the foundry is but labour's melody. Who could stand at the pit-head and watch the tons of coal ceaselessly rise from the darkness of the pit without being impressed? To see and know how such things are done—these are some of the lessons that industrial England has to teach. A solitary traveller working by himself suffers from many disadvantages. He can often see but the outskirts of many places that he would wish to enter. The information that he derives may not be accurate. Much valuable time is often lost in not knowing the country well, and also in not knowing which are the likely farms to apply to for permits in order to see their works in operation. On the other hand, if a party were organised, pioneered by an efficient guide, with letters of introduction to the heads of the commercial centre from which they wish to radiate, the chances of a successful educational trip would be greatly enhanced. Let us suppose a party of young men desirous of seeing England at work. How easy it would be if some influential man would take up the idea, and by obtaining the necessary letters of introduction, not only would the gates to many interesting sights be open, but efficient men to explain the marvels that could be seen within would also be obtained. In the same way that parties are pioneered through Italy, Switzerland, or even places like Oxford at home, could a party of men and women be shown round some of the workshops of England. By living amongst the people, becoming associated with their institutions and their modes of life—different in so many respects from those followed in other parts of the country—and by watching the mighty thread of England's industry being woven before their eyes, surely that would constitute a holiday as instructive as it would be interesting and useful.—Mr. F. A. Hunt, in "The World's Work" for July.

Patent News.

The following applications for Patents were made between June 6 and June 25, 1904:—

- Enlarging Apparatus.—No. 12,734. "Improvements in photographic enlarging or reducing apparatus." Henry Rex Cook.
- Raising Ferrottype Plate Paper.—No. 12,834. "Method of clipping and raising ferrottype plate paper and other photographs." Joseph Richardson.
- Cameras.—No. 12,883. "Improvements in or connected with photographic cameras." John Weston Brooke.
- Stand Attachment.—No. 12,923. "An attachment to a photographic camera stand for the purpose of taking stereoscopic views." Alfred James Giddings.
- Cameras.—No. 13,005. "Improvements in photographic cameras." Arthur Lewis Adams.
- Photographing Coloured Objects in Monochrome.—No. 13,179. "An improved method of photographing coloured objects in monochrome." The Gem Dry Plate Company, Limited, and Thomas Thorne Baker.
- Shutters.—No. 13,183. "Improvements in 'focal plane' shutters for cameras." George Jones, trading as Talbot and Eamer.
- Mounting Photographs.—No. 13,472. "A new or improved process for mounting photographs and the like." Complete specification. Friedrich Wilhelm Gustav Chelius.
- Masks.—No. 13,774. "Improvements relating to gauges and masks for use in photographic printing." Complete specification. Frederick Charles White.
- Postcard Printing Frames.—No. 13,893. "Improvements in and connected with frames for printing picture postcards and the like from a photographic negative." John McInnes.
- Film Developing Apparatus.—No. 14,069. "Improvements in apparatus for developing photographic films." Complete specification. Jonathan Millard Brainerd.
- Printing Frame.—No. 14,110. "Improved photographic printing frame." Robert Arthur Montagu Boyce.
- Magazine Attachments.—No. 14,329. "An improvement in magazine attachments or charging packets for photographic cameras." Newton Livingstone Scott.

A NEW "ENSIGN" FILM COMPETITION.

DURING the months of July, August, September, and October, 1904, a monthly competition will be held in connection with the "Ensign" Film. Twenty pounds every month will be distributed among those who send in the largest number of the labels that are pasted on the bottom of the "Ensign" Film boxes. There are no conditions or rules to be observed, and no coupons have to be obtained. All that has to be done is to cut off the bottom of the box in which this film is packed, with the label containing particulars of the batch number, date, etc., and send as many as possible to Austin Edwards, The Film Factory, Warwick, before the end of the month in which you intend to compete. Mark the package "Ensign" Competition. Enclose name and address and remember that two six-exposure spool labels will have the same value as one twelve-exposure label. In the case of the smallest films, which are packed four in a box, the label of one box will count as four spools. The prizes will be awarded as follows:—To the person sending the largest number of labels in any one month, £10; to the person sending the next largest number in any one month, £5.

There are also five other prizes of £1 each to those who come nearest to the winning collections, making twenty pounds in all to be distributed each month. All sizes rank equally in this competition, and there is no distinction made between users of different sized spools. Competitors may ask their friends to collect labels for them. Do not wait until the last month when the entries will be heavier; the earlier labels are sent in the better chance there is of winning a prize. Twenty labels may win the first prize, and this will work out at ten shillings a label, so that you see the offer is one that is worth consideration.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

July	Name of Society.	Subject.
11	Southampton Camera Club	<i>Imogen Sulphite</i> . Demonstrated. A. E. Henley.
12	Nelson Photographic Society...	Members' Print Evening.
13	North Middlesex Photo. Soc.	<i>Orthochromatic Photography</i> . Arthur Payne.
13	Everton Camera Club	Competition.
14	Watford Camera Club	Competition—"Architecture."

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

JUNE 30, 1904.—Annual general meeting. Mr. A. Haddon in the chair.

HONORARY SECRETARY AND TREASURER'S REPORT

In presenting to you my first report I must claim youth and inexperience as an excuse for any failing you may detect in the account of my stewardship, as against which I lay at the members' doors the my eyes, heinous crimes of not attending as frequently as could be wished, and also a strange aversion to paying subscriptions. However, figures and facts are hard nuts to crack, and, having charged you with these failings, I now appear for the defendants, so to speak, and prove that you are no worse in both respects than you have been in years gone by; in fact, you are rather improved.

Membership is the great factor in a society's vitality, and although the grand total of members has been somewhat reduced, it is only because a few names of non-paying, non-attending members have been struck off by the committee; these gentlemen are quite useless to the society. If they paid and did not attend, or attended and did not, they would be useful, but doing neither they are a luxury we must dispense with. We have elected 11 new members this year, of whom have resigned, making a net increase of 9. We have struck off 8 bad eggs and 3 have resigned, making a decrease on the roll of two, and our membership is now exactly 100. There have been 50 meetings, as usual, and the average attendance is 21, which I think is good. The smallest was 13, the largest 50. We have had what I may term some notable papers this year, and I think would be invidious to name any in particular, because I do not think that any paper can justly be described as mediocre. Some of the papers have kept the Press in free copy for weeks. I refer especially to the one on the metrical system, by Mr. Gotz and the psychic effort of Blackwell. We have had 22 open nights, for which the summer months have been responsible, it not being fair to ask a lecturer to come down and not to present him with an audience. We have had 7 lectures pure and simple, 17 papers of technical interest, 2 technical demonstrations, and two nights have been taken up by business of the society. This past year is notable as having been the first year of the Henderson Award, which has lain dormant since it was given to the association by Mr. Henderson. I fear the next awarding may lead to much discussion. We have had so many good original papers. Mr. T. Thorne Baker was the recipient this year. The Anonymous Award was given to, and deserved by, Mr. Fowler, a remarkably useful gentleman, who always seems to have a paper ready, and is handy in taking the secretary's place when the gentleman feels lazy.

Our thanks are due to Mr. Harvey Piper for one of our large attendance, and to departed friends for the largest meeting of the year, the "ghosts' evening" before referred to bringing up fifty members and friends who were very much alive. These meetings were only surpassed by the supper (55), which I have heard was excellent; I did not get myself. But we must express our appreciation of Mr. Grant's many friends, who did so much to cheer us up, and our thanks to Mr. Grant for bringing them. This occasion was marked by the return of an old member, Mr. E. J. Wall, to photographic society life after months' illness.

I must, in referring to the library, which has been enriched by many newly-bound volumes of the weekly and monthly Press, express

pathy with Mr. Marshall. A word for our energetic recorder, who has been very busy in sending out and writing splendid reports of meetings, and I have done.

Expenditure this year has increased by £3 7s. 11d., due to votes for lantern, amounting to £2 15s. 9d., and lantern stand, 12s., both additions to assets of the associations. Our income has fallen £1 15s., no less a sum than £12 15s. being due to the association's subscriptions of 1903-4. The gentlemen who are represented must have the liability of the large item of 7d. per head ago laid at their doors, the normal amount being 4d., which should be ample. Rent is low, being 2s. 4d. per head. Subscriptions to the Royal costs 3d. per head, a charge which will assist in the coming year, as 1d. per copy is to be charged for the Book. Printing and stationery is a heavy item, being nearly equal to the other.

Following officers were elected:—Trustees: Messrs. A. Haddon, E. Freshwater. Committee: Messrs. S. H. Fry, Hart, T. K. R. Beckett, Teape, P. R. Salmon, H. C. Rapson, and A. Beddard. Hon. Lanternist: Mr. Wright. Hon. Recorder: W. T. On. Librarian: Mr. W. J. Marshall. Affiliation Delegates: Mr. Furley Lewis and H. C. Rapson. Hon. Secretary and Treasurer: Mr. R. J. Kindon.

New Books.

"Dictionnaire de Chimie Photographique." Part V. Gauthier-Villars, 55, Quai des Grands Augustins, Paris.

We have recently received the fifth section of this work, by Messrs. Ad. Braun fils, which is intended as a chemical book of reference for amateur and professional photographers. This part includes sections extending alphabetically from "Emulsion" to "Gomme," "Ethers," "Salts of Iron," and "Gelatin" are dealt with, it will be specially interesting.

"Lehrbuch der Photographie." Vol. 49. Optik für Photographen. F. Stolze. Wilhelm Knapp, Halle a/S.

This volume, which has been specially written as a text-book for men in Technical Photographic Schools, deals with optics in relation to photography. The nature of light, its refraction, the properties of prisms and photographic lenses are dealt with in a very simple manner. The lenses of the leading opticians are also brought under review. The book should give the photographer an intelligent view of the optical part of his outfit, and we warmly recommend it.

"Directory of Chemists and Druggists." 711 pp. Price 20s. London: Published by Kelly's Directories, Ltd., 182, 183, 184, Abchurch Lane, London, W.C.

There can be no doubt as to the usefulness of this work to those connected with the chemical trades. In the pages of the book will be found the names of over 56,000 persons, being an increase, as compared with the last edition of the work, of about 10,000. These include the manufacturers of almost every chemical of importance to have a separate heading, as well as a considerable number of trades that have not previously appeared. The scientific branches are also included, such as the analytical and organic chemists, members of the Pharmaceutical Society, etc., and the scientific researches are constantly developing important results. The contents are arranged admirably for reference. Places in England, Scotland, Ireland, and Wales, with the names of persons engaged in business in each, arranged alphabetically in counties, and by a cross-reference list of trades, arranged alphabetically.

Hon. Sec. of the North Middlesex Photographic Society writes that the outing arranged for July 16 has been altered to Rowley Green.

News and Notes.

ROYAL INSTITUTION.—A general monthly meeting of the members of the Royal Institution was held on the 4th instant, the Duke of Northumberland, K.G., president, in the chair. Viscountess Gort, Mr. M. H. Spielmann, and Mr. W. R. W. Sullivan were elected members.

An interesting series of pictures illustrating the stirring times experienced by the British Expedition to Tibet at the present moment has been sent in to Kodak, Limited, by Lieutenant F. M. Bailey, of the Pathan Mounted Infantry. They were taken with the No. 3A folding pocket Kodak on the N.C. film, and, besides being excellent as pictures, they are important as records, and doubtless reproductions of them will find their way into the leading illustrated weeklies.

The National Trust for Places of Historic Interest or Natural Beauty have an option to purchase Aira Force, the romantic gorge of the Aira, and Gowbarrow Fell, on Ullswater. This beauty-spot is familiar to all artists and users of the camera who have been fortunate enough to visit the locality. The land which it is proposed to acquire comprises over 700 acres, and includes a mile of the shore of the lake, above which towers the summit of the fell nearly 1,600 ft. above sea level. The actual purchase-money required is £12,000, but a balance will be needed to meet expenses, and it is desirable, if possible, to secure also some adjoining land, which is offered on advantageous terms.

We have received two useful little guide-books that should prove of much use to the holiday-maker who takes his camera with him. One is entitled "Holidays in Eastern Counties," and prominence has been given to some less-known districts in East Anglia which will well repay a visit. The other deals with a series of tours in less-known districts of Holland, North Germany, the side valleys of the Rhine, the Tyrol, the Belgian Ardennes, and Scandinavia, easily and inexpensively reached by the Great Eastern Railway Company's routes via Harwich and the Hook of Holland and Antwerp. Both these booklets are well illustrated, and may be obtained on application to 30, Fleet Street, London, E.C.

RECORD and Survey Photography receives due recognition in the schedule of the Newbury Photographic Exhibition, to be held in the autumn, one class being devoted to work of this nature; and as the county of Berks is particularly rich in antiquities and historical associations an interesting collection should result. It was at Newbury that two of the fiercest battles of the Civil War were fought, and the old houses adjoining the Bath Road afford interesting reminiscences of the days of coaches and worthy subjects for the camera. In this competition the Mayor of Newbury, who is a keen antiquarian, has offered prizes to the value of three and a half guineas on condition that the prize-winners give copies of the successful prints to the local museum.

By the death of Mr. G. F. Watts, R.A., England not only loses an artist worthy to rank with the great masters of the past, but also one of the most potent spiritual forces of the nineteenth century. His passing severs another of the links which connect our age with that of Carlyle and Scott, Thackeray and Dickens, Browning and Tennyson, Ruskin and Turner, Martineau and Gladstone. As an artist Watts ranks with the great masters by reason of his work being marked by three attributes rarely combined. In the first place, there is always a great conception; he held that a picture must have a message, that lacking this, in his own words, it was "like a face without eyes." In the second place, he was a perfect draughtsman; in the third, a no less admirable manipulator of colour. As far back as 1857 Ruskin wrote: "We have, as far as I know, at present amongst us only one painter, G. F. Watts, who is capable of design in colour on a large scale." His ideal of portraiture has been well described "as the intimate study of a man in the mood of his vocation," and his portraits of Tennyson, Gladstone, Carlyle, Joachim, Rossetti, and Cardinal Manning witness to his idealizing of the subject.

THE NATIONAL PORTRAIT GALLERY.—The 47th annual report of the trustees of the National Portrait Gallery has been issued as a Parliamentary paper. The report states that Mr. Watts's portraits of Lord

Salisbury and Mr. Lecky, painted in 1884 and 1878 respectively, have been accepted as part of Mr. Watt's original gift to the nation, the usual rule as to the expiration of ten years from the date of death being suspended, as on former occasions. This rule was also suspended in the case of the terra-cotta bust of Mr. Lecky and the marble bust of Mr. Herbert Spencer, both modelled by Sir Edgar Boehm, R.A., and of the portrait of Herbert Spencer, painted in 1872 by John Bagnold Burgess, R.A. The total of visitors from January 1 to December 31, 1903, is stated to have been made up as follows:—Visitors admitted free of charge, 120,303; visitors admitted on payment of 6d., 9,016; visitors admitted on Sunday afternoons, 11,368; total number of visitors admitted in 1903, 140,687. The report further gives particulars regarding other portraits acquired by purchase or gift during the year—the total number of additions to the collection being 28—of loans made to other collections, and of copies of portraits made by students.

A DIPLOMA, as officer of the French Academy has been awarded to J. C. Strauss, a St. Louis photographer, whose studio is on Franklin Avenue, near Grand Avenue, an honour which is conferred by the Ministry of Public Instruction and Fine Arts on artists deemed worthy of special distinction. The diploma was awarded by Paul Lascombes, a delegate of the Ministry, who, with Felix Lamy, secretary of the French Commission to the World's Fair; Marcel Hortiloup, Commissioner of Fine Arts at the Exposition; Paul Delestre, who holds a similar position; and Charles Gerschel, a photographer of Paris, went to the Strauss studio at three o'clock yesterday afternoon. They found Mr. Strauss, who did not know of the honour about to be conferred upon him, at work in his shirt sleeves. M. Lamy, secretary of the French Commission, impressed with the work of Mr. Strauss on exhibition in the Palace of Fine Arts, several weeks ago suggested to M. Lascombes that he be appointed an Officer of the Academy, although this honour is conferred upon few foreigners. M. Lascombes readily acquiesced in the plan and cabled to J. Chaumie, French Minister of Public Instruction and Fine Arts, asking that the violet ribbon which is the insignia of the honour, be awarded to the St. Louis artist.—“St. Louis Republic.”

Commercial & Legal Intelligence

RE Blyton Wainman Powls and Alfred Arthur May, trading in partnership as Powls and May, photographers, of 301, Summer Lane, the former residing at Birchfield Road, Aston, and the latter at 17, Crompton Road, Handsworth. The above named debtors appeared for their public examination at the Birmingham Bankruptcy Court on June 23 before the Registrar. The statement of affairs filed by the debtors showed liabilities amounting to £857 8s. 11d., deficiency £772. In reply to the Official Receiver, Powls said he was a grocer's manager until 1887, when he went into partnership as a photographer with May, who had been a grocer's assistant. Their capital amounted to £100. The business was very successful at first, being conducted largely on the club system, with agents among the factory girls. In November, 1902, the greater part of the premises was destroyed by fire. The damage amounted to £710, of which they received £410 from an insurance company. Owing to declining trade the firm was unable to recover the loss through fire. They borrowed money, and sold their furniture, but as they were trading at a loss things went from bad to worse till they had to suspend payment. Asked why they continued to draw £4 each out of the business for household expenses, Powls said he set up a big establishment when he thought he could afford it, and found it difficult to reduce expenses. He was now earning nothing. May said that he was now acting as manager for Mr. Bennett, who was carrying on the business. He could add nothing to what his partner had said in explanation of the heavy drawings.

ART COPYRIGHT.—HANFSTAENGL v. MACFADDEN.—This was an action which had been remitted from the High Court, and in which the plaintiff, Mr. Franz Hanfstaengl, a fine art publisher, claimed damages from the defendants, Mr. B. Macfadden and Mr. William Henry Gale, for the infringement of the copyright of a picture called “The Sirens,” by the German artist, Paul Thumann. Mr. Montague Lush, K.C., who (with Mr. Morton Smith) appeared for the plaintiff,

said Mr. Macfadden was an American gentleman living in America and carrying on apparently a very large business in copying pictures and sending them over to this country for sale. He also published such pictures in magazines called “Beauty and Health,” “Physical Development” under circumstances which, counsel contended, only tended to debase the picture and destroy the value of the copyright. Mr. Gale was Mr. Macfadden's manager in England. There were also some hundreds of copies of the picture in a portfolio, entitled “The Human Form Divine.” Mr. Ludwig Schubert, manager to the plaintiff at 16, Pall Mall East, stated that Mr. Hanfstaengl had carried on business in London for fifty years. “The Sirens” had a considerable sale in its reproduced form, prices ranging from one guinea to one shilling. They had had considerable trouble with infringements, especially from America. In cross-examination by Mr. Lewis Thomas, who represented the defendants, the witness admitted that there was no register in England showing that the picture was copyright or that it was registered in America. He also admitted that defendants, on learning that the picture was copyright, at once stopped the sale of the magazines, portfolios, and offered to pay any reasonable amount of damages. Mr. Algernon Graves, fine art publisher, stated that in his opinion the piracy tended considerably to damage the value of the copyright of “The Sirens.” In cross-examination, he admitted that the London house did not stock the picture. The jury awarded the plaintiff the sum of £100 as penalties and damages. Judgment entered accordingly, with costs.

SHALL LONDON HAVE A GREAT INTERNATIONAL EXHIBITION?

THIS is a question raised by the “Magazine of Commerce” a month ago. The current number of that magazine now gives the interesting result of a referendum on the subject among the representative group of British manufacturers. It appears that 100 firms consulted, 36 are for the exhibition, 32 are against, and 32 are neutral, while 17 are considering the subject. Mr. G. Balfour, the President of the Board of Trade, endorses the proposition provided he can be assured that he will have the support of the commercial world. Hence the referendum instituted by the “Magazine of Commerce.” It is interesting to note that some firms object to an exhibition. Their decision is emphatic and final. One or two of the objectors raise the familiar argument that in a Trade country a Great International Exhibition merely gives foreign manufacturers an opportunity of copying our methods, and our goods from our own home markets, and from the few foreign markets over which we still have an ascendancy. The argument, in fact, of these objectors is that a great exhibition is good for a Protectionist country, but bad for a free-import country. We have no standard of comparison in reasoning with this argument, as we are practically the only free-import country of the world. It is none the less apparent that there are many manufacturers who would be deterred from supporting an exhibition on these grounds. Considering the fact that foreign nations would be sure to take advantage extensively in a Great United Kingdom Exhibition, the English manufacturer would have before him very numerous examples of his imitation, and from which he would derive valuable suggestions. In other words, the advantages of the exhibition, from the public standpoint, will outweigh its disadvantages. Many people seem to think that they can do more good for themselves by hiding their light under a bushel. Publicity is bound, sooner or later, to take any good article; and manufacturers should make public their servant rather than their master. The suggestion is that the exhibition should be chiefly, if not entirely, intercolonial in character. By all means let the colonies play the most important part in the exhibition—they may safely be trusted to value their own interests in that respect—but the colonial character of the exhibition should not deprive it of the great value and importance attached to a cosmopolitan gathering. If the exhibition were confined to the colonies, it could not attain the high rank of international exhibitions held in other countries. It would be regarded by the world as a domestic matter of our own, and the influx of visitors would decrease accordingly. To do the thing the suggested exhibition should be both intercolonial and international. There is no reason why the two features should not be harmonised, unless we are to indulge in the chimerical hope that the British Empire can be run successfully as an isolated unit of world of gregarious nations.

FORTHCOMING EXHIBITIONS.

October.—Glasgow Photographic Exhibition. Secretary, Art and Museum, Kelvingrove, Glasgow.
 14 to September 30.—Vienna Photographic Society. Secretary, Karmelitergasse 7, Vienna 11.
 August 1.—Andover and District Horticultural Society. Photographic Section. Hon. Secretary, W. L. Gradidge, Jubilee House, Andover.
 August 16-20.—Royal Cornwall Polytechnic Society Photographic Exhibition. Secretary, Edward Kitto, The Observatory, Falmouth.
 September 16 to November 5.—Photographic Salon, Dudley Gallery, 11, Piccadilly. Hon. Secretary, Reginald Craigie, Photographic Salon, 1904, Dudley Gallery, Piccadilly, London, W.
 September 20-28.—Newbury Photographic Society. Hon. Secretary, Forster, Guildhall Club, Newbury.
 September 22 to October 29.—Royal Photographic Society's Forty-first Exhibition, New Gallery, Regent Street, London. Secretary, W. Bartlett, 66, Russell Square, London, W.C.
 October 1-30.—Berlin International Photographic Exposition. M. Goercke, Berlin W. 62, Maassen-Strasse 32, Germany.
 October 19-22.—Rotherham Photographic Society. Hon. sec., H. C. Ringway, Tooker Road, Rotherham.
 November, 1904.—Ilford and District Photographic Society. Hon. W. N. Beal, 155, Thorold Road, Ilford.
 November 3.—Frome M.I. Photographic Society. Hon. Secretary, Mitchell, 3, Willow Vale, Frome.
 November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Sec., Dunlop, Myrtlebank, Motherwell.
 November 9.—Hackney Photographic Society. Hon. Secretary, Mr Selfe, 70, Paragon Road, Hackney, London, N.E.
 November 15-16.—Ipswich Camera Club. Hon. Secretary, R. H. 37, Henley Road, Ipswich.
 November 21-26.—Sheffield Photographic Society. Joint Secretaries, Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.
 November 23-26.—Hove Camera Club. Hon. Secretary, A. R. 55, The Drive, Hove.
 November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., Simmers, Aberdeen House, Ramsgate.
 November 2-8.—Southsea Photographic Society. Hon. Secretary, Lawton, 20, Clarence Square, Gosport.
 November 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104, 101st Street, New York.
 November 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.
 November 13-20.—Southampton Camera Club. Hon. Secretary, S. G. 37, Oakdene, Highfield, Southampton.
 November 28-31.—Wishaw Photographic Association. Hon. Sec.—Robert Telfer, 138, Glasgow Road, Wishaw.
 December 14-28, 1905.—The Scottish National Salon. Hon. Secretary, J. Frame, 28, Bank Street, Hillhead, Glasgow.
 December 21 to March 7, 1905.—Glasgow Southern Photographic Exhibition. Hon. Secretary, W. A. Frame, 23, Bank Street, Hill-Glasgow.
 December 1905.—Northern Photographic Exhibition. Secretary, F. G. 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

October 1.—Thornton-Pickard. £100 cash prizes for pictures taken with Thornton-Pickard cameras and shutters. Thornton-Pickard Manufacturing Co., Altrincham.
 October 16.—Luna paper. £240 cash prizes for prints on Luna paper. Messrs. Allegre and Co., 59a, New Oxford Street, London, W.C.
 November 15.—Belgian Association Lantern Slide Stereogram Competition. Secretary, M. Vanderkindere, 97, Avenue Brugmann, Brussels.
 November 31.—Coxin. 68 prizes for users of Coxin. Judging twelve prizes. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.
 November 1.—The "Graphic." £50 in cash prizes. Manager, Competition, the "Graphic," Tallis Street, Whitefriars, London, E.C.
 November 31.—Barnet. Nineteen classes. Prizes valued at £500

for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

March 15, 1905.—Ilford. £750 in prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

Correspondence.

- * * Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.
- * * We do not undertake responsibility for the opinions expressed by our correspondents.

THE KODAK COMPETITION.

To the Editors.

Gentlemen,—June 30, the closing date of the Grand Kodak £1,000 Amateur Competition, brought in sacks full of entries, which now number many thousands. The clerical work attaching to such a competition as this is considerable, and it will be perhaps two or three weeks before the result can be made known. As a whole the exhibits are up to a very high standard, and to adjudge them will be no sinecure.—Yours faithfully,
 KODAK, LIMITED.
 41-43, Clerkenwell Road, London, E.C., July 1.

THE list of applications for space in the forthcoming Loan Exhibition of Process Engraving in Monochrome and Colour, to be held at the Victoria and Albert Museum in October, will, it is understood, be closed very shortly. The exhibition will include photo-lithographic and collotype processes, and a complete historical series of examples, showing the gradual development and uses of these and the others represented is being arranged.

PHOTOGRAPHS and FRAUD.—In photographs of the swindling London Penny Omnibus Association's premises that were issued to the public the same horses were placed in various stalls in the stables, and a very pretty picture was made by bringing in a borrowed coach and four. Some stables at Walham Green were described as the "head depot," a room at Fulham Road became the "main traffic office," the "stores and granaries" were said to be situated at Fulham, Hammersmith, and Westminster, and there was an alleged "grazing" farm at Ockenden. When the association went into bankruptcy, claims from the public to the extent of £18,000 were made, but the creditors only received one penny in the pound. Sentence of five months' imprisonment was passed at Clerkenwell yesterday on Arthur Bartlett, a joint manager of the association, who was charged with conspiracy with Knowles, the secretary (now "wanted" on a warrant), to defraud the public.

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Answers to Correspondents.

- * * All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.
- * * Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.
- * * Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.
- * * For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

Samuel Nixon, of Glenvista, Creggan, Londonderry, Ireland. *Photograph, Showing Mrs. Kerrigans, of Leenane, co. Galway, Ireland, standing by her Spinning Wheel, also the Chair upon which the King sat, and the Cabin (or House) in which the King and Queen Visited Mrs. Kerrigans in the year 1901.*

H. Bennett, Church Lane, Goosnargh, near Preston. *Photograph of Block of Buildings with Landscape; the Anneze portion of the County Asylum, Whittingham, near Preston.*

Louis G. Carpenter, 88, High Street, Ramsgate. *Photograph of H.R.H. Princess Louise, the Duke of Argyll, the Mayor of Ramsgate and Officials on Balcony of Royal Victoria Pavilion, Ramsgate.*

Chas. Foster, Photographer, Promenade, Port St. Mary, Isle of Man. *Photograph of the Crew of the Fishing Vessel "Harvest Home," Lying and Carting Nets.*

BACKGROUND.—We do not know the gentleman's present address. Better consult the advertisement columns of the JOURNAL, as it is quite against our rule to recommend any particular maker's goods.

UNEXECUTED ORDER.—JACKSON says: "Several weeks ago I received this list of a paper. I sent stamps for sample. Some weeks elapsed, when I wrote reminding them I had not received it. I then got a post-card saying they could not get raw paper, but would do so in a few days. I have heard nothing since. Do you know anything about it?" In reply: We know nothing about it whatever. Better write to the firm again and remind them of the matter.

LENS FOR ENLARGING.—S. CHAMBERLAIN says: "(1) I have just come across an old camera made by J. F. Shew, 89, Newman Street, Oxford Street. But the lens is an Alexis Millet, of Paris, No. 1615. It is 3in. in diameter, and is a double achromatic portrait lens. Can you tell if this is a first-class lens? (2) The approximate worth of it; and (3) to what size it will enlarge? If not, can you, please, tell me the way to find out the above questions?" In reply: (1) We could give no opinion unless we tested the lens. (2) Better get the value from Messrs. Shew. (3) To any size, provided it will cover the size of the negative to be enlarged.

TONING TROUBLE.—"P. O. P." asks: "Can you tell me the cause of the trouble I have with my sulphocyanide toning bath? When used a second time it turns prints a faint yellow colour, when first put in, and works slowly; viz., prints get a pink tint on the edge. I have reason to know the bath has enough gold in it, yet the trouble seems to come from lack of gold. I am careful to have everything used perfectly clean, but cannot get over this trouble. It seems to come only in hot weather." In reply: It is pretty evident that the bath is deficient in gold, notwithstanding your statement to the contrary. Add more gold and see the effect.

CARBON LANTERN SLIDES.—"LANTERNIST" says: "I should be greatly obliged if you would advise me on the following points:—(1) In the 'B.J.P.' for October 30, 1903, p. 867, 'Caledonian' states that no coating of the glass is necessary in making carbon lantern slides, but on p. 923 of November 20 this is contradicted, which is correct? (2) Are lantern slides made by the carbon process as good as the ordinary slides? (3) What is a good formula for white ink, to be used with an ordinary pen, for writing titles on dark mounts?" In reply: (1) We should

certainly advise the use of a substratum on the glass. (2) This is very much a matter of opinion. However, the carbon process yields excellent slides. (3) Chinese white, as sold in tubes artists' colourmen, mixed with thin gum water.

SPOTS ON PRINTS.—"J. B." says: "I have used with great satisfaction the chromic acid treatment for bromides from too contrasty negatives, but on trying it with gaslight paper (Velox) have been troubled with black spots on the print so treated. I enclose print which was exposed entire, then divided, one half bathed in chromic acid solution, and the two portions then developed at the same time and in the same dish. I will observe that the print developed in the ordinary way was free from the markings. I shall be much obliged if you suggest any preventative of or cure for the 'spots.'" In reply: Evidently there were some particles of matter in chromic acid bath that had a reducing action where they came in contact with the print. The other half of the picture being evidence of slovenly work. We should suggest more care in the manipulations.

SPOILT COLLODION.—"B. C." says: "(1) Some time ago I had misfortune to spoil a considerable quantity of enamel collodion by getting some water accidentally mixed with it. A quantity of water was only small in proportion, but sufficient to render the collodion useless in its present state. When poured on the glass in the usual manner it does not 'set' as it should but turns milky and spongy. Is there any way of rescuing collodion, or will it have to be thrown away? (2) I shall be obliged if you can give me a recipe for making celluloid varnish for negatives." In reply: (1) Pour the collodion into a dish, and allow it to become thoroughly dry, and then dissolve in equal parts of ether and alcohol. Unless you use a large quantity, it will scarcely be worth the trouble. (2) The simplest way is to clean spoilt celluloid films and then dissolve in a mixture of equal parts of amyl-acetate and methylal spirit.

VELOCITY OF BULLET.—E. M. PARS writes: "I have been interested by the appearance in various photographic weeklies of a photograph of a rifle bullet taken at one-millionth part of a second. I shall be pleased to hear how the velocity of this bullet has been arrived at. The BRITISH JOURNAL OF PHOTOGRAPHY, its Jubilee Number, gives the velocity as 20,000 ft. per second, but a week later it is given as 3,000. The 'Photographic News' of June 10 says 30,000 per second, and a paper which I cannot lay my hands on at the moment, if my memory serves me correctly, gives it as 40,000 ft. per second. I think I am right in stating that the ascertained velocity of any rifle bullet very rarely exceeds 2,000 ft. per second, varying a little according to the make of the rifle and the amount of powder used." In reply: We cannot say how the velocity of the bullet was arrived at. Perhaps, if you write to the makers of the plate upon which the photograph was taken, they will give you the information you desire. You see, the illustration is simply an advertisement for a particular make of plate.

STUDIO QUERY.—"STUDIO" asks: "Will you please advise me regarding the following? I have small studio, sitters' end facing north, 15 ft. 8, roof and one side glazed clear glass. I have 4 ft. block sitters' end, which I see you advise. I have no knowledge of studio work, but in so short a studio sitter will be very close to the background, say 1 ft., and it seems to me when blinds are fitted I shall have no control over light on sitter. Will you kindly inform me if I shall find this so in practice? If 4 ft. is too much to block in so short a studio? 2. What colour blinds do you advise? 3. What can I stipple glass with on roof? 4. How can I fix blinds on roof? 5. Should blinds on side light work from top to bottom, or in sections, top centre, and bottom to centre, overlapping one another?" In reply: 1. The studio is certainly very small, but there is reason why the sitter should be so close to the background. 1 ft. Then 4 ft. will not be too much to be blocked. Medium blue or pale green. 3. Starch paste mixed with little whiting is as good as anything. 4. The ordinary brackles such as are generally used for window blinds. 5. For the side, curtains running on rods will answer well.

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EX CATHEDRA.

The Photographic Convention. The nineteenth annual meeting of the Photographic Convention of the United Kingdom was opened at Derby on Monday evening. The president for the year, Mr. Geo. Herbert Strutt, ex-Light Sheriff of Derbyshire, delivered a brief inaugural address at the opening conversation given by the Mayor, councillor Cornelius Boam, in the Albert Hall of the Mechanics' Institute. The exhibition of photographic apparatus, pictures, etc., to say nothing of the musical romenade, light refreshments, etc., were greatly enjoyed by the large number of ladies and gentlemen present. The exhibits include contributions by Kodak, Limited, and the Platinotype Co., and a series of unframed prints, the work of members of the Convention. The exhibition of professional work by members of the Professional Photographers' Association, on view at the Corporation Art Gallery, is also attracting much attention. A review of this collection will be given in our next issue. The week's programme of excursions to the beauty spots of Derbyshire is being favoured with delightful weather, and we doubt not will result in a good "bag" of pictures. At the meeting on Wednesday Professor Joly was elected president for the ensuing year, and Dublin was decided on as the venue for the next convention, in July, 1905. Those who visited Dublin on the occasion of the 1894 convention will retain very pleasant memories of Ireland's capital.

New Lens. The paper recently read before the Royal Photographic Society by Mr. Conrad Beck, on Dr. Rudolph Steinheil's new principle of lens construction, must again impress on us all the pre-eminence of the German in matters connected with the advancement and application of optical science. The photographic objective, the microscope, and the telescope all owe much to our Teutonic brethren, whose peculiar adaptability

for steady research in any particular direction forms a not inconsiderable phase of the national characteristic. We reproduce Mr. Beck's paper on another page, and the lens he describes at length will be found to embody some novel optical properties, not the least of which is its simplicity of construction coupled with the skill with which certain conditions necessary to the construction of the modern anastigmat have been complied with.

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Espionage in Germany. We have two or three times lately called attention to the "spy scare" in France, and cautioned tourists with their cameras to be careful as to how they use them. This caution also, it seems, is equally applicable to Germany, at least, on the French frontiers, for here the authorities are equally on the alert. The Berlin correspondent of the "Standard," telegraphing one day last week says that the trial of a man at Leipzig had been commenced on a charge of espionage. It is alleged that he had obtained employment at Metz in order to obtain access to the forts at Distenhofen, of which he took several photographs. Three high police officials, it is stated, said that they could only give evidence if the trial was conducted in camera. The accused asserts his innocence. We refer to this matter simply to point out that the German authorities are equally as suspicious of suspected spies as are their French neighbours on the frontier.

* * *

Duelling and Photography in France. Duelling in France often brings a smile in England, where we have quite a different and more impromptu method of settling temporary quarrels—namely, with Nature's weapons. A little while ago we read in one of the daily papers, sarcastically inclined, that the French Government should take steps to stop this silly practice or some day, perhaps, an accident would happen, and someone might be hurt. In the daily Press, one day last week, we read that a duel was fought in Paris at the great wheel close to the Champs de Mars, and that it was witnessed by a large number of people, including several photographers, who took cinematographs of the encounter. One of the combatants is said to have been injured. Reading this, and knowing, as we do here, how some cinematograph pictures are produced, many may, taking the circumstances into consideration, fairly surmise that this was a "bogus" affair, got up for the purposes of obtaining a sensational cinematograph picture for a music-hall. But, after all, it may have been a "real genuine French duel," and "honour was satisfied."

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Photographs by Wire. It has long been the dream of electricians to transmit pictures by wire, and several good attempts have been made to realise it. The

latest is by a German physicist, named Korn. His system, which is briefly described in the "Electrician," like most of those that have preceded it, depends on the remarkable property of selenium of permitting or resisting the passage of an electric current, according to the amount of light falling upon it. At one end of the wire a negative photographic film of the design to be forwarded is mounted on a glass cylinder. As this cylinder revolves a spot of light travels over the surface of the film and illuminates a selenium cell behind it. When the beam strikes a transparent part of the negative, the selenium, being strongly lighted, sends a strong electric current, and on the contrary the current is weakened when the light falls on a darker part of the film. At the receiving station, by a reverse arrangement, the sensitive paper on a corresponding rotating glass cylinder is traversed by a fluctuating beam of light, which thus produces a photographic record resembling in light and shade the original design. The apparatus can, it is claimed, be employed to transmit photographs and drawings.

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The Free Portrait Swindle.

From an account in the "Photographische Correspondenz" we are glad to see that one of those people who trade upon the credulity of the public, and do harm to photography, has received his appropriate reward. A dealer of Polish extraction, 35 years old, named Löbmann, but now a naturalised French subject, was charged at Berne with fraud and attempted fraud. His practice was the solicitation of orders for enlargements, which would be made free of cost provided the persons paid for the frames, half the amount on giving the order and the other half on delivery of the framed picture. About twenty tradesmen gave him orders. The frames were of common quality and the pictures not retouched. Löbmann was evidently making a good profit on his venture, for it was proved that he had bought fifty rejected frames from a man in Berne, to whom he gave instructions to pack them and send them to various people, who were informed that the photographs would be sent from another town. The Court found that Löbmann's business was carried on merely as a means of deceiving the public, and as he had already been kept under detention for a month, sentenced him to thirty days' solitary imprisonment.

* * *

Kew and Brentford as Photographic Resorts.

Last week we made reference to the proposed disfigurement of one of the pretty little islands in the Thames, facing Kew Gardens, by converting it into a place for repairing and building barges. A very large number of photographers who dwell in our Metropolis seem to be quite unaware of the pictures they may obtain in the district of Kew and Brentford. Indeed, it would be difficult to find anywhere within four or five miles from the Marble Arch so much food for the camera as here. For example, there is Strand-on-the-Green, commencing from Kew Bridge, where, within two or three hundred yards, a good day's work may be found. The old and varied cottages on the river-side, some quite Dutch in their character, make excellent pictures. In fact, Strand-on-the-Green, with its old barges, is quite characteristic of a Dutch quay. It is the happy hunting-ground of painters, and we have on a fine day seen nearly a dozen at work at one time, but not a single photographer. This picturesque spot affords pictures both morning and afternoon. How long Strand-on-the-Green will retain its present character it is difficult to conjecture, seeing that a year or two ago some of the old cottages were pronounced by the local sanitary authorities to be in an unsanitary state. Then there is the old town

of Brentford adjoining, that with its old date character little cottages and courts, old-fashioned public-houses, of which there is a plethora—together with the barges the river-side on to Isleworth, where several days' work may be profitably expended with the camera. On more than one occasion we met the late Mr. Norman Macdonald the painter, on his way to the salubrious (?) town of Brentford, with his camera, as he told us, to secure "bits" from the old cottages, courts, and squalid children of the "barges" for his pictures. Although Brentford, according to the books, the county town of Middlesex, cannot be said that in its present state it is any great credit to it. But that is of no moment to the camera worker, so long as he can get picturesque pictures there and he can; and, what is more, with a pleasant bus or tram run within half-a-dozen miles of the Marble Arch.

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Coloured Photo-Miniatures.

Photography practically killed miniature painting of the old style on ivory some fifty or sixty years ago, and those who followed it as a livelihood had, perforce, to take to colouring photographs. In the fifties and sixties there was considerable run on tinted and coloured photographs; the work being executed by the old miniature painters who, for the most part, exceedingly well done, and good, many cases high, prices were paid for them. When the carte-de-visite became the rage, the colouring of photographs became neglected, and furthermore the fashion in portraits in brooches, lockets, and the like died out. Hence coloured miniatures became a thing of the past. A few years ago an attempt was made to revive miniature-painting, and a Society of Miniature Painters was formed, which held one or two exhibitions, which were very successful. The King has always shown great interest in the art of miniature-painting, and has now conferred upon the Society of Miniature Painters (at the Modern Gallery in Bond Street) the title of "Royal." This honour should add further stimulus to miniature-painting. At the present time many of our leading portraitists are making a feature of coloured miniatures on a photographic base, and exceedingly well executed many of them are. In the old days the colouring had to be done on silver prints, and not a few, for which high prices had been paid, rapidly faded and that brought discredit to the art. Now, however, we have permanent processes—platinum and carbon—to work upon; hence there need be no fear of the pictures fading. Unfortunately, there is no method of producing a photograph direct upon ivory, the material that the artist most delights to work upon. Carbon prints can be transferred to ivory, but then it is necessary to have a substratum of insoluble gelatine. Hence the artist has not the bare surface of the ivory to deal with, but one of gelatine, which, for his (or her) work is quite a different thing. It remains to be seen if three-colour work, for portraiture, will be brought to such a state of perfection as to supersede hand colouring. So far as we have been able to ascertain, professional portraitists are taking no interest in this subject, though it might well be worth their while to do so. There is little question that if good three-colour portraits were produced, a certain portion of the public would, even for the novelty of the thing, prefer a "natural colour" photograph to a hand-painted one. Up to the present, however, we have seen nothing in this direction that would compare with a well-executed hand-coloured photograph.

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The Heat Wave.

The year of grace 1904 will acquire fame in history for the resurrection of summer—a season loved long since and lost awhile to the energetic

photographer. A glance at the weather reports all quarters during the past fortnight, as published in daily papers, reveal an almost unparalleled series of unbroken sunshine. That this portends much future of plates goes without saying, and incidentally the owner of the small hand camera, fitted with cheap and small stop, his opportunity. He can even aspire to successful street photography, that is, so far as the exposure of the plate goes, under the conditions that prevailed of late. At midday on Monday last we had a fully-exposed negative in the midst of the traffic with a camera having a lens working at F.11 shutter at 1-100 sec. The vast amount of brilliant light at present gives an opportunity for effective street photography that has seldom occurred for many years, not only from the photographic point of view, but also from the social standpoint. The streets have become a study for. Symphonies in white and the palest of pinks and yellows and a dozen other tints adorn the side walks and bus tops. Panamas and flannels and muslins have come up in the streets with the speed of mushrooms. Parks and open spaces are thronged with ladies and men dressed in charming summer costumes; while the lower class, has subsided mostly into grey as light as air. The Water Carnival at Henley, too—that of the snapshotter—reached its zenith in the most beautiful weather. The festive array of house-boats and barges on the course, the panorama of ever-shifting small boats and one types of faces, the whole of the scene, with its charming natural setting made it a year a picture hard to beat. The Meteorological Office wisely will not pledge its word for more than four hours, but we understand that at the Victoria Establishment there was a unanimous feeling at the end of the week that the weather was at last going to credit. It has had so many disappointments during the few years, that a spell of orthodox summer weather is gratefully and comforting to a deserving body of servants, whose efforts are sometimes derided. And the really keen user of the camera, who rides his bicycle under all conditions, will conclude that cooler days and their compensation when the time comes to retire to the stuffy recesses of the dark-room, with the temperate something—a state of things calling for the application of ice, alum, formalin, and much good. Whether all these are possessed by every enthusiastic amateur photographer and the professional with a desire to fill to time is a question we prefer to leave individual.

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Sir William Crookes has been making a series of interesting experiments on the behaviour of diamonds when subjected to the action of radium. More than twenty-five years ago it was found that these gems, when exposed to the impact of matter in a high vacuum, exhibited phosphorescent of different hues, and eventually were, under bombardment, blackened on the surface. This was quite superficial, and was presumably due to the formation of graphite. It could be removed by the action of diamond dust, as in the operation of polishing, or would disappear if the stone were immersed in a mixture of potassic chlorate in strong nitric acid, as the β rays of radium have the same power as the cathode stream in a radiant-matter tube, Sir William thought that it would be interesting to ascertain whether they would bring about a similar change in the diamond. So he selected two small stones for experiment, one of a yellow tinge, or, as a jeweller would say, "a fair." One of these, which we will call A, was

studiously kept out of reach of radium, but the other one, B, was submitted to its influence for seventy-eight days. At the end of this time it was found that B was not only darkened in tint, but that it had changed its colour from yellow to blue. It was now treated for ten days with the acid mixture already described, when its dull surface colour given by the radium disappeared, and it was once more bright and transparent. But it had completely lost its yellow tinge, and was now of a pale blue-green. "This alteration of colour," writes Sir William Crookes, "may be of commercial importance. If 'off-colour' stones can be lightened their value will increase, while if the prolonged action of the radium is to communicate to them a decided colour, they would be worth much more as 'fancy' stones." This discovery by one of our leading scientists will be of service in answering the oft-repeated question of the utilitarian mind with regard to radium, "Of what good is it?" And it will most surely arouse the interest both of those who own diamonds and those who deal in them. We remember once being shown two very fine gems, one being perfectly white, "of the purest water," as our grandfathers used to express it, while the other was a pale straw colour. But this slight colouration made all the difference in the value of the two stones, the white one being worth fourteen times as much as the yellow one. There must be many thousands of these off-colour diamonds scattered about among different owners, and if they can be made white by a few weeks' association with a tube of radium bromide, and an acid bath to clear them, there will be rejoicing in Hatton Garden and elsewhere. Then there is that other question of "fancy stones." It is not, perhaps, generally known that diamonds have been found of all sorts of vivid colours, bright blue, green, and red being among the number. It seems quite possible that by a more extended exposure to radium some of those colours might appear. Such coloured diamonds are not only very beautiful, but they are so rare that they fetch an enormous price. Radium is not likely to get cheaper under the stimulus of this new demand for its kind offices.

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War Pictures.

Although newspaper correspondents and artists are excluded from the zone of fire which is encircling the fortress of Port Arthur, we may reasonably assume that photographs illustrative of the great drama now being enacted in the Far East will be at some time available to the historian. The Japanese, who have shown such marvellous sagacity in adopting all kinds of scientific aids to the needs of war, not even excluding wireless telegraphy, which is hardly yet out of its swaddling clothes, are not likely to miss any opportunity of employing the camera where photographic records may be desirable. Such pictures would be of intense interest to the whole world, for they would illustrate events which are making history and altering the map of Asia. At present we have to depend upon word-paintings for our notions of what is going on, and the canvasses are necessarily small to be written within the compass of a rigidly censored telegraphic despatch. There are the illustrated newspapers, certainly, but even they have to content themselves with the portrayal of minor incidents which occur on the fringe of the battle area, or give confessedly imaginary pictures of the heat of the conflict. What we all want to see are pictures of the fortifications round about Port Arthur with the siege-guns in position ready at the supreme moment to launch their monster projectiles upon the devoted fortress, and upon the harbour which contains nearly all that remains of the Russian Navy. A comprehensive photograph of the area involved would manifestly be impossible unless the operator were up in a balloon, and even a photograph so taken

would only be a patchwork map with detached puffs of smoke of tiny dimensions for each big explosion. We are all apt to take our ideas of a siege from what our imaginations have gathered from the ruined feudal castle or the mediæval romance. But a modern attack on such a place as Port Arthur is a very different operation, for it covers many square miles of country. Do we realise this when we read that the Japanese have secured heights from which their siege guns will be able to dominate the harbour? These heights are in reality five miles away, and it is impossible for those not trained in the arts of modern warfare to realise that from such a distance a deadly fire can be concentrated on the ships in Port Arthur harbour. The Japs have among them expert photographers, as they have experts in every other branch of science and art, and we may be quite sure that all that is possible to the camera will form the subject of photography. The crude prints in colour which found their way over here from Japan during the war with China will not satisfy the needs of such a rapidly advancing country as that of the Mikado, and we may expect photography, with all its limitations, to take a forward place in illustrating events connected with the present struggle.

Black and White.

* * *

"Can the Ethiopian change his skin?" is a question which was asked many centuries ago, doubtless with an inflection of the voice which compelled an answer in the negative. But this old question seems to crop up regularly in America, where people seem to have a kind of idea that it should be answered affirmatively. Not many months ago we alluded to certain experiments which were to be tried with a view to demonstrate that a nigger child, which is white at birth, could be made to remain white if for some weeks it were kept under the influence of non-actinic light. The result of that experiment does not seem to have been published, so that we may presume that it failed, otherwise by this time we should have had that baby appearing at all the music-halls. Another sensation of a somewhat similar kind was alluded to by the New York correspondent of the *Daily Telegraph* a few days back. Silas Ward, who is a negro, is, we are told, gradually losing his dusky colour, and is becoming white. It is believed that fright has produced the transformation which, if it continues, will cause him to become completely blanched. The cause of his fright is not quite apparent. He has been arrested for stealing chickens, and was imprisoned at Long Island; but whether the chickens frightened him, or he became chicken-hearted when pursued by the myrmidons of the law, does not transpire. Whatever may be the cause, this particular Ethiopian is changing his skin as easily as the common Ethiopian serenader of the Christy Minstrel type was able to wash off his burnt cork, and it would be extremely interesting from a photographic point of view to find out the reason for the change. Fright, and excessive grief, have been known again and again to discharge the pigment from the hair, and it seems to be only a short step further to bring about a similar change with the skin. Hydrogen peroxide acts upon the hair in the same way, only it leaves the head golden instead of white. Ladies with dark complexions who have dallied with peroxide do not realise until too late how ill a dark skin looks with yellow hair. To such misguided ones the story of the New York negro will be of especial interest, for it will raise hopes in their minds that skin can be made colourless as well as hair. If any body of men are qualified to deal with a black and white problem such as this, photographers are they, and it would be to their interest to devote some of their leisure time to its study. They already know so much about carbon and other pigments, and are so familiar with various methods

of reduction and intensification, that it should not be difficult to apply to the human epidermis remedies which have been found so effectual in dealing with animal gelatin. If visitors to a studio can have their faces retouched, improved, as well as the presentment of those faces on negative film, photographers will no longer complain of lack of custom. If it be possible to turn a nigger white it should be an extremely easy matter to make a dark complexion a few shades lighter.

THE PHOTOGRAPHER AND HIS EYES.

ALMOST every trade or profession has some special disease peculiar to its votaries—the clerk has his writer's cramp, the lead manufacturer and the potter their lead-poison, the match-maker his necrosis of the jaw, the submachine-gun excavator his "caisson disease," and "dentist's palsy," "miller's itch," the "cyclist's stare," the "athlete's hump" are self-explanatory familiar terms all expressing the same idea, and, while already in photography we often hear of bichromate and metal poisoning, there seems danger of another morbid condition being associated with photographic operating—the retoucher's eye or photographer's retinitis or conjunctivitis. As bearing upon this probability we would draw attention to a note warning struck by Mr. William Sugg at the concluding meeting of the Institution of Gas Engineers recently held. Mr. Sugg spoke of the danger that threatened the sight of the modern worker by artificial light, owing to the increased power of gas-light now so common through the introduction of the incandescent burner without stop being taken to guard the eyes from the effects of the rays known to be deleterious in their action. What he wanted, he said, was that the rays from these burners should be the colour of sunlight, and not that of mercury light. Shades of rose colour or green should be employed where intense light was used. The whole matter needs careful study, was his opinion. It is scarcely necessary to state that the warning is equally applicable, indeed, more so in the case of electric lighting. The views we are expressing cannot be looked upon as alarm, will be obvious to all readers of our Correspondence Column, files of which will show by no means infrequent reference to the existence of eye troubles, and any one who observes the retouchers at work with the consoling glare of a bright light—frequently the actual incandescent light referred to in Mr. Sugg's warning—must be struck by the very present danger to the ultra-sensitive organ, sight that such exposure must bring about. Dr. Sverdrup Wells, long known as a leading ophthalmologist, in his work a "Treatise on Diseases of the Eye," states that "Retinitis is but rarely met with as an idiopathic affection, but . . . it is probable that it may be produced by prolonged exposure to extremely bright light . . . or by excessive use of the eyes, especially by strong artificial light. At first, only a hyperæmic condition of the optic nerve and retina is noticed, and then, if the employment is persisted in, retinitis may ensue." There can be little or no doubt that it is at this stage of hyperæmia of the retina that the retouchers who have written to us have experienced the first feelings of alarm, and it is at these instant steps should be taken to avoid subjecting the eye to further grave risks, until medical advice has been sought. Simple conjunctivitis, or, as Dr. Wells prefers to call it, catarrhal ophthalmia, is also liable to be produced by the same cause, as he states in another portion of his "Treatise," again using almost the identical words we have quoted above as to its causation. We earnestly desire to call our readers' attention to another source of possible danger to eyesight, one v

to be overlooked—the continual glare upon the eyes of red light of the dark-room lamp during development, it is unsuitably situated, or from which the eyes are protected. It might be thought that the light would be screened, if merely because of the fact that a perception of the finer qualities of the image is not possible if the eyes are exposed to a strong light, especially if the light is of a red colour; but we must say that of the many dark-rooms we have entered such screening is a very rare exception. We commend to our readers the method adopted by Mr. Ives in the dark-room he occupied when stationed in London some years ago. That photographer, most fertile in practical expedients of almost any kind, we have met, had a strong red light placed immediately in front of him, but he was wise enough to prevent its direct rays entering his eyes, and this he effected in a way as simple as it was efficient. He will, we are sure, forgive us for betraying the secrets of his dark-room. Between the eyes and the light he had a slight screen fixed by hinges to the wall, and capable of being lowered, or raised, almost to a perpendicular position if required, so as to enable him to uncover the light when it was desired to look through his negative by its direct aid, and to hide it again when not directly needed. We may add further detail—though unconnected with the subject we are dealing with—the under side of this screen was painted of a bright colour, so as to throw down upon the plate in its developer a soft and even illumination. Prevention is better than cure, we are apophthegmatically told. This is prevention in one direction; in the other, retouching is a plan adopted by one of the very earliest retouchers who was at work over a quarter of a century ago contains some of the most desirable precautions. He used a lamp as his source of illumination, and concentrated the rays by passing them through a globular water-bottle, in which, and here lies the point, was faintly dissolved water by washing out into it a sable pencil that had been used across the cake of indigo in his colour-box. With the facilities which modern photography offers a less cumbersome substitute would be found by dyeing a waste dry-plate (from which the image had been removed) to any tint that was suitable, and this we are inclined to think might have been chosen green, rather than blue. A penny tin of Judson's dye of the desired tint could be had at any druggist's or chemist's shop.

To cure, our advice to anyone intending to "doctor" himself is that of Punch's—"Don't!" Above all things, eyes should not be tampered with when they give warning of trouble; a medical man should be seen. When, however, nothing more is experienced than a temporary inconvenience, an innocent collyrium may be made by dissolving boric acid in water in the proportion of about four grains to the ounce, and applying it with a soft rag or sponge, or, what is far better, an eye-cup. Our own method is to make it double this strength and dilute with hot water just before use, to make it quite over "milk-warm." It is then most pleasant in application.

THE tribute to literature and its power of "taking you out of yourself"—where we all want to be—is paid by a "Librarian" in the "Book Monthly." He writes: "Every sort of article is found turned circulating library books—photographs, hairpins, powder, love letters, bills, bits of lace; in fact, anything that will serve as a book-marker, from a slice of bread and jam to a five-pound note." It would like to know the name of the novel that so fascinated a reader that it was worth a fiver not to miss a word.

A NEW PRINCIPLE OF PHOTOGRAPHIC LENS CONSTRUCTION.

[A paper read before the Royal Photographic Society.]

IN bringing before your notice the new invention by Dr. Steinheil of Munich in photographic lens construction I do not propose to-night to describe the qualities of the new unifocal lens which may be more suitably studied in our commercial publications, but I shall endeavour to set forth what appears to be one of the most original steps in lens construction that has been seen for many years.

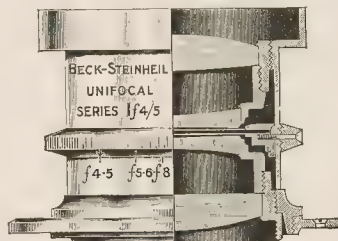


Fig. 1.

To begin at the end, as it were, I will mention that this new lens consists of two convex positive and two concave negative lenses which are all four of the same focal length and which are all four made of glass with the same mean refractive index. It is, in fact, this feature which suggested the name Unifocal for the lens. Such a combination does not look at first sight very hopeful, and would appear to give but slender chances of producing a corrected lens at all. The two convex might be expected to neutralise the two concave lenses of equal power and the correction of spherical aberration with glass of the same mean refractive index would appear to be impossible. But, leaving this problem, let us first examine the means by which the colour correction of a lens of the usual type is accomplished, and, in order to somewhat simplify the problem, let us consider the case of a telescope object glass. With this form of lens, which consists usually of a convex positive lens in contact with a concave negative lens, the colour correction, or, more technically, the correction for chromatic aberration, determines the focal lengths that the two component lenses must have. That is to say, the positive and negative lenses must be in a definite ratio according to the dispersion of the glasses employed.

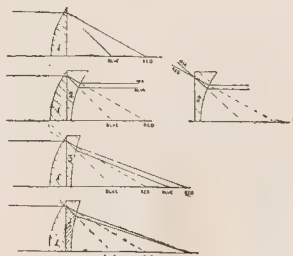


Fig. 2.

To illustrate this point the first lantern slide shows a plain convex positive lens marked I. with a ray of parallel white light entering from the left. The lens bends this ray of light upon emergence, but, owing to the well-known property of glass which is called dispersion, it acts differently upon the different-coloured portions of light which, when combined, go to form a ray of white light. A lens or prism of glass will bend blue light more than green, green more than orange, orange more than yellow, and yellow more than red. For sim-

plicity the lantern slide shows only the red and blue light, but it will be evident that if the blue light is bent most, it will come to a focus on the axis at a point nearer to the lens than the red. The diagram therefore illustrates these two positions, and if a bundle of parallel light entered an uncorrected lens, it will not for this reason form a sharp focus on the axis at any one point.

On the same lantern slide is a figure of a concave lens marked No. 2 of the same power and made of the same glass, and in this a small bundle of white parallel light is supposed to be entering from the right; this lens splits it again up into its component colours, the blue being again more bent than the red and emerging from a virtual focus nearer to the lens than that of the red. Indeed, the positions of these foci are exactly the same as those of the convex lens, because we have assumed that the lens is of the same power and the same glass.

If now we close these lenses up together it will be noticed that the negative lens exactly neutralises the colour errors of the convex lens, and the light emerges as white light. The blue light emitted by the convex lens proceeds along the exact course that is necessary in order that it should emerge from the negative lens in a parallel direction, and the red light does the same. But the colour error being thus neutralised is accomplished at the expense of the whole lens being neutralised, and the combination is useless, the light passing through it without being bent or focussed. If we use a negative lens marked No. 3 that is not as powerful as the positive we shall then find that the convex lens is only partially neutralised, and we still have the light refracted. But we shall also find that the chromatic aberration is only partially neutralised, and in fact such a combination is no better than if we had taken a less powerful uncorrected convex lens.

If, however, we use a glass for our negative lens marked No. 4, which has a greater dispersion, that is to say, that has a greater power of separating the colours, we can neutralise the error of the convex lens without entirely neutralising its refractive or bending power. Let us suppose that a negative lens is made of such a glass and of such a power that it bends the red light to the same extent as before, but bends the blue light more. With a suitable selection we could arrange that it bent it to such an extent that, although it is not so powerful a lens as the convex, it exactly neutralises the colour error. If the glass of which the negative concave lens is made displaces the colours twice as much as that of the convex positive lens, or indeed has double its dispersion, then it need only be half as powerful a lens to correct the chromatic aberration, and the result of such a combined pair of lenses is to produce an achromatic lens half as powerful as the original uncorrected lens. This is the principle upon which the telescope object glass and most forms of photographic lenses are made. The individual lenses are in the ratio of the relative dispersions of the glasses employed. Now as there are many kinds of glass available, and therefore many different dispersions, it might be supposed that there is a considerable choice of focal lengths for the individual convex and concave lenses in order to produce the particular complete lens required. To take a simple case, suppose we require to produce a 10 in. achromatic lens, by means of a positive and a negative lens cemented together, it can be made with a plus 1 in. and a minus 1.9 in. lens cemented together, provided the two glasses save the difference in dispersion of 1 to 1.9, or it can be made with a combination of a plus $4\frac{1}{2}$ in. lens, with a minus 7 in. lens, another pair of glasses being selected which possess this greater difference in dispersion. So that one might take a pair of extremely powerful lenses or a pair of comparatively weak ones, and yet obtain the required 10 in. achromatic lens. If this be so, it will be readily seen that the less powerful lenses are the better, because the curves are less deep. Spherical aberration and many of the other

errors of a photographic lens increase very rapidly as the curve become deeper, and, although such errors can be corrected, is with difficulty, and prevention is better than cure. Absence of body is always better in a railway accident than presence of mind, so it is better to use the lower power components, make the achromatic 10 in. lens, rather than the powerful ones, and in a telescope objective this is generally done.

But, unfortunately, in photographic lens construction another factor comes into play, although the component lenses require to be of certain special focal lengths to produce achromatism, they require also to be of certain focal lengths to give a flat field free from astigmatism, so that there are two considerations that bear upon the focal power of the lens employed. They have also to fulfil a formula which is called the Petzval condition which says that—

$$\sum \frac{1}{\mu F} = 0$$

or expressed for two lenses $\frac{1}{\mu_1 F_1} + \frac{1}{\mu_2 F_2} = 0$

or written differently

$$\frac{F_1}{F_2} = -\frac{\mu_1}{\mu_2}$$

This means that the component positive lenses of a photographic lens must have a focal length that is in a ratio to that of the component negative lenses equal to the refractive indices of the glasses used. That is to say, in the 10 in. lens previously mentioned, not only must the focal lengths be in the proportion of the dispersion, but also in that of the refractive indices of the glasses employed. Now, although there exists great difference of dispersions in glass, there is not much variation in refraction, and the greatest difference in this respect in glass that is otherwise suitable is between about 30 and 33. Therefore the focal lengths of the positive and negative lenses must be in about the ratio of 30 to 33. If this is worked out by the ordinary formula for obtaining the resultant focal length of a number of lenses close together, it will be found that to produce a lens of 10 in. focus, the positive lenses must have a focal length of only three-quarters of an inch, and the negative lenses only slightly more.

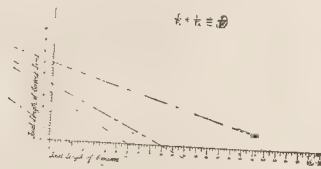


Fig. 3.

To render this point more clear, I have prepared a mechanical slide. The formula which tells us what are the focal lengths of two lenses in contact which will give us a particular focus resultant lens is $\frac{1}{F} = \frac{1}{F_1} + \frac{1}{F_2}$, and the answer to this equation can be obtained by a diagram.

If we divide off a vertical line in inches and a horizontal line in inches, and swing across these divisions a line which revolves on a centre which has been correctly placed, the position where this line cuts the vertical divisions gives the focal lengths of the positive lens, and where it cuts the horizontal divisions gives the focal length of the negative lens.

The lantern slide is designed for producing a complete lens of 10 in. focus, and it will be seen that it can be constructed out of a positive of 7 in. focus and a negative of $22\frac{1}{2}$ in. focus, or out of many other combinations. But suppose that the positive and negative lenses have to be in a particular ratio, say, one must be twice the other, then the focus that the two component lenses must be is at once fixed. There is only one position of the swing line where this exact ratio is found, and

are the foci of the lenses and no other. You will also see if the difference between the foci of the positive and negative lenses is great, the focal lengths are comparatively long. The ratio is 2 to 1, the positive lens used for making a camera lens 10 in. lens can be as much as 5 in., but on the other hand, if the two lenses have to be more nearly similar, if the positive and negative focal lengths must be very similar they must both be enormously powerful short focus lenses.

You have just seen then that for the satisfying of the Petzval condition which is necessary to produce an Anastigmat lens of positive and negative component elements must be very nearly the same in power, a variation of about 30 to 33 being required to satisfy the Petzval condition, and this can only be done by having both the lenses very powerful. It will be seen at once how greatly this complicates the problem of making the corrections. The modern Anastigmat has been constructed in most cases by the combination of a series of extremely high power positive and negative lenses, each individual lens having large errors of a positive and negative nature. This has involved deep curves and a large number of elements to obtain the required perfection.

There are six chief errors to be corrected in a photographic lens: (1) chromatic aberration, (2) spherical (central) aberration, (3) astigmatism, (4) curvature of field, (5) coma, (6) distortion, to combine all these corrections simultaneously in one lens is unusually difficult. The usual methods of effecting corrections have been No. 1, chromatic aberration, by the choice of lengths of the component lenses according to the dispersion of the glass, Nos. 3 and 4 by the focal lengths of the component lenses according to the refractive index of the glass. Nos. 3 and 4, however, are also dependent on the actual shapes of the lenses. Nos. 2 and 5, spherical aberration and coma, must be made by altering the shapes of the lenses without altering their focal lengths, and combinations that can be devised to simultaneously make the whole corrections are consequently difficult to obtain. These remarks are necessary to point out the astonishing advance which has been achieved by Dr. Steinheil, who, by one stroke, has swept away from the problem the Petzval condition. He has invented a method of making all the foci of the component lenses the same and mean refractive index of the glasses of which the component lenses are made, also same. So that, whatever the foci of the component lenses whatever the refractive index used, the Petzval condition

$$\sum \frac{1}{\mu F} = 0$$

is satisfied.

As soon as this exasperating restriction has been withdrawn, anastigmats have to be made of unusually high power lenses, the positive being balanced against the negative, the refractive index to be used is extended. It is no longer necessary to introduce large spherical aberration and errors which must be corrected; they can all be reduced to a much lower grade before the correction is attempted. It is, however, objected that to compound a lens of a positive and a negative of the same power may remove the Petzval condition of astigmatism, but it will also remove all refracting power, and render the combination useless as a lens.

You have just stated that such would be the case, and to avoid complication I have not mentioned that if we take a positive lens of 1 in. focus and a negative (minus) lens of 1 in. focus, they only neutralise each other if placed close together. I have prepared a lantern slide which shows a negative lens and a ray of light entering from the left in a direction towards the virtual focus of the lens, and in consequence the light, when it has passed through, emerges in a direction parallel to the axis, but the slide is so constructed that if the direction of the entering ray of light is altered, the direction of the

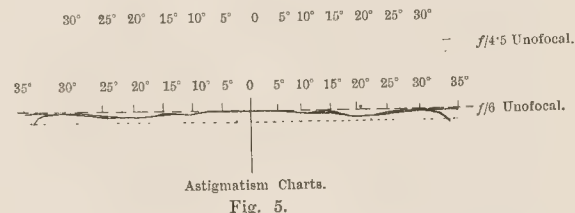
emerged ray will be altered also in the same way as it actually happens in optics. Thus, this lantern slide shows the positions of any pair of conjugate foci of a negative lens mechanically, and forms rather a simple means of showing what happens in actual practice. As one focus gradually approaches the lens, the other follows it, but at a very different speed.



Fig. 4.

I will now introduce a convex lens of the same focus as the concave, showing a parallel ray of light being brought to a focus on the axis. If the convex lens be placed in contact with the negative, the exact neutralisation of the pair is shown, the light that leaves the convex lens being sent out parallel again by the concave, but suppose I separate the two lenses a little I can ascertain by the mechanical contrivance of the slide where the ray being emitted by the convex lens will be focussed to, and we find that the neutralisation no longer takes place. The combined lens is now a fairly powerful lens, focussing parallel light down to a point on the axis not far from the lens. Thus, if the negative lens be gradually moved away from the positive, it has less power as a lens and will act as if it were no longer focus, so that by making the separation between the component positive and negative lenses to the required amount, the chromatic aberration can be corrected exactly as if the negative lens had the required difference in focal length. The complete combination, instead of being a neutral non-magnifying lens, as would be the case if the component lenses were close together, has a positive focus. The rest of the corrections are made by the shapes and focal lengths of the individual lenses, without, however, being hampered by the restriction imposed by the necessity of carrying out the Petzval condition in the ordinary manner. The lenses are made very thin with very flat curves, and consequently do not give rise to the reflexions which produce flare and reduce so largely the quantity of light that enters the lens. With a Unofocal lens having an aperture of F.4.5 most perfect photographs can be taken with small stops, and, astonishing as it may appear, the F.4.5 Unofocal lens may be used stopped down as a perfect wide-angle lens.

The exasperating restriction that the Petzval condition introduces in the manufacture of anastigmat lenses has hitherto required that some compromises must be made. All the defects cannot be corrected with the same amount of perfection, but, this restriction being removed, it has been possible to produce a lens of F.4.5 with telescopic central definition, perfect freedom from distortion and flare and a 60 degree flat field, of which this lantern slide shows the astigmatism. The chart is measured from an actual lens.



Astigmatism Charts.

Fig. 5.

A somewhat curious but very useful advantage that is gained by the use of a lens of this Unofocal type is the greater equality of illumination over the whole plate which it possesses. The diagram shows two lenses, in the upper one of which the two

concave lenses are cemented to the convex, and in the lower one they are placed at some distance from them. It will be noticed that, owing to the coming down of the light in the lower diagram by the convex lens, before it reaches the concave, a much larger proportion of an oblique pencil of light gets through. The diagram is somewhat exaggerated, but not so much as might be generally supposed. The methods by which all the other various corrections of the Unofocal lens are accomplished are worked out by calculation and could not

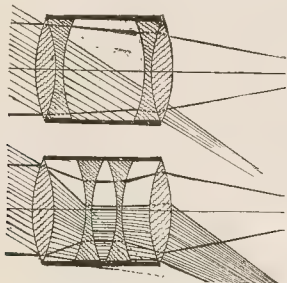


Fig. 6.

well form the subject of a paper, but the principle of removing the Petzval condition from the calculations in this ingenious manner has appeared to me of sufficient interest even to those who are not frequently calculating lenses to warrant my bringing the matter before your notice. The use of separated lenses is of course not new, but the same trouble of complying with the Petzval condition occurs, and it is only Dr. Steinheil's invention of using equal foci and equal refraction index glass that has solved this problem.

CONRAD BECK.

SAFEGUARDING THE LENS.

By the AMATEUR OPTICIAN.

THE extent to which a photographic lens may deteriorate by the action of light has been a matter of conjecture and experiment, rather in years gone by than recently. It seems to be a fact that lenses—photographic combinations—say of the rapid series, may, it appears, by the discoloration of the glass, become distinctly inferior. The previous generations no doubt felt this matter somewhat acutely at times; the optical portion of the outfit was, on the whole, much more costly than at present, the rapidity of his wet plates depended considerably if not altogether upon the skill and experience of the individual; therefore it is easily understood that when a lens by some cause degenerated in rapidity, to say nothing about any loss in definition which would no doubt be associated with the decrease in speed, the owner thereof would be severely handicapped at the least, and most probably be very much out of pocket.

The late Mr. Traill Taylor may be quoted to the effect that "the great cause of lenses becoming slower is not the balsam used in cementing their elementary parts together, but the discoloration of the glass itself by the action of light." The subject was brought before the British Association (Brighton meeting, 1872) and some samples of fine quality glass shown "which from being quite colourless had assumed a very sensible degree of deterioration on being exposed to strong sunlight under a mask for a brief period. It was felt that this deterioration, although of perhaps primary importance in such a case as the glass roofing of a studio, which was constantly exposed to light, would also effect photographic lenses in which a degree of discoloration far less in amount would produce a greater effect in the prolongation of the exposure." The author continues "To ascertain whether optical glass would follow the role of window and plate glass, we wrapped a piece of tin-foil round a lens in such a manner as to allow one half to be exposed and this we placed

where it could receive the beams of a September sun for a protracted period. Upon being afterwards examined by laying on a sheet of white paper, the exposed half caused the eye to assume a decided hue of a character resembling yellow or a purplish tinge."

We have been induced to remark upon the subject by reason of the regrettable practice adopted by many dealers in photographic apparatus of exposing cameras and lenses in windows, often in a very strong light, with the lenses uncovered. The length of time in strong daylight to which of these optical combinations have been exposed before being put to rest, meeting with a resting place in the pocket of the purchaser, is a matter of pure conjecture; it may be weeks or months. Judging by the condition of a window we pass almost daily, the period of exposure is very considerable. As it is clear that prolonged exposure to light will in some cases lead to the discoloration of the glass objectives, faint it may be, but sufficient to necessitate a longer exposure in the camera, or—for we are better off than formerly—the use of a quicker plate, it is equally clear that the careful treatment of a lens should not begin with the purchaser and operator. We have been taught to treat lenses, some of them costly, and all of value in their respective departments, with care and discretion. A cap for the front sometimes for the back of the lens—which is a good practice—or a neat light-proof case, has been the rule in all well regulated practice, for many years, the precaution being based upon grounds, not only the perfect cleanliness of the instrument, but the protection of the glass against unnecessary strong light. The practice we have referred to is objectionable, unreasonable, is not the design of the makers nor fair to the person who ultimately has to use the apparatus.

PHOTOGRAPHY AS A PROFESSION IN THE UNITED STATES.

THIRD ARTICLE. CERTIFICATES.

These shall consist of employer, all-round workman, operator, retoucher, and printer, each good for one year only from date of issue. There shall be three grades in each—ordinary, honours, and extra honour. The ordinary certificate shall be granted to possession of ordinary technical skill, the honours certificate to knowledge of theoretical principles chiefly.

Those who on December 31, 1904, have been for at least five years engaged in photographic work will be granted ordinary certificates on submitting proof to the board of examiners that they possess fair technical skill in the branch or branches of the art they profess. For further particulars consult special paragraphs.

EMPLOYER CERTIFICATES.

Ordinary certificates.—These will be granted to all photographers in business on December 31, 1904, who can prove to the satisfaction of the examining board that a fair grade of work is being made in their place of business.

Any one starting in business as a photographer after December 31, 1904, will be granted an employer certificate without examination if he already hold an all-round workman certificate, the grade of the new certificate to be the same as he previously held. Should he not hold an all-round workman certificate before he can secure an employer certificate he must qualify by examination in the department or departments in which he is deficient, according to the rules regulating such departments.

Honour and extra certificates.—These will be granted to all photographers in business on January 1, 1905, who qualify by examination in the corresponding grades as operator, retoucher, and printer, and to those who start in business after that date.

no already hold corresponding certificates as all-round workmen, or who afterwards gain it by examination. These certificates may also be granted to holders of the ordinary certificate to gain some very distinctive reputation from a non-professional on account of pictorial excellence.

ALL-ROUND WORKMAN'S CERTIFICATE.

All-round certificates will be granted to those who have qualified in the three departments as operator, retoucher, and printer. Each certificate will state the grade attained in each.

OPERATOR CERTIFICATES.

Ordinary certificate.—This grade of certificate will be granted to anyone who has had at least two years' experience as an employee, on proving to the satisfaction of the examining board that he or she can make the following portraits: Child under seven, full length and bust figures of young man and young woman, family group of not more than five people, mother and child, old man and old woman. The candidate must be able to expose and develop correctly, the negatives to be such as will give good gradation when printed on mat surface paper. He or she must also be able to intensify and reduce negatives.

Honour Certificate.—In addition to the above the candidate must know the chemistry of photography as found in the constitution of a photographic plate, the action of light and developing salts on the same, also the chemistry of the various intensification and reduction processes. Optics.—He or she must be able to draw a figure in line either from life or model, and be familiar with the theory of portrait lighting.

Extra Honour Certificate.—In addition to the above the candidate must possess a good knowledge of the theory of composition and values.

RETOUCHER CERTIFICATES.

Ordinary Certificate.—This grade of certificate will be granted to any one who has had at least two years' experience as an employee, on proving to the satisfaction of the examining board that he or she can retouch equal to the standard required in a good studio.

Honour Certificate.—In addition to the above the candidate must be able to etch on the film, and to make a shaded drawing of a plaster cast of the human head, special attention being given to the principal lines and muscles.

Extra Honour Certificate.—In addition to the above the candidate must be able to name the muscles and bones of the human head, and to make a shaded drawing of the head and bust of a plaster cast, special attention being given to the lines and muscles.

PRINTER CERTIFICATES.

Ordinary Certificate.—This grade of certificate will be granted to any one who has had at least two years' experience as an employee on proving to the satisfaction of the examining board that he or she is able to work both glossy and mat printing-out-papers, glossy and mat printing-in-papers—such as Velox—the brands to be worked being selected by the candidate. He or she must be able to mount prints neatly on any standard mount on the market.

Honour Certificate.—In addition to the above the candidate must be able to make platinum prints—brand to be selected by the candidate; be able to subdue contrasty effects by local printing or otherwise, and to show a knowledge of the chemistry of photography as applicable to silver and platinum printing, and be able to test both silver and platinum prints as to whether they have been sufficiently fixed or washed.

Extra Honour Certificate.—In addition to the above to be able to sensitise carbon tissue, print and develop it, and to be able to explain the chemistry of the process.

APPRENTICES.

Any person entering the profession of photography after December 31, 1904, in order to be eligible for certificates must fulfil the following conditions:—

1. He or she must be sixteen years of age, have attended at

least two years at a high school, and must be able to make direct from the object a satisfactory outline drawing of an ordinary table, chair, or couch.

2. He or she must show a service of at least two whole years—unemployed time shall not be counted—with certificated photographer or photographers. Apprenticeship will be considered as commencing with the date when the preliminary drawing examination was successfully passed and proof of age and school career has been admitted. At the end of the apprenticeship period the various employees' certificates may be attempted at any duly appointed examination and in any order.

Students of any college of photography who have attended a course of at least two years length will be considered as having served the regular apprenticeship, provided they pass the preliminary drawing test not later than the date of attempting their first examination.

METHOD OF GRANTING CERTIFICATES

To those now engaged in photography as a business or occupation.

1. Those owning or renting a studio must send in to the examining board twelve cabinet prints of the following subjects: Two baby pictures, one family group, one group of young people, one bridal couple, one full length and one bust portrait of young woman, one full length and one bust portrait of young lady, one old man, one old woman, and one outdoor group. All labour expended in the production of these prints must be done by the regular studio staff. An examination fee of \$1 must accompany the application. If applicant satisfy the examination board he will be notified to that effect, and certificate will be granted on receipt of the membership fee of \$5. Should the applicant fail to qualify he will be notified of the fact, and suggestions given him as to how he can bring his work up to the standard. He may again make application for a certificate whenever he feels he has attained the necessary skill.

2. Employees must make application to the examining board stating whether it be for an all-round workman, operator, retoucher, or printer certificate, and in their application must give the name and address of their employers for at least two years prior to the date of application. One dollar fee must accompany the application. The examining board will at once communicate with the previous employers to learn the estimation in which the applicant is held as a workman, and from the replies determine whether he is eligible for a certificate or not. In case any applicant who has been refused a certificate feels he has not been fairly treated he may appeal to the board for an examination, and it shall be the duty of the board to arrange reasonable opportunity for the applicant to take such examination within six weeks of the date of his appeal.

When the examining board has decided that the applicant has qualified for the certificate, he or she shall be notified, and the certificate will be granted on payment of \$1.

In case of a certificate being refused, the board may suggest to the candidate such line of study as would help him, and he may apply for future examination as soon as he thinks himself qualified.

PROFESSIONAL Photographers' Association.—A meeting of the Liverpool branch was held on June 24th, with Mr. G. Watmough Webster in the chair. The discussion on the question of photographers' prices was resumed, and it was decided, on the motion of Mr. Mowll, seconded by Mr. Warrington, "That all photographers in Liverpool and district be invited at a later date to attend a meeting, under the auspices of the Liverpool branch of the P.P.A., at the Alexandra Hotel, with a view to ventilating opinion in reference to photographers' prices." It was hoped that local photographers would have the interests of their profession sufficiently at heart to make the meeting a representative one, and one likely to lead to results beneficial to all.

THE INFLUENCE OF THE CHARACTER OF DEVELOPERS ON THE SIZE OF GRAIN OF REDUCED SILVER.

FOLLOWING many works (*) on the subject, it has up to the present been generally admitted that the size of the grain of reduced silver in gelatino-bromide plates is uniform whatever be the developer used.

Abney (†) has, moreover, found that the size of grain of reduced silver in an over-exposed plate is finer than in the case of the same plate normally exposed, and also that additions of alkaline bromide apparently increase the size of the grain.

Having obtained with some less energetic developers very transparent images of a colour differing greatly from the ordinary, we thought that there may be a relation between the size of the grain and the colour of the deposit.

In order to verify this idea we compared for size of grain silver reduced by the principal known developers not only normally composed, but also by experimenting with the same developer in different degrees of dilution, in different duration of action, at different temperatures, and in different degrees of alkalinity. We also investigated the modifications determining variations in exposure as well as the results of decreased or increased development.

A.—INFLUENCE OF THE CHARACTER OF DEVELOPER.

Developing solutions were prepared of normal composition, as usually employed, and with the following developing substances:—Hydroquinone, pyrogalllic acid, dianol, metol-hydroquinone, quinomet, eikonogen, glycin, paranol, ortol, edinol, adurol, hydramine, pyrocatechin.

In addition to the preceding developers, which comprise nearly all the developers ordinarily employed, we have tried others which are seldom used owing to their weak developing power. These latter appeared particularly interesting from the fact that the reduced silver gave them images of special colours.

Examples of these weaker developers are paraphenylenediamine and orthoamidophenol, used with sulphite of soda alone. These developers give by reduction an image of great transparency and of a brownish colour by transmitted light, and grey by reflected light, much akin to that obtained by the development of collodion emulsions. We give the composition of the various developers employed.

No. 1.		No. 2.	
Hydroquinone ...	10 gr.	(a) Hydroquinone ...	10 gr.
Anhydrous Soda Sulphite ...	40 gr.	Anhydrous Soda Sulphite ...	30 gr.
Anhydrous Carbonate of Soda ...	55 gr.	Water ...	500 c.c.
Water ...	1,000 c.c.	(b) Tribasic Sodium Phosphate ...	80 gr.
		Warm water ...	500 c.c.
		Use 50 c.c. sol. a, 50 c.c. sol. b.	

Pyrogalllic Acid.		No. 3.	
(a) Water ...	500 c.c.	(a) Water ...	1,000 c.c.
Anhydr. sulpte. ...	50 gr.	Sulphite ...	100 gr.
Pyro Acid ...	14 gr.	Pyro Acid ...	40 gr.
(b) Water ...	500 c.c.	(h) Acetone ...	50 c.c.
Soda carbonate ...	50 c.c.	Use 75 c.c. water : 25 c.c. sol. (a) ; 10 c.c. acetone.	
Use 50 c.c. sol. (a) ; 50 c.c. sol. (b).			

Eikonogen.		Metol.	
Anhydrous Sulphite ...	30 gr.	(a) Water ...	1,000 c.c.
Carbonate of Potash ...	30 gr.	Anhydrous Sulphite ...	50 gr.
Eikonogen ...	35 gr.	Metol ...	10 gr.
Water ...	1,000 c.c.	(b) Water ...	1,000 c.c.
		Anhydr. Carb. Soda ...	10 gr.
		Use 50 c.c. sol. (a) ; 25 c.c. sol. (b).	

Metol Hydroquinone.		Paranol.	
(a) Distilled water ...	400 c.c.	Water ...	1,000 c.c.
Metol ...	2 gr.	Anhydrous Sulphite ...	75 gr.
Anhydrous Sulphite ...	20 gr.	Caustic Lithia ...	5 gr.
Hydroquinone ...	25 gr.	Paranol (free base) ...	10 gr.
(b) Distilled water ...	400 c.c.		
Carbonate of Potash ...	40 gr.		
Use 50 c.c. (a), 50 c.c. (b).			

Hydramine.		Edinol.	
Water ...	1,000 c.c.	Edinol ...	5 gr.
Hydramine ...	5 gr.	Anhydrous Sulphite ...	20 gr.
Anhydrous Sulphite ...	15 gr.	Tribasic Sodium Phosphate ...	30 gr.
Caustic Lithia ...	3 gr.	Water ...	500 c.c.

* Eder's Jahrbuch, 1895, p. 417. Bulletin Association Belge de Photographie, 1893, No. 11.

† Eder's Jahrbuch, 1895, p. 417.

Pyrocatechin.		Glycin.	
(a) Water ...	300 c.c.	(a) Water ...	1,000 c.c.
Anhydrous Sulphite ...	20 gr.	Anhydrous Sulphite ...	10 gr.
Pyrocatechin ...	10 gr.	Glycin ...	10 gr.
(b) Water ...	500 c.c.	(b) Water ...	500 c.c.
Carbonate of Potash ...	10 gr.	Carbonate of Potash ...	100 gr.
		Use 100 c.c. (a), 25 c.c. (b).	

Adurol.		Dianol.	
Anhydrous Sulphite ...	100 gr.	Water ...	1,000 c.c.
Carbonate of Potash ...	150 gr.	Dianol ...	5 gr.
Water ...	500 c.c.	Anhydrous Sulphite ...	30 gr.
Adurol ...	...	

Quinomet.					
1.		2.		3.	
Water	... 1,000 c.c.	Water	... 1,000 c.c.	Water	... 1,000 c.c.
Sul. of Soda	... 60 gr.	Anhydr. Sul.	... 60 gr.	Anhydr. Sul.	... 60 gr.
Quinomet	... 9 gr.	Acetone	... 30 c.c.	Quinomet	... 9 gr.
		Quinomet	... 9 gr.	Caustic Lithia	... 6 gr.

Paraphenylenediamine.		Orthoamidophenol.	
Water ...	1,000 c.c.	Water ...	1,000 c.c.
Paraphenylenediamine ...	10 gr.	Orthoamidophenol ...	10 gr.
Anhydrous Sulphite ...	60 gr.	Anhydrous Sulphite ...	60 gr.

With all these solutions we developed lumiere blue lab plates of the same emulsion and consequently all of the same size grain at the start. Exactly identical exposures were made on all, and then followed development in the previously mentioned solutions, all at a temperature of 20 degrees, and in all cases until the developed images had reached a comparable density.

All the plates, after complete washing, were treated on small portion of the surface (that most opaque being chosen), containing the greatest amount of reduced silver) by a little water sufficiently hot to dissolve the gelatine. This gelatin solution, well shaken, and containing the reduced silver, was used for the preparation of material for microscopic examination. The whole of the developed plates were treated in the same manner, and the microscopic images photographed, employing in all cases the same magnification. The prints obtained were compared together, and showed the following results:—

1. The size grain of silver reduced by the different developers in general use appears the same whichever developer be employed.*

2. Developers, as paraphenylenediamine or orthoamidophenol, used with an alkaline sulphite produce reduced silver of an extremely transparent nature and of characteristic colour of which the grain is much finer than that produced by other developers.

B.—INFLUENCE OF THE DEGREE OF DILUTION OF THE DEVELOPER AND LENGTH OF ITS ACTION.

In order to observe the influence of diluted developers we selected normal hydroquinone and carbonate of soda, and also dianol. Each of these was diluted by an equal volume of water in the first test, and by ten times more water in the second. In both cases development was continued sufficiently to produce deposits of the same density.

Plates were also developed in upright baths for about an hour, using quinomet and dianol according to the following formulæ:—

Quinomet.		Dianol.	
Water ...	4 litres.	Water ...	2 litres.
Quinomet ...	5 gr.	Dianol ...	3 gr.
Anhydrous Sulphite ...	50 gr.	Anhydrous Soda Sulphite ...	9 gr.
10 per cent. Pot. Bromide ...	5 c.c.		

The plates were also developed in the same dish with a normal hydroquinone developer containing carbonate of soda, one of which had been taken from the developer and fixed directly to the image was clearly visible, and the other had been sufficiently developed to obtain a dense image. The same trials were made using normal dianol developer.

The negatives so obtained were thoroughly washed, then each treated with hot water as previously mentioned for the purpose of making preparations for microscopic examination. The results of this examination were then photographed as before.

(*) The coating of the plates developed by pyrogalllic acid being insoluble, the gelatine was melted by heat with a solution of caustic alkali, in order to obtain the preparation for the microscope.

The examination of the resulting microphotographs shows that the size of grain is practically the same in all cases, excepting the case of those slowly developed, in which the size of grain is finer than in the others.

INFLUENCE OF THE TEMPERATURE AND ALKALINITY OF THE DEVELOPER.

A series of experiments was made with two developers. Metol and hydroquinone, working with solutions kept at different temperatures—5deg., 15deg., 25deg., 35deg.—and the images produced being developed to approximately the same density.

Observations were also made at the same temperature of the influence of larger or smaller quantities of alkali, by increasing or diminishing the quantity of alkaline carbonate in a series of plates, and by adding to a normal dianol developer increasing quantities of soda bisulphate in order to increase the normal rate of development by rendering the solution more acid.

The negatives obtained in these different experiments were developed so as to obtain microscopic preparations for photographing. In no case was found any appreciable difference in the size of the grain of the reduced silver.

Experiments were also made by adding to a paraphenylene diamine developer (compounded with soda sulphite) increasing quantities of alkaline carbonate. It is noticeable that this action in increasing the speed of development tends to produce a deposit of reduced silver of similar colour to that obtained with other developers. The microscopic examination of images developed shows that the size of grain enlarges according to the increase in the quantity of alkaline carbonate until the normal strength is reached. At the same time the colour of the image becomes more and more black, and finally is comparable in colour with that produced by an ordinary developer.

An experiment was also made by suppressing the alkali in certain developers, such as paranol and hydramine, and by slow development, using only soda sulphite in addition, to ascertain whether by this means results comparable to those obtained with paraphenylene diamine or orthoamidophenol could not be obtained. No more modification, however, is found than when a normal dianol developer is acidified with soda bisulphite. The colour of the reduced silver shows no change.

INFLUENCE OF DURATION OF EXPOSURE AND THE ACTION OF ALKALINE BROMIDES.

A series of plates some under-exposed, some normally exposed, some over-exposed, in different degrees, was developed. The normal developers were employed, viz., hydroquinone with a carbonate and dianol.

The images were developed to a similar density and then developed as in the former cases to obtain microscopic preparation, which were then photographed.

Examination of the microphotographs appears to show, as indicated by Abney, that in cases of over-exposure the grain of reduced silver is slightly smaller than in the case of normal exposure.

Again, plates exposed under the same conditions were developed in two developers very sensitive to the action of alkaline bromides, viz., hydroquinone (with soda carbonate) and quinomet with soda sulphite and acetone. (*) We added to these developers increasing quantities of a 10 per-cent. solution of potassium bromide, varying from 2 to 15 c. c. per cent. of the developer. The images, when developed to similar densities, were treated as before to obtain microscopic preparations. Examination of the microscopic images given by these preparations appeared to show a slight enlargement of the grain of reduced silver when the developer contained considerable additions of alkaline bromide.

Pyrogallol acid developer was not chosen owing to the difficulty of obtaining microscopic preparations from plates so developed, the gelatine of such plates being practically insoluble.

CONCLUSIONS.

We may draw the following conclusions from the preceding experiments:—

1. The size of the grain of reduced silver deposited by normal developers as ordinarily used is practically invariable.

2. No apparent influence is shown on the size of the grain of reduced silver by temperature, concentration, or duration of development.

3. Excesses of alkali or alkaline bromide seem to produce a very slight enlargement of the grain.

4. Over-exposure appears to be a factor towards the reduction of the size of the grain of silver reduced by a developer.

5. Two developers not generally used, viz., paraphenylene diamine and orthoamidophenol, used with soda sulphite, produce a deposit like that obtained when collodion emulsions are used, and of which the grain is much finer than that produced by other developing substances. (*)

6. The colour of the deposit seems to vary in relation to the size of the grain. The finest grain corresponds to a grey violet colour like that shown on the reduced silver of collodion emulsions.

The various developers may be classed according to the increasing size of the particles of silver reduced by them, and show four types of size represented by the accompanying plates. These plates show that the first type presents many important differences to the other three, which differ but little between themselves.

First Type.—Paraphenylene diamine or orthoamidophenol used with soda sulphite only.

Second Type.—Paraphenylene diamine or Orthoamidophenol used with soda sulphite and a small quantity of alkaline carbonate.

Third Type.—Paranol used with soda sulphite only. Quinamet used with soda sulphite only or with the addition of acetone. Paraphenylene diamine used with soda sulphite and a normal quantity of soda carbonate. Normal metol, eikonogen, or other developers (formulae as above).

Fourth Type.—Normal hydroquinone-metol, hydramine, paranol, hydroquinone (formulae 1 and 2), pyrogallol acid, edinol, dianol (or with the addition of soda bisulphite), or quinomet used with caustic lithia (as in formulae above).

A. AND L. LUMIERE AND A. SEYEWETZ.

Photo Jewellery.—Messrs. Dorrett and Martin, of 60, Strand, W.C., and 16, Belle Vue Road, Upper Tooting, London, S.W., have submitted to us specimens and price lists of their productions in photo-jewellery. These little pictures which are produced in great variety of size and style, are placed in metal frames of tasteful design, and make very attractive articles of bijouterie. The needs of the professional photographer are specially catered for by Messrs. Dorrett and Martin, to whom our readers should apply for full particulars of their specialities. In an explanatory leaflet Messrs. Dorrett and Martin observe:—"The photo jewellery line is one that has assumed vast proportions in America and the Continent, and is now making gigantic progress in the Colonies; therefore it is only reasonable to suppose the same will take place in this country. The reason of this success is not far to seek, for what could be nicer, as a present or ornament, than a suitable piece of jewellery enclosing a photo, which probably is a memento of priceless and sentimental value. Jewellers are now including a far larger variety of photo jewellery in their stock than they have hitherto done, and the manufacturers also are devoting much more attention to the line. Send us the photo with particulars and we do the rest."

* We have found that paraphenylene diamine and orthoamidophenol are not the only developing substances which can produce deposits showing this special feature, and made up of very fine grains of reduced silver. We have obtained similar results with most developers under certain conditions, only less perfect than those obtained by the use of paraphenylene diamine and orthoamidophenol. We are endeavouring to determine precisely and to generalise the conditions relating to the formation of these deposits, having a special appearance, hoping to throw light on the theory of these phenomena.

AMERICAN NOTES AND NEWS.

THE ROTOGRAPH CO.—The Rotograph Co. has incorporated under the New York State laws, with a capital of \$300,000. Mr. Arthur Schwartz, president of the parent company in Germany, is the president of the American company. This company expects to put out many photographic novelties in the very near future, besides pushing their well-known brands of bromide paper.

WILLIAM H. RAU, the official photographer of the World's Fair, at St. Louis, has received notification from the French Government that he had been decorated with the "Palme Académiques." With this letter he received his diploma, signed by the French Ministry of Public Instruction and Fine Arts, which authorises him to wear the title and decoration of "Officier d'Académie."

A USEFUL HINT TO GUM WORKERS.—A correspondent of the "Photo Beacon" writes:—"To make a solution of gum by the ordinary method is, to say the least of it, rather a tedious operation. The mixture of gum and water requires frequent attention in the way of stirring, and, even then, several hours elapse before solution is effected. The chemist who requires his solution clean and fresh, proceeds in the following manner, which is practically automatic, and depends on the natural law that the denser liquid falls to the bottom. He takes the gum in two or three folds of fine muslin, and of this makes a bag. This he suspends in a cylindrical measure containing water, so that the gum shall be just below the surface of the liquid, the muslin bag being tied to a glass rod or pencil laid across the mouth of the measure. Solution proceeds rapidly. The foregoing method finds additional favour in the eyes of the chemist, as no heat is required, heat, in his opinion, causing a tendency to rancidity.

MR. HOWARD DU BOIS recently gave a talk to the Photographic Society of Philadelphia entitled "A Method of Accurately Colouring Lantern Slides." His talk was illustrated by a number of coloured slides of scenes in the Canadian Rocky Mountains. In colouring slides, he said that the great trouble arose from the lack of the colour note in photography, this depriving the colourist of proper data. The different methods employed by Ives, McDonough, and others were not perfect, being too complicated for ordinary use. He thought hand-colouring was much better. In the method of colouring devised by him he used celluloid strips, coated with gelatine, stained by aniline dyes of various colours. These strips were accurately matched against the picture on the ground glass, thus enabling his artist readily to select the proper colour. The principal point was to secure the proper gradations of greens. The result, he thought, was to be criticised not from an artistic, but from an effective standpoint. The English plates, the Paget, were good for the purpose. He had found the dry plate to give much better results than the wet. The making of slides of this kind was different from the making of slides for other purposes, no contrast being necessary, as this was supplied by the colouring.

THE FLASHLIGHT FIEND.—"Has it ever occurred to you," asked a New York photographer, "that the tintype artist, as he called himself, is passing out of business? Here and there you will find him, at a resort like Coney Island or Far Rockaway, and not long ago I found one in the vicinity of Grant's Tomb. But the tintype artist of the smaller country town is a memory. You ask what has become of him? Most of them, I think, have become itinerant flashlight artists. And for real battlefield nerve they are ahead of the Japanese soldiers. They will walk into an office with their outfit and an-

nounce that they have come to take a flash of the room, before the occupants realise it the apparatus is at work, flash is made, and the chaps who do it—there are generally of them—fold up their tripod and vanish. Then occupants of the room begin to wonder what it is for. They find out within a few days. One of itinerants returns with mounted pictures, which he offers for \$1 each. Strange to say, the people who have been flashed buy the product, but I am of the opinion they often do so to keep the pictures from being exhibited elsewhere. In other words, they buy up the circulation. A book agent or canvasser gets access to your office you show the door; but one of these strolling flashlight fiends can walk in upon you, distract you from your business, fill your room with smoke, walk out, come back in a week, and sell you what he calls a picture, and you submit as quietly as a young man who comes in contact with a nursing bottle. And the funny thing about it is that this chap comes to the city to do his business. You never find him in the country town."

"SUNNING DOWN."—Ninety per cent. of the amateurs using one or the other of the popular developing papers of course using some form of artificial light for printing. This reason it may seem a little out of place to use a word to describe a process involving "sunning" of the print, reminds me of the "St. Louis and Canadian Photographer." "Sunning down" was a well-known remedy with the older workers in print-out processes, particularly during albumen days. It was resorted to in correcting the snowy effects resulting from over-developed, under-timed negative. It is even more applicable to our gas-light papers than to those involving old assistance. An amateur came to me recently with a negative he desired to improve by reducing. Such a procedure is risky, entailing as it did a possible loss of the all too small detail. As the scene contained no real high lights I advised that he simply sun it down in printing. He failed to understand. I had all the material for printing close at hand so volunteered a demonstration. A straight print was made to determine the time required and proved the need of a remedy to overcome the harshness of the result. The first sheet of paper was exposed for the correct time, removed from the printing frame, and, holding it in my hand, I turned up the light for a second or two. It was then developed, and while hardly what one might call a perfect print, was much superior to the first. Neither did it have the same flat appearance one recognises as an indication of light-struck paper. The effect was entirely different, owing to the nature of the negative. Should there be necessary high lights in a print "sunned," it is not a hard matter to clear them up with a light reducer.

NEW AMERICAN STUDIO LIGHTING.—In equipping their new photograph gallery, Rojas and Connor, of New Orleans, I have departed completely from the established idea of fitting an operating room, and have established their plant on lines absolutely new in high-class photography. They have done away with the slanting skylight, considered before as absolutely necessary to secure the best results, and have installed a perpendicular light made of hammered glass, which gives the operator a horizontal in place of a slanting light. Mr. Rojas explaining the creation of this absolutely new feature of photograph gallery to the "Photographer," explained how he was struck on the idea which he developed. A number of amateur photographs were given him to print, which had remarkably fine lights, which had been taken in a room not to a window. The established idea is that only the light coming from 45 degrees down across the face and body gives the best

ults. He gave the matter a great deal of study, and decided that he could secure better results by letting the light strike the object at 45 degrees horizontal, for he would get rid of all shadows, which are matters of such bother to the operator. He experimented, and found that by making the skylight wide enough he could accomplish the desired results, and control the light as he saw fit by means of shades and curtains. When he moves into the present building he will put in a windowing up nearly the width of the room, and have hammered glass, which distributes the light perfectly, fitted perpendicular to the floor, like a wall of glass. At either side he put in windows, which could be opened for ventilation, and could be controlled by means of green shades. Then he papered the walls in dark green, and the ceiling in a light colour. The result was that he got results which were far beyond his expectations. The same light struck the subject from head to foot. There were no muddy shadows, no shadows under the eyebrows, nose, and the like. The effect was strikingly natural. The effect in taking fine draperies, especially light colours, was far ahead of the old system. There was none of the chalky effects and deep shadows, but in their place a soft light on the most exposed parts and a half-toned shadow, which did not even lose the material pictured. By constant experiments he has found that subjects can be taken with broad hats and there are no shadows under the hat itself, for the light strikes the hat on a line parallel with the earth. The new skylight he would make easy the fine effects in large groups of figures, and would allow him to take pictures which would reproduce the interior of a room effect, the ceiling being as much in view as the floor. Formerly that was out of the question, for the light came from aloft, and cut off any such deep picture. In fact, time illustrated to him that his sea had really revolutionised all the established rules, and would time revolutionise the system of fine photography itself.

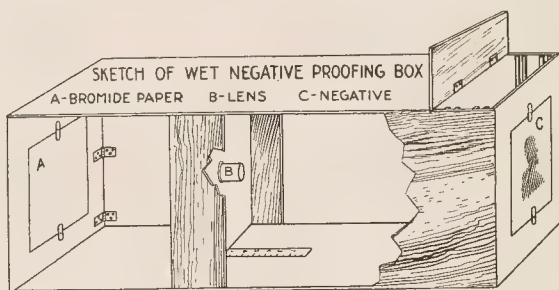
The summer number of "Country Life," of which we have just seen a copy, is undoubtedly a first-class production, containing many beautiful photographs by well-known photographers. These pictures, as samples of good half-tone, tone, and superior printing, would be probably hard to beat. The literary contributions are also of a high standard.

GENERAL Staff Outing of Houghton's Ltd. Saturday, July 2, was served as a closed day at 86 and 89, High Holborn, and 97, Hatton Garden, in order that the entire office and warehouse staffs might have the opportunity of spending an enjoyable day's relaxation from the pressure of the season's business. A full series of sports was organised by a specially selected Sports' Committee, and held at the Crown Hotel Athletic Grounds, Broxbourne, a charming spot on the banks of the River Lee. Early access from London was made in special saloons from Liverpool Street Station at 9.29 a.m., and on arrival, a cricket match was arranged Married v. Single, which remained a draw at 12 o'clock, when the principal work of the day was commenced in a well contested tug of war, which was ultimately won in a final heat by the representatives of the clerical staff. Following on this, the four heats of 100 yards' contest were run. At the 6 o'clock the all-important lunch was served to over 190 employees, presided over by Mr. G. Houghton. In a few well-chosen words, Mr. Houghton welcomed his staff, and referred to the many years a number of them had been directly associated with him, and his heartfelt remarks went home to all present. At the conclusion, he was appropriately acknowledged with loud cheers, and a response was made by Mr. Wilcox, but as this was not a day for long speech-making, it was unanimously decided to again return to the field of sport, where an excellent programme of events was carried out with enthusiasm. During tea Mr. E. W. Houghton announced that the directors desired to make the outing an annual affair. The Tudor and Ilex Works staffs had their outing independently some weeks ago.

" TAKEN, FINISHED, AND DELIVERED IN TEN MINUTES."

ABOUT two years ago I received a printed invitation from a local department store to have my picture taken there, the ad. stating that it would take but ten minutes to do the trick and deliver the finished picture—I beg pardon, I mean product. Being rather curious to see how this could be done I called upon a friend who was manager of the amateur photographic department in the store. Through his influence I was permitted to examine the "works." I found that the pictures were not tints, but actual black and white prints upon postal cards—Rotograph post-cards, as it happened. The two operators were Germans, most kind, but very secretive about their process, and I could gain no information regarding it except what I could see outside the dark room. This part of the process was simple, so far as I could see. A plate-holder was inserted in the camera, the sitter placed in a chair under a skylight, and exposure made in the usual manner, and then one of the operators would whisk the plate-holder away to the dark room, from which he would presently emerge with the finished product.

Just before these operators left town I had an opportunity to see how all this mysterious manipulation was accomplished, although I had guessed their method even before I saw it. The scheme necessitated the use of a box similar to an enlarging camera. Sketch of similar apparatus is shown herewith. The plate, which, by the way, was a $3\frac{1}{4}$ by $4\frac{1}{4}$ in a 5 by 7



camera, was taken from the plate-holder and developed, a strong, rapid-working metol-hydrochinon developer being used, rinsed, and placed in an almost saturated acid hypo solution. Fixing took but two or three minutes, and then the plate was rinsed again and swabbed off with a tuft of cotton. It was then placed in the box—wet. Before going any further it will be necessary to describe the apparatus.

The box is to be made as shown, the dimensions being about 24 in. long, 8 in. wide, and 10 in. high, inside. The negative end of the box is open, while the other end holds the sensitive paper, and is provided with a door the full size of the opening. At the negative end four cleats are nailed inside the box to form a groove, into which an 8 by 10 kit may be slipped. This kit may have an opening suiting the plate to be used. A kit can be easily made at home, if the expense be an item. Midway of the box, inside of it, a slide should be rigged up provided with a board to hold the lens used for projecting. This lens may be your camera lens, or a cheap single achromatic. A piece of celluloid may be tacked to the bottom of the box marked with numerals to aid in securing the size of picture desired upon the sensitive surface at the other end. Illumination of the negative for projection may be secured by placing the negative end of the box against an opening, which has been provided in a window-frame, or, what is more desirable, a pair of condensers mounted in a separate box, with an artificial light of some sort behind them, may be used. The latter is the method used by the two Ger-

man operators. Having placed the wet negative in the kit, a piece of 8 by 10 ground glass may be placed at the closed end of the box, the door being swung open while the image is focussed. When a sharp image is secured, of the size desired, a piece of bromide paper is inserted and the exposure made, the print developed, fixed, and rinsed. The developer and fixing solution are similar to those used for developing the plate—very strong. A hypo eliminator of some kind was used by the operators, the print again rinsed, dried quickly (with the aid of heat if necessary), trimmed, and delivered. This would apparently take some time to do, but the operators were so expert that it was all done quicker than I could explain it, and the prints were often delivered in ten or twelve minutes. To facilitate matters, the lens in the projecting box was set at a certain point, and as all plates and resulting images were alike in size, there was no need for focussing. In fact, with the negative always in the same place at the end of the box, the sensitive paper at the other extreme end and the lens exactly in the centre between the two, the image will always be sharp and the size of the picture the same—that is, natural size of image on negative. If a larger or smaller image be desired, provision must be made to move the negative as well as the lens. This could be done by mounting the kit in a slide similar to the lens slide.

How permanent these pictures were I have no means of knowing, as I have not kept those I had taken, but I should judge they were fairly permanent. The above method would be of doubtful value to the amateur unless he would care to start in this business himself, but inasmuch as the arrangement can be used to make enlargements, and also quick proofs from wet negatives, it is worth looking into. A proof can be made from a wet negative in quicker time than it takes to tell it, and the results are always better than by placing a sheet of wet bromide paper in contact with the wet negative and printing in the frame. I built one of these boxes about a year ago, and used it in connection with newspaper photography, in which I was then engaged, and I had them all beaten when it came to turning out fast work, and there was no necessity of using a plate larger than $3\frac{1}{2}$ by $4\frac{1}{2}$, whereas my rivals were obliged to use 5 by 7 cameras to secure the desired results.

BERNARD C. ROLOFF, in "Camera Craft."

LUCIO MAURICE HACKETT, late photographer, of Dale Street and Lime Street, Liverpool, appeared for his adjourned public examination at the Liverpool Bankruptcy Court before the Registrar. He admitted that his drawings recently had been at the rate of about £1,000 a year, but he explained that he had included in his drawings about £100 he had paid on account of the hired furniture. He also admitted that when pressed for money he had been obliged to sell stock below cost price. The examination was ordered to be closed.

THE Mammoth Pictorial Postcards.—The London Stereoscopic Company, of 54, Cheapside, London, E.C., have, we imagine, broken the record in the way of large-sized pictorial postcards. Admirably printed in colotype, they have submitted to us a series of 12 by 10 portraits of popular actresses, which can be sent through the post as ordinary cards. They are certainly very striking productions, and, as we have proved by experiment and observation, are immensely popular with devotees of that great modern cult, picture postcard collecting. But the company by no means confine their adaptation of the colotype process to mammoth cards. They produce cards of the ordinary size in remarkable variety, and also work the process for scrap views, facsimile reproductions, show-cards, book illustrations, trade catalogues, calendars, etc. We can recommend our readers to apply to the company for specimens in the assurance that there will be no disappointment with the quality of their very beautiful examples of photo-mechanical printing.

METHODS OF EXAMINING AND DETECTING THE COMPOSITION OF PAPER.

SINCE the introduction of various forms of gum bichrom printing the number of amateur photographers who prepare their own printing paper is increasing. Although innumerable pages of instructions have been written on the choice and use of the chemicals and pigments necessary for the purpose, selection of the most suitable samples of paper to receive sensitive film, and, subsequently the photographic image, received little or no attention.

At the present time the composition of the paper that is to be utilised for carbon or gum printing is a matter of the greatest importance, owing to the general use of paper manufactured from wood pulp. Some years ago the substance of all best class paper consisted of linen, cotton, or esparto grass; but these materials are now rapidly being superseded by pinewood, and even the more expensive papers often contain a large percentage of wood pulp.

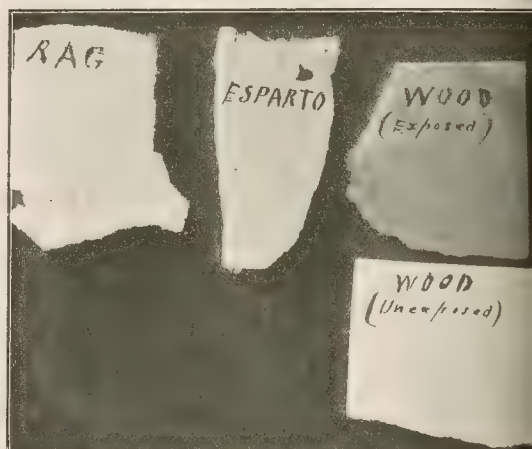


Fig. 1.—Photograph of Various Papers After Exposure to Light and Air.

Paper made from wood has the objectionable characteristic of changing to a yellowish brown tint when exposed to light and air. This discolouration may proceed slowly or rapidly according to the conditions of storage, but the change is inevitable, and is merely a question of time. It is evident that the colouring tendency of this class of paper makes it a most undesirable material for photographic purposes, and carbon workers who wish to preserve the purity of the high lights in their pictures will do well to avoid the use of wood paper for the final support of their films.

The prejudicial effect of wood paper on pictures is experienced by artists, who are often supplied with card and paper made partly or wholly of wood pulp. In consequence a careful executed wash or chalk drawing, in which the whites of the picture are, or ought to be, supplied by the surface of the card board, becomes in a few months degraded in tone, through the wood pulp paper turning a dingy yellow.

The writer has met with several examples of this discolouration in valuable drawings which had been prepared for reproduction. When the pictures were first submitted, the lights were practically pure white, but when the same pictures were sent up a few months later for reproduction, the appearance of the sketches was altogether changed. In one case the artist had painted in the whites of the picture before a satisfactory reproduction could be obtained.

When the appearance of a photograph has been marred in any manner the only way to remedy the defect is to take another negative, that is, if the photographer is fortunate enough to possess the original negative, but in many cases where the plate has been overexposed or lost, this is impossible.

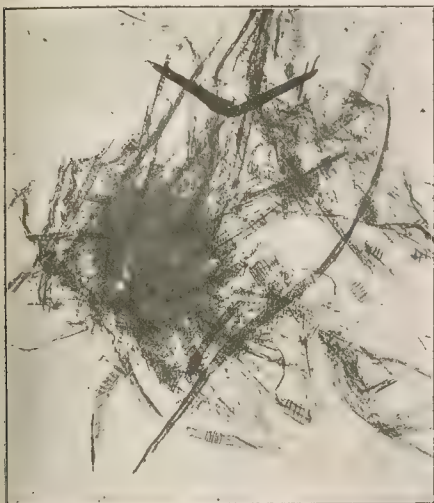


Fig. 2.—Photo-micrograph of Paper Manufactured from Wood. Stained with Phloroglucin. $\frac{3}{8}$ in. obj.

Fig. 1 gives the result of comparative tests made with various papers in order to observe the result of exposing paper made of different materials to light, air, and damp.

As will be seen in the illustration, three fragments of paper made of wood, esparto, and rag respectively were pasted on a card



Fig. 3.—Photo-micrograph of Paper made from Rags. $\frac{3}{8}$ in. obj.

and exposed in the open air for six days. Light in the absence of moisture has considerably less effect on the colour of paper, the weather being fine at the time the experiment was made, very little discoloration was observable at the end of three days. The papers were then dipped in water about twice a day

and exposed to light in a moist condition. This soon effected a change in the paper made from wood, and it rapidly began to darken. The papers were photographed after six days' exposure. The sample of rag paper was as white as when first exposed, the esparto sample had become very slightly darker in

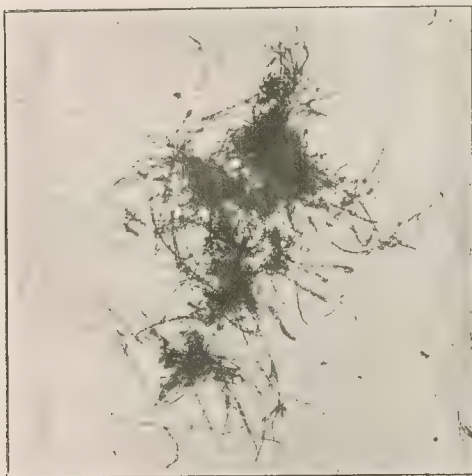


Fig. 4.—Photo-micrograph of Esparto Paper. $\frac{3}{8}$ in. obj.

tone, while the wood paper was a dingy yellow colour. For the purposes of comparison a fresh piece of the same sample was placed beneath the exposed portion of wood paper before the card was photographed for reproduction.

This experiment clearly shows the most suitable kinds of paper for photographic purposes.

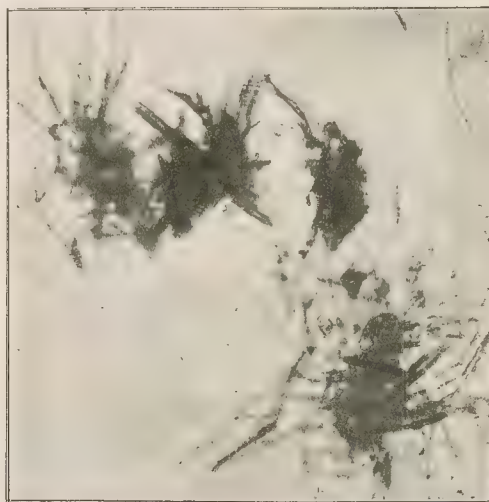


Fig. 5.—Paper composed of wood and rag fibres. Dark parts show wood stained with Phloroglucin. $\frac{3}{8}$ in. obj.

Rag paper is, of course, the best, but is also the most expensive. Paper made from esparto grass, as it is only slightly affected by light and air, is also a suitable material; but for pictures to which any value is attached, wood paper ought never to be used.

Paper often consists of a mixture of rag or esparto, with a certain amount of wood pulp; this class of paper is better than that which is manufactured solely from wood, but is at best only a partial improvement.

There are several means of detecting the presence of wood pulp in paper. Some of the methods require the use of a microscope and a certain amount of experience in working it; but there are certain specific stains which readily demonstrate to the unaided eye the existence of wood pulp when it is present in a fairly large proportion.

There is a considerable difference in the structure of wood fibres from those of linen, cotton, or esparto grass. When paper is examined under the microscope wood fibres can generally be distinguished even if they have not been stained. A low power, about $\frac{2}{3}$ in., is a convenient lens for the purpose. A typical feature of wood fibre is found in a ladder-like arrangement of fibres which is not found in rag or esparto paper. These parallel lines are plainly seen in Fig. 1. The fibres are coarse, flat, and irregular in shape. Esparto fibres are thin, elongated, and regular, somewhat resembling those of linen and cotton.

The best method of distinguishing the fibres of paper is to immerse the substance in selective stains. For wood fibres the most reliable and simplest stain is phloroglucin. The chief drawback to the use of this reagent is its high price (one ounce costs about 16s.), but only a very small quantity need be purchased. Phloroglucin used in conjunction with hydrochloric acid stains ligneous tissue a bright-red colour.

The following formula will be found convenient and reliable:—

Phloroglucin .....	.5 gramme.
Absolute alcohol	10 CCs.
Distilled water.....	40 CCs.

A small quantity of the solution is poured into a watch-glass, and a portion of the paper to be treated is placed in it for about ten or fifteen minutes. The paper is then transferred to another glass and treated with a few drops of strong hydrochloric acid.

If the paper is made from wood pulp it immediately assumes a bright red colour, while rag or esparto papers are unaffected. In making a trial of this stain, a piece of paper from one of the daily newspapers can be used, as these are all printed on paper made from pine-wood.

Hydrochloric acid is sometimes mixed with the phloroglucin solution, and the staining is finished in a single operation. The red stain is, of course, less pronounced when the paper is only partially composed of wood. There is another method of staining that can be used to identify the various fibres. This consists of chloride of zinc and iodine. The following formula can be recommended:—

Zinc chloride saturated solution	35 CCs.
Pot. iodide	5 grammes.
Iodine .....	.1 gramme.
Water	10 CCs.

Unlike phloroglucin this stain acts chiefly on linen, cotton, and esparto fibres, staining them with a violet or blue tone, merely imparting a yellowish tinge to wood paper. The rag fibres are stained almost immediately, but wood generally requires a prolonged immersion before a pronounced yellow stain is produced.

Fig. II is a reproduction of a photo-micrograph of wood paper; the irregular fibres and parallel lines are very noticeable.

Fig. III. shows a photograph of linen paper, the fibres being very different from those shown in Fig. II.

Esparto paper fibres are shown in Fig. IV.

Fig. V. is from paper composed of both wood and rag; the dark parts of the photograph show where phloroglucin has stained the wood fibres red.

There remains the question as to whether some means can not be devised to prevent the objectional discolouration of paper made from wood pulp. At present there is no method of overcoming this defect, and little or no effort is made to find a cure, though it seems well within the bounds of possibility. In a dry, dark place, wood paper will keep well, but light, air and damp soon play havoc with its colour.

J. I. Pigg, F.R.M.S.

FORTHCOMING EXHIBITIONS.

June-October.—Glasgow Photographic Exhibition. Secretary, Art Gallery and Museum, Kelvingrove, Glasgow.

July 14 to September 30.—Vienna Photographic Society. Secretary, W. Burger, Karmelitergasse 7, Vienna 11.

August 1.—Andover and District Horticultural Society. Photographic Section. Hon. Secretary, W. L. Gradidge, Jubilee House, Andover.

August 16-20.—Royal Cornwall Polytechnic Society Photographic Section. Secretary, Edward Kitto, The Observatory, Falmouth.

September 16 to November 5.—Photographic Salon, Dudley Gallery, Egyptian Hall, Piccadilly. Hon. Secretary, Reginald Craigie, Photographic Salon, 1904, Dudley Gallery, Piccadilly, London, W.

September 20-28.—Newbury Photographic Society. Hon. Secretary, E. J. Forster, Guildhall Club, Newbury.

September 22 to October 29.—Royal Photographic Society's Forty-Ninth Exhibition, New Gallery, Regent Street, London. Secretary, A. W. W. Bartlett, 66, Russell Square, London, W.C.

October 1-30.—Berlin International Photographic Exposition. M. Franz Goercke, Berlin W. 62, Maassen-Strasse 32, Germany.

October 19-22.—Rotherham Photographic Society. Hon. sec., H. C. Hemmingway, Tooker Road, Rotherham.

November, 1904.—Ilford and District Photographic Society. Hon. sec., W. N. Beal, 155, Thorold Road, Ilford.

November 3.—Frome M.I. Photographic Society. Hon. Secretary, B. J. Mitchell, 3, Willow Vale, Frome.

November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Sec., James Dunlop, Myrtlebank, Motherwell.

November 9.—Hackney Photographic Society. Hon. Secretary, Walter Selfe, 70, Paragon Road, Hackney, London, N.E.

November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.

November 22-23.—Ipswich Camera Club. Hon. Secretary, R. H. Sutton, 37, Henley Road, Ipswich.

November 23-26.—Hove Camera Club. Hon. Secretary, A. R. Sargeant, 55, The Drive, Hove.

November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., G. W. Simmers, Aberdeen House, Ramsgate.

December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.

December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104, West 101st Street, New York.

December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.

December 13-20.—Southampton Camera Club. Hon. Secretary, S. G. Kimber, Oakdene, Highfield, Southampton.

December 28-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 138, Glasgow Road, Wishaw.

January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

1905.—Northern Photographic Exhibition. Secretary, F. G. 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

September 1.—"Photographic News." Quarterly Competition. "Photographic News," 9, Cecil Court, Charing Cross Road, London.

October 1.—Thornton-Pickard. £100 cash prizes for pictures taken Thornton-Pickard cameras and shutters. Thornton-Pickard Manufacturing Co., Altrincham.

October 10.—Luna paper. £240 cash prizes for prints on Luna paper. An Allegre and Co., 59a, New Oxford Street, London, W.C.

October 15.—Belgian Association Lantern Slide Stereogram Competition. Secretary, M. Vanderkindere, 97, Avenue Brugmann, Brussels.

October 31.—Coxin. 68 prizes for users of Coxin. Judging twelve weeks. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.

November 1.—The "Graphic." £50 in cash prizes. Manager, Competition, the "Graphic," Tallis Street, Whitefriars, London, E.C.

December 31.—Barnet. Nineteen classes. Prizes valued at £500 lantern slides and prints made with Barnet products. Elliott Sons, Limited, Barnet, Herts.

March 15, 1905.—Ilford. £750 in prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

Patent News.

The following applications for patents were made between June 27 and July 2, 1904:—

Cameras.—No. 14,458. "Improvements in reflector hand cameras." Samuel Dunseith McKellen.

Cameras.—No. 14,590. "Improvements in photographic hand cameras." Alfred Sidney Spratt.

Shutters.—No. 14,683. "Improvements in roller blind shutters for photographic cameras." (Date applied for under Patents Act, 1901, 17th July, 1903, being date of application in Germany.) Complete specification. Neils Marius Knudsen.

Cameras.—No. 14,824. "Improvements in photographic cameras." Owen Linley.

Appliances.—No. 14,850. "Improvements in photographic appliances." Henry Charles Braun.

Cameras.—No. 14,854. "Improvements in photographic cameras." Charles Howell and George Lloyd Moore, trading as the Midland Camera Company.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

July	Name of Society.	Subject.
.....	South London Photo. Society...	Wet Collodion Process. Mr. W. T. Wilkinson.
.....	Bowes Pk. and District Ph. Soc.	Competition. Outing Prints.
.....	Nelson Photographic Society...	1. Self-toning Paget F.O.P. 2. Sepia Platinotype. Mr. J. Emmott.
.....	North Middlesex Photo. Soc.	Colour Filters and Isochromatic Plates. Mr. J. McIntosh.
.....	The Optical Society	Binocular Vision and the Theory of the Stereoscope. Mr. T. W. Barber, M.Inst.C.E.

News and Notes.

ISWICH Camera Club.—Through unforeseen circumstances this club has had to alter the dates of their annual exhibition, from November 15 and 16, as announced, to Tuesday and Wednesday, November 22 and 23. The schedules will be circulated shortly.

THE Brooks-Watson Daylight Camera Company, Ltd., inform us that owing to the success of the "Rajar" manufactures, they have opened showrooms and offices in London, at 119, High Holborn, W.C., corner of Southampton Row, and that their productions can now be seen there.

WE have received several of the admirably printed guide books published by the Health Resorts Development Association, of 2, Gray's Inn Road, High Holborn. These guides are well illustrated and contain a fund of information that should be of use to the photographer visiting the districts dealt with. The latest is of Bexhill, and, like the previous volumes, will be sent free on receipt of a postcard.

A SECOND edition of "Photo-Printing," by Hector Maclean, F.R.P.S., is to hand. The book, which has proved its worth in the past as a reliable guide to photographic printing methods, has, in the new edition, been revised, condensed, and considerably added to. Working instructions and many new formulae relating to the newer printing papers have also been included.

WALKER Art Gallery Curatorship.—The Liverpool City Council at a meeting last week unanimously confirmed the recommendation of the Library, Museum, and Arts Committee appointing Mr. Edward Rimbault Dibdin, Curator of the Walker Art Gallery, at a salary of £400 per annum. Mr. Dibdin is a Liverpool man, and is well known in photographic and art circles in that city.

SOUTHAMPTON Camera Club.—At a meeting of the members of this club on the 11th inst., under the presidency of Mr. G. T. Vivian, a demonstration was given by Mr. A. E. Henley on development with imogen sulphite, and its value with plates and papers was ably described. A very useful paper on "Fixation" was also read by Mr. Vials, who unfolded the merits and demerits of both the alkaline and acid baths.

ART in Whitechapel.—At the Whitechapel Art Galleries there will be on view until July 18 an exhibition of amateur and art students' work. The object of the display is that of showing to the East End what others, not themselves professional artists, are capable of doing, in the hope that it may inspire greater efforts in pictorial art. Almost all the leading sketch clubs have supported the project, sending in collective groups of their members' work.

WE regret to have to record the death of John Freeman Edward Davaston, of West Felton and Davaston, Shropshire. Mr. Davaston's pictorial work in photography about five or six years ago was well known and justly admired. His novel and unconventional views of St. Paul's, etc., some of which were published in photogravure, will be long remembered. He died at Fanley Parade, West Hampstead, at the age of 51.

THE Hull Photographic Society had a successful outing last Saturday to Ferriby and Welton. The marine subjects at the former attracted a few, whilst the tree studies and Dale at the latter seemed to be appreciated by others, from the fact that anything photographic in the shade proved more pleasant owing to the heat of the sun. There was not much serious work attempted until after tea. The next outing is to Ripon, for Fountains Abbey, July 23.

COPYRIGHT laws extend to the phonograph if a Brussels Court has rightly interpreted international jurisprudence on this subject. M. Sardou brought an action against a cinematograph concern for allowing their phonograph to repeat a part of "Madame Sans Gêne." At the same time M. Puccini asked for redress on the ground that they had played, photographically, some airs from the "Vie de Bohème." An Appeal Court has decided in favour of M. Sardou's claim. It rejected that of M. Puccini, but on the ground that the music sent out by the

phonograph was not meant for the "Vie de Bohême," but for the "Cavalleria Rusticana."

X-RAYS Again.—Already the X-rays have been utilised for a variety of purposes, and now it is stated in the "Globe" that the manufacturers of that imitation antique furniture which finds such a ready sale have pressed it into their service. Formerly the suggestion of worm-eaten age was given by boring fine holes, and now the genuine bacteria which attack wood are, it is declared, first cultivated in potatoes, and afterwards rubbed into the "antique" furniture. When they have sufficiently suggested the process of decay and it becomes desirable to kill the bacteria, they are subjected to the action of the X-rays, and death supervenes.

THE Optical Society.—The fifth annual dinner of the Optical Society will be held at the Mitre Hotel, Hampton Court, on Thursday, the 21st instant, at 6.30 p.m. By the courtesy of the Director of the National Physical Laboratory, Bushey House, Teddington, Dr. R. T. Glazebrook, M.A., F.R.S., arrangements have been made whereby members of the Society and their friends attending the dinner will have the privilege of visiting that institution in the afternoon of the day named. Application for tickets should be made without delay to the hon. secretary, W. Salt, 20, Hanover Square, London, W., who will supply all particulars.

PROPOSED New Poisons Act of South Australia.—A deputation from the Pharmaceutical Society of South Australia recently waited on the Chief Secretary of the Colony, and pointed out to him that the 1862 Poisons Act did not in any way serve the requirements of the present time. Since January, 1902, there had been thirty-two deaths through poison, ten of these being accidental, and the remaining twenty-two cases of suicide. What the deputation desired was that the Society should administer the Act, and should be empowered to impose an annual licence fee on each individual entitled to sell poisons. A Bill, which has been prepared by the Society, will probably be presented to Parliament at an early date.

AN International Industrial Exhibition will be opened at Cape Town in November, 1904, and remain open for a period of three months. The Government of the Colony intend to make a comprehensive official exhibit of local products. Photography, optical goods, and scientific instruments are specially named, and extensive exhibits have been arranged for by prominent firms of France, Germany, Austria, Holland, etc. The exhibition grounds will be constituted a "bonded store," and any duty paid on goods not sold will be refunded on their reshipment. Further particulars can be obtained on application to the Trades, Markets, and Exhibitions, Limited, Palmerston House, Old Broad Street, E.C.

SPAIN has a long leeway to make up in science, but a more fruitful hour is at hand. She has just established, for instance, the first observatory, which is to be devoted entirely to the elucidation of the connection between changes in the sun's surface and changes in the magnetic and climatic conditions of the earth. It is now pretty generally admitted that if we want to understand terrestrial weather we must study the solar weather which determines it. This piece of Spanish enterprise will, no doubt, be much appreciated by the snapshotting Don, and the Spanish equivalent for our photographic societies, who will doubtless now sally forth armed not only with cameras, but with the knowledge that the weather and sunshine are guaranteed by the Government.

THE death of the widow of the late D. O. Hill, on the 5th inst., at Edinburgh, recalls to memory her husband's contributions to photographic art. Mr. Hill in his day was secretary to the Royal Scottish Academy, and his attention was first directed to photography through the difficulties he encountered in painting his 1845 Disruption commemorative picture. This painting includes about 470 portraits of ministers, elders, and others, and the work entailed, as might be expected, was stupendous. His work, however, was greatly simplified when Mr. Hill employed photography as a medium for making his preliminary studies of the many characters depicted. The gain to photography was well shown in the fine collection of his photographic portraits exhibited at the recent Scottish Salon.

THE delightful promise of this year—let us hope it will be kept—will double the best country thing of the year, which is long grass full of flowers and sorrel, with the hay harvest that follows. For once the fields are shaven, the greatest beauty of colour and surface is gone for another twelvemonth. This happy year we hope to see it twice, and to have the hayfields, so delightful during the past fortnight, repeated in August, and although it appears to be the fashion to sneer at the everlasting haymaking scene as portrayed by the camera, the sunbonnetted damsels, in graceful attitudes, hay-rake in hand, sturdy waggons, and top-heavy haycarts, with their overflowing burden, we venture to think the fault is more to be found in the individual with the camera than with the material at hand for picture making.

THE medallion by Mr. Hamo Thornycroft, placed in the north aisle of the choir of Westminster Abbey to the memory of Sir George Stokes was unveiled on Thursday last by the Duke of Devonshire, Chancellor of Cambridge University, after a crowded meeting in the Jerusalem Chamber, where the attendance included the Dean of Westminster, who presided, Mr. Choate, the United States Ambassador, Lord Kelvin, Lord Rayleigh, Sir John Gorst, Sir James Dewar, Sir Richard Jebb, Sir William Huggins, President of the Royal Society, the Rev. Canon Duckworth, Bishop Welldon, Sir Frederick Bridge, the Rev. Canon Beeching, the Rev. Canon Henson, Professor Larmor, Professor Forsyth, the Master of Trinity College, Cambridge, and the Dean of Christ Church, Oxford. Sir William Huggins, the Rev. F. H. Chase, Vice-Chancellor of Cambridge University, Lord Rayleigh, and Lord Kelvin spoke eloquently of Sir George Stokes's position in the front rank of scientific men.

THE Magic Lantern in Church.—At the Church of St. Mary-at-Hill the service is punctuated with photographic pictures thrown on the screen. The words of the service are also projected by the lantern, and the choir sing to the accompaniment of brass and drums, with the Rev. W. Carlisle leading "the chorus" from the pulpit, and blowing such notes as are within reach of his cornet-à-piston. All the time the succession of pictures and printed words is proceeding. The Creed is recited slowly to an organ accompaniment, and each article of belief—even the Communion of Saints—is illustrated with a click from the machine up in the organ loft. It is doubtful whether such means will find the beliefs of the average church-goer better defined or strengthened, but the fact remains that, while church after church throughout the city on Sunday ring out their invitations in vain, the Church Army fills this particular church on a broiling July evening with the help of its peculiar methods and the magic lantern.

PHOTOGRAPHY at Oxford.—The veto placed upon the use of cameras in many of the colleges in this university and in public and semi-public institutions throughout the country, is becoming a greater farce every day, says the "Oxford Times." While the Oxford man is given to understand that photography is only allowed with special permission from the college authorities, and has his ardour dampened by the necessity of writing to them individually, the American visitor, with characteristic audacity, not entirely due to ignorance of the regulations, calmly walks in with his hand camera, sometimes folded up and secreted, at others well exposed to view, and secures the requisite snapshot. As might be guessed, the introduction of the collapsible roll-film variety of camera is responsible for much of this poaching, for, as the college porter naturally refrains from acting with the authority of the customs' official, those with the most liberal allowance of impudence and the least regard for dons and the decrees of dons, secure the greater number of interesting photographs.

BIRMINGHAM Photographic Society's Garden Party.—About one hundred members and friends of the Birmingham Photographic Society were entertained on Saturday, July 2, by the President (Mr. A. J. Leeson), and Mrs. Leeson, at a garden party at their residence, Barnt Green. After formal reception of the guests, Mrs. Leeson was presented with a bouquet, and games were then indulged in, including tennis, croquet, and a putting competition. Instrumental music was played at intervals. Considerable interest was evinced in a number of competitions in photography for members. The subjects were living models, and this is regarded as a novel, if not unique, kind of competition for the Society. There were four groups,

isting of a dairymaid and a cow in the East Wood, a group at well in the costume of George III., a simular group at a sundial, a genuine countryman in the West Wood. Some fifty members part in the competitions, and about 200 plates were exposed. dairymaid and the cow seemed to be the most popular subject.

Edinburgh Stereoscopic Atlas of Anatomy.—Messrs. Jack, of burgh and London, announce the publication of a complete s of anatomical photographs for the stereoscope, so arranged as exhibit the natural relations of the parts. The photographs have taken from special dissections prepared by the aid of formalin, the work of preparing them has been carried on in the anatomical rtment of Edinburgh University, with the permission of Proor D. J. Cunningham and under the supervision of the senior onstrator of anatomy, Dr. Waterston, by whom the series is g edited. The photographs are of the usual size for the stereo- e, and each one is mounted on the lower part of a card measuring y 7in., the upper part of which is reserved for descriptive press. The specimen photographs sent are of exceptionally fine ty, and the stereoscopic effect is excellently produced, affording best possible imitation of real structures. The series will com- 250 separate stereographs, and will be issued in sections of t 50 each, contained in suitable cases, at a price for the whole s of £6 5s., including a stereoscope. The first section is ised during the autumn, and the publishers hope to complete work early in 1905.

Latest about the N-Rays.—It is known that the N-rays are e undulations of the ether similar to those of light, but M. Becquerel now thinks that these rays may also provoke or ate a transference of material particles from the body emitting . He finds by experiment that when the rays traverse a mag- field, even of slight strength, perpendicularly to the lines of etic force, they do not produce any change in the brightness e phosphorescent sulphide of calcium, whereas when they cross ame field parallel to the lines of force they do. He also ob- d that the strongly radio-active bromide of radium and a salt amium feebly radio-active produce an effect on the sulphide of cal- similar to that of the N-rays. M. Sutton finds that the colour feeble source of light has an influence on its sensibility to the n of N-rays. Blue or violet sources are more easily increased ightness by the N-rays falling on them than are green rays, and w, orange, or red sources appear to remain unaffected by the . Another interesting fact is that N-rays increase the sensibility e eye for violet, but not for red light. A visible spectrum in rk room when acted on by N-rays appears to lengthen towards ultra-violet or invisible rays. The sensibility of phosphorescent ances to N-rays is also very variable with their colour. The ide of calcium, with a violet phosphorescence, is the most sensi- Alkaline-earth sulphides and zinc sulphides with green phos- esences are less sensitive, and M. Sutton has not observed any t of the rays on zinc and alkaline-earth sulphides with orange phos- esences.

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Answers to Correspondents.

- *¹ All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.
- *² Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.
- *³ Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.
- *⁴ For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, &c. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

John Alfred Horsburgh, 4, West Maitland Street, Edinburgh. Photograph of the Rt. Hon. Sir Robert Cranston, the Lord Provost of Edinburgh, Standing in his robes.
Mrs. Caroline Gavin, 83, St. Giles, Norwich. Photograph of Group of Provincial Grand Masonic Lodge of Norfolk.
John George Gowland, Photographer, Church Street, Crook. Photograph of the late Thomas Wilkinson.
John William Powell, 29, Hannah Street, Porth, Glam. Photograph of Rev. William Edward Prince.
Charles Alfred Brett, Photographer, 1, Avenue Road, Hampton, Middlesex. Six Photographs of the Reverend Prebendary Raim. View and Rural Dean of Hampton, Middlesex. Four in his robes, and Two in Ordinary Clerical Dress.
Arthur May Cormack 31, Newborough, Scarborough. Photograph of Group of Tom Currier's White Musketeers.
Samuel Nixon of Glenvista, Oregon, Londonderry, Ireland. Photograph of Mrs. Kerrigans Sitting Beside her Spinning Wheel. Mrs. Kerrigans was visited by the King and Queen near Leenane, Co. Galway, Ireland, during their visit to Ireland in the year 1901.

F. FRENCH.—We have nothing of the sort you require.

OPINION WANTED.—"PRINTS" says: "I shall be much obliged if you will kindly give me your opinion of my retouching from prints enclosed." In reply: Our opinion is that the work is poor—very poor indeed.

"OPERATOR."—A reference to the Almanac will give you all the information you require re accessories. Firms such as Marion's, Soho Square, W.C., or Fallowfield, Charing Cross Road, W.C., will supply what you require.

VIEW ANGLES.—L. M. asks: "How am I to go about ascertaining what angle a particular lens includes upon plates of various sizes?" In reply: If our correspondent refers to pages 1161-2 of the "Almanac" he will find an article on the subject. It is too long to be dealt with in this column.

COPYRIGHT.—"ONE IN DOUBT" says: "I should esteem it a favour if you would answer me the following question: Is it legal or not to print postcards and offer them for sale from a sitter's negative that they have bought photographs of, without the consent of the sitter?" In reply: Certainly it is illegal, if the sitter paid for the portraits in the first instance.

BURNISHER.—"J. G." writes: "I will esteem it a favour if you will tell me which is the best way for a hot roller burnisher to work—whether the rollers should both run the same speed, or is it better for the hot one to run quicker, and, if so, how much quicker?" In reply: Roller burnishers as sent out by the makers are geared so that the rollers work to the best advantage. Why do you wish to make any alteration?

ZINC TANKS.—WASHER says: "I have been using zinc tanks for print washing, and to prevent the metal acting on the prints have coated the insides of the tanks with enamel. This is rather costly and requires frequent renewal. Would ordinary Brunswick black be quite suitable? Or would you recommend heating and coating with pitch and resin?" In reply: For zinc there is nothing better than enamel. Brunswick black, pitch, and the like are better adapted for wooden tanks. If the zinc is well cleaned a good enamel should be fairly durable.

VARIOUS QUERIES.—"OLD READER" asks: "(1) Could you name me any firm of opticians who make the small, cheap lenses for toy cameras which are sold for about 6d. each? (2) I have orders occasionally for presentation portraits. Can you name me any

firm who makes small brass plates, with inscriptions on them, to put on bottom of frames? (3) What is best thing for polishing brass mounts of lens to make them highly burnished?" In reply: (1) We cannot. Indeed, we have seen no sixpenny cameras that have been fitted with lenses. (2) Any engraver that engraves the inscription will also provide the plates. (3) Lens mounts are lacquered. Your best plan will be to send the lens to an optician to be relacquered.

REDUCING BROMIDE PRINTS.—R. ROBERTSON asks: "Can you tell me of a safe reducer for over-developed bromide prints that will not affect the colour or permanence of the prints?" In reply: There are several reducers that may be employed, such as this, carbamide 20 grs., citric acid 10 grs., water 10 oz., or hypo 1 oz., water 5 oz., potass ferricyanide 10 grs., or the ammonium persulphate reducer, but the colour will to some extent be altered. There is also the potass cyanide and iodine reducer, but as this is a dangerous poison, it can hardly be regarded as a "safe" formula. The simplest thing is to throw the prints away and make fresh. It is the more economical in the end, if time be of any value.

SPOTTY PRINTS.—For some time I have been troubled with small spots on my finished prints, and have been at considerable trouble trying to trace the cause. I find that when fixed in a sample of hypo usually sold I get none of them, but with this particular sample I am troubled with them. The shape of the crystal seems unusual; also the fact that some of the crystals are white. I am sending you herewith a sample of the soda and a portion of photo showing the spots mentioned. As I have rather a large quantity (2 cwt.), I should be glad if you could say what is the fault, so that I may complain to the firm who sent it and have it changed." In reply: We should certainly not suspect the hypo (the sample sent) as being the cause of the spots. The crystals seem all right. We think you must trace the spots to another source. As regards the white crystals, see last week's B.J.P., p. 602, "Iodine and Hypo."

STUDIO QUERY.—MARTIN says: "Will you kindly advise on the following? I have opened a studio on ground floor, with only a window at the front 7 ft. wide and from ceiling to within 2 ft. of the floor. The room is 20 ft. by 7 ft. I have fixed a light with five incandescent lights attached, which I use on the right hand of the studio, and about 5 ft. from background. I am at present only doing stamp and midget photos, and bring the sitter almost close under the light. I submit some specimens for your opinion as to whether my light is not strong enough or whether my background is too dark. I give about three seconds' exposure. I also wish to take cabinets and carte-de-visites. Is my room big enough? What focus lens ought I to get and is my light strong enough?" In reply: The specimens sent are all under-exposed. The room is very small for professional work, and for full-length cabinets you will save to employ a lens of about 8 in. focus. Had you sent a plan of the studio we could possibly have advised you further.

UNSATISFACTORY BUSINESS.—H. P. U. writes as under: "I notice a correspondent in this week's 'B. J.' asks a question re unexecuted order (page 620). I sent for a sample of paper and enclosed stamps, and also had the same reply, so no doubt it is the same firm. Have not heard from them since. In June, 1901, a gentleman called on me saying he was a journalist, and wished to write an article on my business to be published in 'The Age' or 'Seymour's Journal,' and undertook to send me 50 copies of same for £1 1s. I paid him the amount, and on the following September he writes to say the articles are written and in type for this district, but has omitted mine until the next issue. I have received no copies, and cannot get a reply from him, though I have written several times. Can I sue him in the County Court for the return of my guinea? He gave his name as Dr. —." In reply: Certainly you can sue the man in the County Court, if you can find him. Possibly you might take stronger measures; but we are afraid you have lost your guinea.

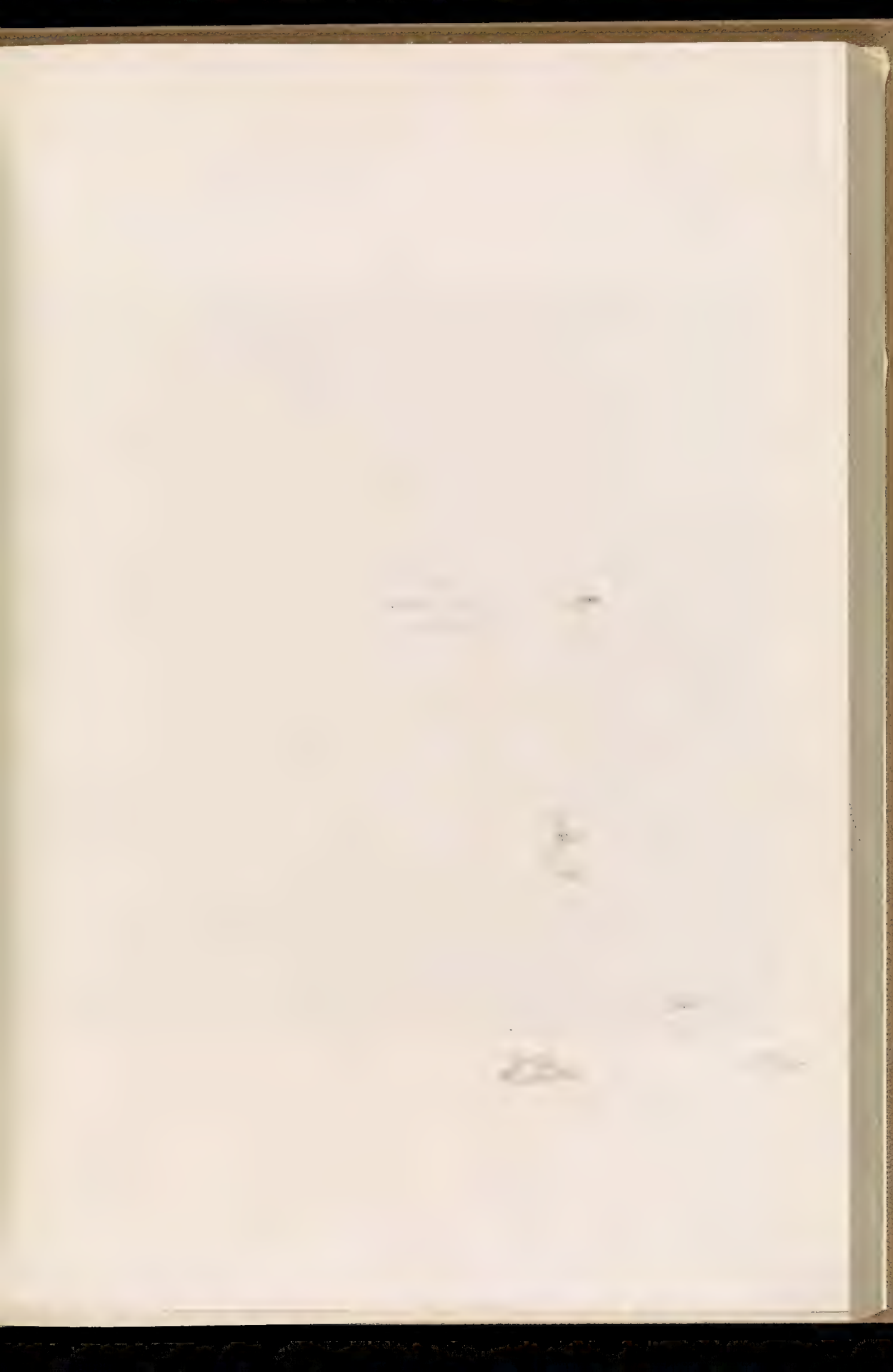
PHOTOGRAPHING BUILDING.—FOCUS says: "I have to photograph a public erection at night when illuminated. Will you please

answer me the following questions as a guide for taking photograph?—(1) If I use a 'Busch Rapid Aplanat No. 3 Lens,' focus 10 in. stop 22, and Iso instantaneous plates, exposure would be about right, picture to be 1-1 plate? (2) illumination is done by electric lights—red, blue, and Should backed plates be all right, or ought I to use coated? (3) Is there any special method of taking these, ular subjects? (4) Is it best to work when quite dark, a slight amount of light better to help with detail of built? (5) Can you give any advice other than asked in the questions?" In reply: (1 and 2) How is it possible to ask such questions as these without knowing anything of the of the lights? Backed plates should certainly be used No. (4) Under some conditions, yes, it may be. (5) Make or two trial exposures, then you cannot go far wrong. not that occur to you?

VARIOUS QUESTIONS.—"BOB" asks: "Would you kindly tell (1) The best and most permanent method of making water large wooden dishes, bottoms of glass. (2) What dish will a $\frac{1}{2}$ pl. negative be from the enlarging easel 30 by 24 enlargement, using an 8-in. focus R.R. lens, with condensers? (3) Does a name block have to be heated blocking mounts in gold or silver?" In reply: (1) There is no very satisfactory way of making large wooden trays glass bottoms thoroughly watertight. Try painting the with a mixture of pitch with a little tallow added. The tallowing method has also been recommended for waterproof large dishes: Mix equal parts of gutta-percha and paraffin over a slow fire and apply while hot by warming the pouring some of the mixture inside and allowing it to flow from side to side. A warm iron passed over the surface will give a polished surface much resembling that in rubber after vulcanising. The coating is absolutely waterproof and will resist the ordinary acids and alkalis used by the photographer. (2) If you refer to page 1,159 of the "Album," you will find a table which will give you the distances required for any degree of enlargement, for any focus lens. (3) it is better heated.

VARIOUS QUERIES.—J. S. ADAMSON asks: "Can you inform me of good reliable books on the following subjects: (1) Painting with oils and water colours and pastel, photos and miniatures. (2) Finishing enlargements in monochrome. (3) Colodion chemistry, printing and toning. (4) On photographic optics. I desire to make a special study of optics, merely a describing the various lenses in general use by professional photographers. (5) What are per cent. solutions; how are they calculated? (6) What sort of hand camera (or stand) is advised for wave and marine work? (7) What colours (carbon) do you recommend as best for landscape, sea, figures, fruit, and architecture? (8) Do you recommend the use of red and sea green for fruit and seascapes? Are these of an artistic?" In reply: (1) "The Art of Retouching and Finishing Photographs," by Robert Johnson. (2) "Enlarging and their Finishing," by G. Rodwell Smith. (3) There is no work specially devoted to this subject. It is dealt with in manuals. (4) "The Optics of Photography and Photographic Lenses," by J. Traill Taylor. (5) Dissolve so many parts, according to the per centage required, in water, and make the up to a hundred. (6) Any ordinary camera, whether on a stand. (7) and (8) Quite a matter of taste, and tastes greatly nowadays. Possibly the best effects will be obtained by not endeavouring to imitate the colour of the original.

The Council of the International Society of Sculptors, Painters and Gravers propose to hold a memorial exhibition of the works of their late president, Mr. James McNeill Whistler, in the National Gallery, Regent Street, London, during February and March. A great number of prominent collectors both at home and abroad have already promised their support by contributing the works they possess, and it is hoped that the public will have an opportunity of seeing a most representative exhibition of his works.





MEMBERS OF THE NINETEENTH ANNUAL

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CONVENTION OF THE UNITED KINGDOM.

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Negative by C. BARROW KEENE,
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EX CATHEDRA.

One is pleased to see that the police authorities are still giving their attention to the traffic in a certain class of picture postcards. On Friday last a man with a foreign name, residing in Wardour Street, appeared to answer two summonses at the Marlborough Police Court for exposing objectionable pictorial postcards. Mr. Muskett, who prosecuted for the Commissioner of Police, asked the magistrate to take a serious view of the case, and we are pleased to say he did so, for he mulcted the defendant in the substantial sum between thirteen and fourteen pounds in fines and costs. This will discount the profits he has made on the sale of these disreputable things, which it was said were produced abroad, where nearly all these indecent things come from. It is a pity the police authorities do not take steps to stop the importation of this class of postcards, for it is illegal to export pictures of an indecent character, and they may be stopped at the Customs House. The picture postcard has now become such an important and lucrative industry in this country that its popularity should not be marred by these indecent productions. Coarse and vulgar pictures did such years ago to kill the popularity of the stereoscope, and would be regrettable if they did the same with picture postcards. Stationers and others would do well to consider this matter, for we have seen in well-to-do shop windows cards which, though they could not be classed as indecent, were of a highly coarse and vulgar nature, and such as would give offence to a refined mind. There is no harm in a comic picture; it is amusing. But when it borders on the vulgar or indecent it is quite a different matter.

The Future of Photography for Employees.

The Editor of "Wilson's Photographic Magazine," commenting on an article in a recent issue of the BRITISH JOURNAL OF PHOTOGRAPHY dealing with this topic, compared the methods that obtain in England with those in the United States. He remarks:—"It may readily be understood that the situation offers some very puzzling problems to our English cousins, and we believe that the system of apprenticeship is responsible for the growth of it. We have troubles of our own in this country, no doubt, but this is one that is foreign to us. The same tendency to substitute female help for male help, which is complained of there, prevails with us, but we believe without the disastrous consequences that seem imminent on the other side. While the market may be overstocked with applications for situations, the man or woman employed possessed of the right kind of information need not despair as to the future. If his or her education is of the right kind the opportunity may be found in which to apply it in almost any of the larger cities or towns. It is true there are many who find it almost impossible to obtain permanent positions. Does it ever occur to these unfortunates that the fault is not all on one side? There are operators and operators, reception-room assistants and reception-room assistants, but among them all there are those who tower pre-eminently above their fellows. If by chance they desire a change of employment, opportunities flock to them. It is thus in every business or profession, and the man or woman possessed of the greatest amount of practical information in his or her sphere, and also capable of applying it with the least friction may be sure of success. Absence of friction in this case means adaptability to conditions and circumstances. In the case of a reception-room assistant, for instance, she who possesses the knowledge of human nature, in addition to the technique of her profession, is seldom out of employment." The situation seems to sum itself up in the short phrase, "personal equation," and if this is so, it should hold forth a gleam of hope and encouragement, even to the most unfortunate plodder.

Self-toning Paper.

The heat wave from which we have all been more or less suffering since "the dog days" commenced, must have given quite a spurt to the use of self-toning paper, for this excellent material has a collodion surface, upon which lukewarm water and hot fingers make no impression whatever. Indeed, as most of our readers know, it can be dried before a hot fire, or, dust permitting, in a hot sun. There are also some other advantages attached to this description of paper irrespective of its salamander-like qualities. The warm, brown tone of the prints lends itself admirably to

purposes of reproduction, and the block-maker is quite as content to deal with it as he is with a P.O.P. print. Then there is the question of touching up, which is an important one, especially in blocks required for the illustrated newspapers, where sometimes an obtrusive figure has to be painted out, or another put in by an artist. For the surface can easily be worked upon by ordinary water-colour tempered with a little ox gall. There is no gelatine to absorb the water, and washes, say, of Vandyke brown, can be used to strengthen shadows in a way which would be very difficult in dealing with either a gelatine of an albumen coated paper. And the surface of the paper is so hard that if touched by the finger nail in the washing water there is no tearing of the film, and no abrasion caused by the corner of another print coming in accidental contact with it. Then again, when the print is to be mounted, it can be surface-dried between sheets of blotting-paper and coated with the mountant without delay. If necessary, it can be rubbed down with a wet handkerchief without any risk of injury. The saving of time in dispensing with the tiresome toning operation, with all its risks, more than compensates for extra cost, while the saving of gold makes this method of printing a photograph a cheaper one than any other. With regard to permanence, we well know that a collodion negative is everlasting, provided that reasonable care is taken of it, and there is no reason to suppose that a collodion film on paper is less so.

* * *

The Chantrey Bequest.

A few weeks back we referred to the question that had been raised in the House of Lords with reference to the administration of the Chantrey Bequest and the discussion upon it, which resulted in a Select Committee being appointed to inquire into the matter. That Committee has now held several sittings, and numerous witnesses have been examined. The principal question seems to be what was the original intention of the generous bequeather when he made his bequest. Was the money to be spent on the purchase of meritorious pictures by what, at the time being, are unknown artists, as an encouragement to them and of British art? Or, on the other hand, from those who had made some mark in the British art world? There is no question that most of the works that have been purchased have been exhibited at the Royal Academy, while it is alleged works of equal merit, shown at other exhibitions, have been overlooked. Amongst the witnesses already examined are the secretary to the Royal Academy, its president (Sir E. J. Poynter), Sir William Richmond, R.A., Sir J. Alma-Tadema, R.A., Mr. Marcus Stone, R.A., Brock, R.A., Val Prinsep, R.A., Seymour Lucas, R.A., and many other Royal Academicians. They seem to be pretty well of opinion that the bequest has been fairly well administered. Art critics have also been examined as witnesses, one of whom said that he considered that the successive councils had been either ignorant of the terms of the will or had read the document very carelessly. He thought that the purchasers had been too much influenced by the feeling of the moment. There are other witnesses to be examined whose views, we believe, are not altogether in accord with the ideas of the R.A.s, and the report of the Committee when it is issued will be exceedingly interesting in art circles and to the public generally. The expenditure of between two and three thousand pounds a year—the sum left by the generous donor—in the furtherance of British art is no light matter for the consideration of the Committee so as to ensure that the sum is laid out to the best advantage, and also in accordance with the views of the late Francis Chantrey.

July Light.

The weather we have had during the past few weeks has certainly been a clerk of the weather. By now, as well as to the "clerk of the weather," it may be well to point out to some who, as novices, may be aware of the fact that at this season of the year the light is at times very deceptive. It may be exceedingly bright and yet be, photographically, comparatively weak, and many plates which are supposed to have received a full exposure turn out on development to be under-exposed. When the sky is cloudless, and the sun bright, the light by no means so actinic as many imagine. The strength of the sunlight is, the stronger, of course, the stronger the shadows cast, and if there are no clouds that will diffuse the light they will appear heavy in the picture through being under-exposed, and this is often the case when the picture is taken when there is a clear, dark blue sky devoid of clouds, although the exposure given was supposed to be ample. In these circumstances, the old maxim of the wet day should be observed. "Expose for the shadows, and the lights take care of themselves." One or two days last week when the light was very brilliant there was a dark blue sky, and then the actinism was at a very low level as many who had printing to do, and it was done in the shade, are fully aware. The printing took much longer than it would have done on a comparatively dull day. Those who were making daylight enlargements, with light reflected from a mirror, also found the same state of things obtaining. The dark blue sky reflected by the mirror had but a very feeble action, but here this could be at once seen by the lack of brightness in the image appearing on the focussing screen. When the sky is in the condition indicated, the mirror should be discarded and a sheet of white cardboard substituted. There is another trouble that is often encountered in hot weather, namely "heat daze"—that bright shimmering one often sees in the atmosphere, especially near the ground, on a hot sunny day when the sun is very hot and bright. If a photograph be taken through this the object will be considerably dimmed in brilliancy and lacking in sharpness. Many of our older readers will remember a picture that was shown some years ago, and at the Society's Exhibition, and which was awarded a medal. It was entitled "A Morning on the Wear." This picture, we have reason to know, was taken about midday, on a clear, hot sunny day, when there was no trace of mist. But there was plenty of this "so-called" heat haze, which is practically invisible. Indeed, we were told the negative was at first thrown aside as worthless, but was afterwards printed and given the above title.

* * *

The

Daguerreotype. There are many interesting passages in the article recently contributed to "Century Magazine" by the veteran American photographer, Mr. Bogardus. He entitles his paper "The Art of Daguerreotype," which is somewhat of a misnomer, seeing that the *modus operandi* of Daguerre is well understood, and that there is no obstacle to anyone producing such pictures. But, as we all know, there could be no demand for daguerreotypes when there are so many more convenient and better ways of making the sun do the bidding. We learn, however, from the article that there is a distinct demand for old daguerreotypes, and that there are collectors of them just as there are those who make a hobby of hoarding all kinds of things, from postage stamps to tobacco pipes. It is interesting to have placed on record the circumstance that Professor Morse, the well-known originator of the Morse alphabet, and the inventor of the first reliable telegraphic instruments, was the means of introducing the process of Daguerre to America. He visited Paris

at the time that everyone was discussing the new method of picture-making, and when the French Government was considering the question of granting pensions to Daguerre and Niepce on the condition that the process was made public property. He met Daguerre, and the latter promised to forward all particulars to America directly the pension was granted. This promise was fulfilled, and in the year 1839 Morse received the instructions and constructed the first apparatus for taking daguerreotypes which was made in the States. It may be remembered that Morse himself was subsequently gulled by the arch-imposter who, under the name of Hilltype, introduced a process for producing daguerreotypes in the colours of nature, which was simply a fraud, the pictures being skilfully coloured by hand. Mr. Bogardus has some funny stories to tell of those early days of "sun pictures." Of course, the exposures were abnormally long, and people who came to have their portraits taken had a belief, which nothing would shake, that under no circumstances must they wink their eyes while sitting for an interminable time before the lens. One old lady in the middle of the operation jumped from her chair in horror, and exclaimed, "Stop it, stop it; I winked." Another matter, one of studio etiquette, which might with advantage be revived in the cases of certain sitters, we will transcribe in the words of the writer of the article: "We always had sticky wax by us to keep wing-shaped ears from standing out from the head." And again: "We often placed a wad of cotton in hollow cheeks to fill them out." From these extracts it will be seen that the spirit of the retoucher was abroad long before it became possible to use a lead pencil on a photographic surface. But perhaps the most interesting feature of the article is its illustrations, which are taken from old daguerreotypes and reproduced in half-tone blocks of that high quality for which the "Century" is justly renowned. It is a combination of the old and the new in photography which all will appreciate, and block makers in this country will look with the eye of envy upon the name of the "engraver" attached to each of the illustrations. We cannot help thinking that if it were the custom over here to honour the block maker by such honourable mention it would tend to the production of better-class work all round.

DARK-ROOM TROUBLES IN HOT WEATHER.

THAT there should be a recrudescence of the difficulties surrounding the dark-room worker during the recent spell of almost tropical heat, seems as natural as the call for the perennial advisory suggestions for the alleviation thereof on our part. The weather we have been subjected to of late must surely have formed the subject of more than one diligent photographer's comments whilst in the depths of his dark-room, and while it is doubtful whether anything really new can be offered in mitigation of the discomforts experienced during an enforced occupation of a stuffy, dimly-lit room, with the temperature at eighty degrees odd outside, the fact remains that certain undesirable manipulatory conditions arise coincident with the arrival of the hot weather, which, unless taken in hand and dealt with intelligently, remain until its departure.

We are all unfortunately familiar with the frilling trouble. This particular fault, however, we are pleased to note, is rapidly becoming a thing of the past, and unless the worker is particularly careless, is not likely to occur often. There are many causes for "frilling," some of which are under the control of the photographer. For instance, it is often caused by using a developer too strong an alkali, or by not keeping the various solutions used, at an equable temperature. Whether the plate-makers have now discovered the exact formula from which an emulsion can

be made that remains (in the form of film) firmly attached to its glass support at a temperature above the normal 60 deg. recommended for developing, we cannot say, but it is nevertheless true that fewer cases of negatives frilling during development occur every year. A slight frilling at times, however, seems inevitable when the weather is very warm. When it appears, the developer should be carefully poured off at once, and the plate washed in several changes of water. It should then be immersed in a bath composed of $\frac{1}{2}$ oz. of chrome alum to 20 oz. of water, for three or four minutes, when it is again well rinsed and the developer re-applied. Amidol will be found an excellent hot-weather developer because of its not requiring the assistance of an alkali to become operative.

A good formula is as follows: To 50 oz. of water add 2 oz. of the best recrystallised sulphite of soda and 20 grains each of bromide of potassium and citric acid. When ready to develop add $2\frac{1}{2}$ grains of dry amidol to each ounce of the above. If further precautions are necessary to prevent softening of the film, place the plate in a bath composed of one part of formalin in fifty parts of water, for a few moments. Formalin added to the fixing bath will also assist. The following formula is suggested: Regular hypo solution, one in four, 1 gallon; metabisulphite of potassium, 1 oz.; formalin, 1 oz. Working in this manner and with the formula given above, the use of ice can be dispensed with in the most sultry weather. Even where no damage to the film is expected it is well to employ a little formalin in the fixing-bath or to use a bath after fixing in order that the negative may be blotted off and dried rapidly so that circular depressions sometimes resulting from slow drying in a warm, damp atmosphere may be avoided. A greater evil, however, than slight frilling at the edges of the negative arises if the wet plate is held for too long a period in the hands for examination. This consists of a general deliquation of the gelatine in the neighbourhood of the warm fingers. The film simply melts away, leaving the bare glass in unsightly patches around the edges of the negative. The remedy for this is, of course, obvious.

The less one handles plates, films, and gelatino-chloride papers during warm weather the better. The higher temperature of the water and all solutions is no doubt trying enough to the easily-soluble gelatine, and the additional heat imparted by the hands might easily overcome the gelatine's power to resist melting. When toning P.O.P. during the hot weather it is absolutely necessary that the solutions be cool to obtain the best results. To cool a bottle of solution of any sort whatever, a good plan is to wrap a wet towel around the bottle and place it in a current of air, such as on a window-ledge with the window open to create a draught, or hung up by the neck in an airy passage. The evaporation of moisture from the towel thus produces an appreciable diminution of temperature. The gelatine surface of P.O.P. when wet is also easily melted, and nothing is more unpleasant than to find, if a print has to be handled a little more than usual, that the heat of the fingers has caused it to become sticky and liable to injury. A good plan is to place the prints as they come from the printing-frame into clean water, then, after a few minutes, drain the water off and renew it, doing this a third time, and then transfer to a strong solution of alum and water; follow this with three further changes of water, and the prints will be ready for toning, and when finished will be sufficiently hard to ensure their not sticking if dried in contact with ferrotype plate or glass.

In hot weather gelatine prints often present a very yellow appearance when thrown into the fixing bath, the tone which they have acquired appearing to dissolve com-

pletely away. When the toning bath is warm, P.O.P. prints appear to tone very rapidly, but the tone is on the surface only. To make sure that the operation of toning has been carried far enough, the prints should be judged by looking through them, no notice whatever being taken of their surface appearance.

The drying of negatives is also worthy of attention during the summer. The rapidity with which they dry appears to have an influence on the grain. Those which dry slowly, as they would tend to do in hot weather, have a coarser, less pleasing grain, and the gelatine often seems to swell during the drying. The best thing is a cool room, away from the dust, in which the drying can be hastened by an electric fan, if possible. Wherever the plates are put to dry, they should be left there, since differences in the rate of drying such as might be brought about by removing the partially dried plate to another place, cause noticeable differences in the appearance of various portions, the line of demarcation often being distinctly visible. Reticulation, the plate seeming covered with a network of fine interlacing lines, is sometimes caused by changes in the temperature of the solutions. For example, it might be easily brought about if the developer were somewhat warm, the hypo, on the other hand, cold and pretty strong, while the wash-water was rather warm again. Tiny pits or sunken places sometimes appear in the film, especially if it is dried slowly.

The proper ventilation of the dark-room is an important question in hot weather. The health of the person demands a change of air if much work is to be done. This can be done easily by having the frame of a box set in at the top and bottom of the door, with partitions inside the box projecting two-thirds or so across, so that while the light is excluded, the air, not being compelled to move in straight lines, can wander in. If possible, the dark-room light should be placed outside the room, so that it shall not help to use up the usually scanty supply of oxygen, to say nothing of the disagreeable odours which dark-room lanterns emit. If nothing more is done, at least provide covers for the trays, so that it will be possible to go out and breathe for a few moments, if the operation should be prolonged. Good ventilation is absolutely necessary if the room is to be kept cool. When not in use the door of the room should be left partly open. The floors should also be sprinkled occasionally with water; this helps to keep down both the temperature and the dust.

In conclusion, avoid touching as much as possible the gelatine surface of either plates of papers while the fingers are at all warm. It is not wise to touch the sensitive surface at any time, but in hot weather the slightest touch of perspiring fingers will leave a mark that it will be impossible to eliminate.

THE bottom of the sea near the shore and in shallow inlets can be better seen from a moderate height, as from a balloon, than from the surface. It is proposed by a French engineer to make use of captive balloons to chart by observation and photography dangerous waters, making the observations more accurate than by soundings.

ACCORDING to reports from Kazan, the famous picture of the Madonna, which is kept in the Bogoroditzky Monastery, has been stolen. The theft of this miracle-working picture now is likely to make a deeper impression on the masses of Orthodox Russia than the news of a lost battle in the Far East. It was one of the things held most sacred in the country, and was invoked in the prayers of high and low—of Czars, noblemen, and peasants. Apart from its miraculous virtues, the picture was of great intrinsic value, on account of its precious frame, which was adorned with an immense quantity of jewels presented by Czars and others, and valued at many million roubles.

THE STEREOSCOPE AS A TEACHER IN ANATOMY.

It is just about forty years ago that the stereoscope arrived at the very zenith of fame and popularity. It waned and sunk to the nadir of oblivion till a few years ago, since when every effort has been made to popularise it as a special and attractive branch of photography. The little success that has attended these efforts is to be explored, but, even yet, we are not without hope of the beautiful effects of a good stereoscopic view appealing to a large number of workers. It is fairly well understood why the stereoscope fell so quickly out of favour—to a degree thorough that there is a generation of adults now living who, at any rate until quite recently, had never actually seen through a stereoscope. Out of this generation, where the beauties of binocular photography are made familiar to them, may we not hope that a new band of stereoscopic workers will arise? The artistic aspects of photography have been so much brought to the front for a long time past that the special and peculiar beauties of the two pictures that required to be viewed through lenses have perhaps been rather looked down upon. All this may change. But there is another aspect of stereography—where, indeed, was the cause of our treating this subject at all just now—the possibilities it affords of giving instruction upon the solid aspects of certain subjects hitherto only treated by flat photographs or drawings. We refer to the representations of anatomical structure, human or comparative. The information afforded to a medical or other student by the most beautifully executed engravings is never thoroughly satisfactory, especially when less frequently seen lesions or pathological conditions are depicted. Here a properly-executed stereoscopic view of the subject would be of infinite value, and bring the student in his study face to face, as it were, with the actual object itself. It is difficult to overstate the case for the stereoscope under such conditions. We are pleased to find that the advantages of this mode of representation has been seen by others, and that it has been brought into use by publication in the ordinary manner. A stereoscopic atlas of anatomy is now being published, as we mentioned last week, and advances proofs of some of the plates have already been issued. The success or otherwise will, of course, depend upon the technical knowledge of stereoscopic and general photography possessed by those who take the photographs; if well done they will be of great value to biological as well as medical students. Of course, such illustrative binocular photographs have before appeared with regard to books of travel, and to the teaching of geography, but not always with great success. The process of the day—the half-tone block—is not well adapted, and collotypic illustrations may easily come off devoid of sharpness and pluck. We cannot but think that bromide prints, producible, as they now are, so readily, quickly, and with such delicate rendering of detail, with as much brilliancy as can be desired, are more likely than any other to give the greatest amount of satisfaction. With regard to the optical aspect, it is evident that many kinds of effects, some good, some the reverse, are within the powers of the photographer by the mere alteration of the distance apart of the lenses employed to take the views. It would be a very easy matter to give undue prominence to an unimportant detail, and throw the student astray. But this we do not doubt will be seen to, and we hail this publication as a step in the right direction, in the teaching, at any rate, of anatomy.

We have just received a handy little volume from Messrs. Daborn and Ward, Ltd., entitled "Photography on Tour." We hope to review it in our next issue.

ON THE ALTERATION OF METABISULPHITE OF POTASH AND OF BISULPHITE OF SODA WHEN EXPOSED TO THE AIR.

In our previous studies* we have demonstrated the behaviour of crystallised and anhydrous soda sulphite when exposed to the air under varying conditions. In the present research the effect of the air on metabisulphite of potash and bisulphite of soda—the two other derivatives of sulphurous acid employed in photography—has been the subject of investigation. Namias† has recently declared that metabisulphite of potash, $\text{K}_2\text{S}_2\text{O}_5$, which crystallises anhydrously, undergoes no appreciable alteration on exposure to the air in crystallised state. The slight diminution of strength in sulphurous acid which results after a fairly long period does not, according to Namias, arise from oxidation, but from loss of sulphurous acid. On the other hand, he indicates that solutions of metabisulphite alter somewhat quickly, although less rapidly than solutions of soda sulphite. Furthermore, bisulphite of soda, according to the same author, is considerably more unstable than metabisulphite of potash when exposed to the air. In the following study we have investigated the action of air on metabisulphite of potash and bisulphite of soda, both in solid form and in solution, under various conditions.

A.—ALTERATION OF METABISULPHITE OF POTASH.

1. Metabisulphite of potash in solid form. Several portions of a sample of crystallised metabisulphite of potash were exposed to the air, in thin layers, under different conditions, one portion being subjected to comparatively dry air at a temperature of 15 deg., another to a very humid atmosphere also at 15 deg., a third at 45 deg., and a fourth at 100 deg. Each portion was titrated by liquor of iodine, first at the commencement of the trials, then every third day, operating in the manner as indicated in regard to the titration of sulphites. The results obtained in each case confirm the opinion expressed by Namias, viz., that metabisulphite in solid form appears to suffer no appreciable alteration.

2. Metabisulphite of potash in solution. Our experiments were carried out on 1 per cent., 2 per cent., 6 per cent., 10 per cent., and 20 per cent. solutions, contained in half-full two-litre bottles. For each degree of dilution we utilised a closed and an unclosed bottle. The solutions are titrated at the outset, then every third day, in the same manner as soda sulphite solutions. The following table indicates the quantity of oxidised metabisulphite in the various solutions, three and six weeks respectively after their preparation:—

Nature and strength of Met. Pot. Solution.	Duration of contact with the air.	Quantity of oxidised product per 100 gr. of total used.		Quantity of oxidised product in 100 c.c. of solution in open bottle after 6 weeks.
		Open bottle.	Closed bottle.	
1 per cent. solution.	After 3 weeks	22 p.c.	11·66 p.c.	0 gr. 56.
	After 6 weeks	56·66 p.c.	28 p.c.	
2 per cent. solution.	After 3 weeks	19·66 p.c.	8·5 p.c.	0 gr. 98.
	After 6 weeks	49 p.c.	20 p.c.	
6 per cent. solution.	After 3 weeks	19 p.c.	3·5 p.c.	2 gr. 70.
	After 6 weeks	45 p.c.	11 p.c.	
10 per cent. solution.	After 3 weeks	16·66 p.c.	2·86 p.c.	4 gr. 16.
	After 6 weeks	41·66 p.c.	4 p.c.	
20 per cent. solution.	After 3 weeks	12·66 p.c.	0·3 p.c.	6 gr. 5 p.c.
	After 6 weeks	32·66 p.c.	1 p.c.	

Notable differences are observable on comparing these results with those given by solutions of anhydrous soda sulphite of similar strength.† Thus the 1 per cent. of anhydrous soda sulphite, in an open bottle, under the same conditions as the 1 per cent. solution

of metabisulphite is totally oxidised after one week, whilst after a period three times longer only about 22 per cent. of the quantity of metabisulphite used is oxidised. In the case of the 10 per cent. solution, whilst less marked than that at 1 per cent., the difference is nevertheless strongly in favour of metabisulphite. After one month about 98 per cent. of sulphite is oxidised as against 41·66 per cent. of metabisulphite at the end of six weeks. With a 20 per cent. solution sulphite oxidises less rapidly than metabisulphite. In fact, after one month there is only 14 per cent. of oxidised sulphite as compared with about 19 per cent. of metabisulphite at the end of the same period, and 32·66 per cent. after six weeks. Therefore, it will be seen that as regards oxidation in the air, the effect of concentration is considerably less important on solutions of metabisulphite than in the case of sulphite of soda.

B.—ALTERATION OF BISULPHITE OF SODA.

1. Crystallised bisulphite of soda.

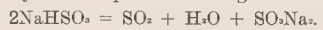
We prepared crystallised bisulphite of soda by concentrating, by evaporation, the commercial solution of bisulphite of soda as far as the commencement of crystallisation, and cooling rapidly. After drying on a plaster slab, the crystals were pressed between double filter-paper, their yield in sulphurous acid being then determined. In order to avoid a product too greatly liable to alteration, we did not use commercial crystallised bisulphite of soda in these experiments.

The bisulphite was divided into two portions and exposed in a thin layer to ordinary temperature of 15 deg., one in comparatively dry air, the second in very humid air. These products were subjected every third day to titration with a solution of iodine at one-half décime normal, operating on 100 c.c. of solution at 10 gr. per litre.

The results of these titrations, expressed in c.c.[‡] of liquor of iodine one-half décime normal, are given below:—

Duration of contact with the air.	Exposed in comparatively dry air. 15 deg.	Exposed in very humid air. 15 deg.
Initial titration	19 cc. 1	18 cc. 1.
After 3 days	24	16·2
After 9 days	37·2	15·3
After 7 weeks	16·2	14·7

It will be seen that crystallised bisulphite of soda at first becomes richer in sulphurous acid. This is probably due to loss of water from crystallisation, for the increase corresponds with an efflorescence of the crystals which becomes more and more accentuated. The product then loses sulphurous acid, its sulphurous odour disappears, and it probably becomes transformed into anhydrous sulphite according to the equation—



Further, the alteration in very moist atmosphere will be seen to be considerably more rapid than in dry air.

2. Bisulphite of soda in solution.

We have experimented on solutions containing, respectively, in 100 c.c., 1 gr., 2 gr., 6 gr., 10 gr., 20 gr., 40 gr., 100 gr., of a commercial solution of soda bisulphite as well as on the commercial solution itself undiluted, using in each case one litre of solution contained in a two-litre bottle, and using for each dilution a closed and an unclosed bottle. Daily titrations as carried out in the experiments with metabisulphite of potash gave results entirely comparable to those obtained with that compound.

The solutions of bisulphite appeared nevertheless a little more oxidable than those of metabisulphite of potash. Thus the quantity of bisulphite oxidised after three weeks, using an open bottle, is 37 gr. per 100 gr. of commercial bisulphite used in the solution containing 1 gr. of commercial bisulphite of soda in 100 c.c.

* Bulletin de la Société Française de Photographie," 1903.
† Bulletin de la Société Suisse de Photographie," 1903, pp. 516 and 518.
‡ In comparing these results Anhydrous Sulphite is preferable to crystallised sulphite, as Metabisulphite of potash, although crystallised, is an anhydrous salt.

In the case of metabisulphite these same numbers were:—

With the 2 p.c. solution the quantity of oxidised sulphite is about ...	34 gr. 0
" 6 p.c. "	32 gr. 0
" 10 p.c. "	29 gr. 0
" 20 p.c. "	23 gr. 0
" 40 p.c. "	13 gr. 0
" 100 p.c. "	5 gr. 0
With the commercial solution "	1 gr. 5
23 gr. p.c. of Metabisulphite in the 1 p.c. solution.	
19 gr. 66 p.c. "	2 p.c. "
19 gr. p.c. "	6 p.c. "
19 gr. 66 p.c. "	10 p.c. "
12 gr. 66 p.c. "	20 p.c. "

The numbers obtained with the bisulphite of soda are markedly higher than those obtained with metabisulphite of potash, but we notice that the commercial solution of bisulphite of soda contains in reality only 40 per cent of NaHSO_3 . If the solutions be brought to comparable strengths in sulphite composition we find numbers comparable between them, but nevertheless lower for metabisulphite of potash than for bisulphite of soda.

CONCLUSIONS.

The preceding experiments enable us to draw the following conclusions:—

- (1) Crystallised metabisulphite of potash does not appreciably alter either in dry or moist air.
- (2) Solutions of metabisulphite of potash kept in contact with the air alter. This alteration is markedly less than that of corresponding solutions of soda sulphite in the case of diluted solutions. On the contrary, the alteration is greater in the case of metabisulphite of potash than in that of soda sulphite when the concentration reaches 20 per cent.
- (3) The influence of the concentration of solutions on their oxidability in the air is much less important with metabisulphite of potash and bisulphite of soda than with sulphite of soda.
- (4) Crystallised bisulphite of soda is very liable to alteration in the air, but solutions behave almost in the same manner as those of metabisulphite of potash.

From a practical point of view the result of our experiments on the alteration of different derivatives of sulphurous acid used in photography when exposed to the air is that for the preparation of developers anhydrous sulphite of soda appears to be preferable to the other derivatives of sulphurous acid.

Diluted aqueous solutions of metabisulphite of potash, although slightly less alterable in the air than those of anhydrous soda sulphite, present the grave inconvenience of necessitating the addition of an exactly calculated extra quantity of alkali at the moment of development, which, from our point of view, would cause metabisulphite of potash to be rejected as an alternative to the use of anhydrous sulphite of soda in practical work.

A. AND L. LUMIERE AND A. SEYEWETZ.

SPOILING Hampstead Heath.—One of the most charming views in the northern suburbs is in immediate danger of being ruined by the cheap builder, and the Hampstead Heath Extension Council, in the name of all Londoners, is engaged in a praiseworthy effort to save it from this fate. Looking out north-west from the slopes beyond Spaniards Road the eye is carried down a lovely vista of undulating ground, green glades of grass alternating with thickets of hawthorn and bramble, to where the country opens out to a typical stretch of English meadow land, an expanse of pasture and hedgerow elms extending away uninterruptedly to the hills on the sky line. This pleasant green middle distance of sward and pastoral hillock is absolutely essential to a picture which has delighted generations, and ought by every possible argument to be left unharmed. Yet it is right across this priceless little reminder at our doors of how beautiful the real country is that the builder will march ruthlessly unless something is speedily done to save a view, unmatched of its kind perhaps in the neighbourhood of the great city, from complete destruction.

THE CONVENTION.

THE Photographic Convention of the United Kingdom of its nineteenth annual meeting in Derby on Monday, July 19, was in glorious weather. Various places and objects of interest in the town were visited during the day, and in the evening delegates were officially welcomed by the Mayor (Council C. Boam) in the Albert Hall. The guests, who numbered about 400, were received by his worship between 7.30 and eight o'clock, and the President (Mr. G. Herbert Strutt) afterwards delivered his inaugural address. Mr. C. H. Bothamley (a past president) occupied the chair at the outset, those also on the platform being the President, the Mayor, Mr. John Stuart, and William Crooke (past presidents), the hon. secretary, treasurer (Mr. F. A. Bridge), Mr. Alex. M. Rodger (Past President) and Mr. W. Crowther (local hon. secretary).—The Mayor tendered a hearty welcome to all present, and expressed pleasure to notice that the first annual gathering of the Convention was held in Derby in 1886. They had, he said, their county some of the best scenery in the kingdom, and hoped their second visit would prove in every way an enjoyable one.

The Chairman expressed regret at the absence of Sir Robert Pullar, the retiring President, with whom, he said, they sympathised in the great loss he had sustained. He warmly thanked the Mayor for the hearty welcome he had extended to them, he remarked that since their meeting in 1886 the Convention had grown, and had become a more prosperous body. To anyone in Derby or the county was absolutely an unnecessary proceeding to introduce a new President, for the family of Strutt was well known so intimately connected with all that was active in their public life. He then asked Mr. Strutt to take the chair, and Mr. Rodger, acting as Sir Robert Pullar's deputy, handed to him the badge of office.

The President, who was very heartily received, said his object was to thank them for the great honour they had conferred upon him by electing him President for the coming year. When he looked at the catalogue of names of presidents who had preceded him, names well known in the scientific world, he felt he could hardly expect to follow in their footsteps as well as he should like, and he could hardly hope to come up to their expectations. But he was well aware how it was he came to be elected to that office. Everybody in the Photographic Society of Derby, and everybody in Derbyshire, thought, as well as all the members of the Convention, would have liked to have elected Sir William Abney, who happened to be his cousin, to that position. But Sir William Abney knew he would be away on the Continent at that time, and a kind friend of his mentioned himself as a possible substitute. Whether his name was put forward simply because he was the relative of Sir William Abney, or because he happened to be President of the Derby Photographic Society for the year, whether it was put merely as that of a local man taking interest in local affairs, he did not know, but he knew they were good enough to take him upon trust, and he responded to their invitation and accepted with very great pride the honour they had conferred upon him for the coming year. He claimed that he had upon the consideration of the photographic world was that for twenty years he had been a painstaking amateur, and he had derived so much pleasure from the pursuit of photography, and it had proved of such immense value to him, even with his very limited knowledge of it, that whenever he got the opportunity he tried to interest others in the art. He did not forget, as the Mayor had reminded them that that Convention had visited Derby before. He still remembered their coming in 1886, and he was very glad they had come again, although he feared at the present time the streets of the town were not in a very attractive condition for photography. However, no great improvements in D

could be carried out without a good deal of dislocation of the traffic and inconveniences of other kinds, and although it was unfortunate that it should have happened at a time when an important Convention was visiting the town, still, he hoped they would understand it. But they were not going to spend the whole of the week in Derby; they were going to visit scenes of which they were justly proud — Dovedale, Haddon Hall, Hardwick, and other places, and which would doubtless be photographed, and he ventured to prophecy that when the week was over and they had returned to their homes they would carry with them some pleasant memories, and he hoped some excellent negatives, of the places they had visited. For his own part, he was certain of this, that all who had had a voice in organising the arrangements—in fact, everybody in the town and county of Derby who took any interest in photography, and the public in general in Derbyshire would do their very best to give him a hearty welcome, and to make their stay in the county a pleasant one. And he thought that it was only right that this should be so, because photography had done an immense amount for the public. They could look back on the old days when photography was in its infancy, and they could see to what an extent it had grown. Why, when they first visited Derby he believed their numbers were only 46, while last year they numbered 340. There at once was an enormous increase, and they had only to look round their own neighbourhoods and note the number of photographers they could count to see how enormously the art of photography had increased. The specimens they saw around the walls represented the highest art in photography, and when they came to look back upon the old photographs of thirty or forty years ago, how very poor they seemed compared with their present works. Yet they must not forget that the pioneers of those days deserved their gratitude. They were working with instruments and processes which were very much harder to manipulate, and it was very interesting to be able to look back on their work, and to see that they produced work as good as it was. Again, if they turned to the apparatus of to-day what changes there had been. The hand camera had come into vogue in a most surprising manner, and he thought they owed a debt of gratitude to those firms who had turned their attention to its perfecting. Inventions came so rapidly that when they thought of telegraphy without wires they might possibly come to photography in colours before any very great length of time. However, after his twenty years of experience, the only definite conclusion he had arrived at was that he knew very little about the art at all, and he thought most of them were standing on the verge of knowledge, and that they had a great deal to learn. The object of a large Convention like that was to bring together those who were deeply interested in the art, and by the interchange of thought, and by the reading of scientific papers to see whether some future possibilities might not be discovered in the art of photography. The Convention had done a great deal in the past, and he felt confident that the visit to Derby would be productive of good fruits. He only hoped that everything would go off well, and he could only add that he was particularly glad he would be able to show them a little hospitality on Wednesday.

On the motion of Mr. John Stuart, seconded by Mr. William Crooke, the President was warmly thanked for his address, and subsequently the company inspected the collection of photographic apparatus, pictures, etc., on view, and enjoyed an excellent selection of music by an orchestral band, under Mr. H. J. Bouldersstone, vocal music being contributed by Miss Bernice Woods, Miss Hollingworth Innes, and Mr. Herbert W. Gambridge. Light refreshments were served during the evening, which was altogether a most enjoyable one.

On Tuesday the whole day was spent at Dovedale, the leader being Mr. T. A. Scotton (Derby). The party proceeded by brake to Ashbourn, which was reached about half-past ten. An hour's

ramble followed, and, the day being fine, some excellent negatives were secured. The party next resumed their journey to Dovedale, where luncheon was provided at the Peveril Hotel. The members in the afternoon separated into small parties, and visited the various places of interest, taking the opportunity to obtain some permanent records of their excursion in the form of landscape views. At five o'clock the party re-assembled, and drove to Ashbourn, where tea was provided.

THE ANNUAL MEETING.

The annual business meeting of the Convention was held on Wednesday morning at the Mechanics' Institute, Derby. In the absence of Mr. G. Herbert Strutt, J.P. (President), Mr. C. H. Bothamley was voted to the chair, and there was a very good attendance.

After the minutes of the last annual meeting had been confirmed, the meeting discussed the place of meeting for next year's Convention.

A letter was read from the Photographic Society of Ireland, asking the Convention to meet in Dublin.

On the proposition of Mr. Lyell (London), seconded by Mr. G. W. Norton (Oxford), it was decided to accept the invitation. The following gentlemen were elected on the Council: — H. Walter Barnett (London), Harold Baker (Birmingham), Godfrey Bingley (Leeds), Henry Coates (Perth), W. J. Croall (Edinburgh), T. R. Dallmeyer (London), W. E. Dunmore (London), Alfred Ellis (London), S. H. Fry (London), F. Gandy (Derby), T. K. Grant (London), Dr. E. Collier Green (Derby), H. M. Hastings (London), E. J. Humphrey (London), Martin Jacquette (London), C. B. Keene (Derby), Sydney Keith (Hounslow), G. T. Lee (Derby), C. Phipps Lucas (London), J. W. Marchant (London), A. F. Mowl (Liverpool), John Noaks (Croydon), G. W. Norton (Oxford), Rev. T. Perkins (Blandford), Arthur Priestley (Birkenhead), Ralph Robinson (Redhill), J. A. C. Ruthven (Dublin), P. R. Salmon (London), F. H. Sanderson (Cambridge), T. Scotton (Derby), A. Seaman (Chesterfield), Alexander Tate (Belfast), W. Taylor (Leicester), J. H. Walker (Leeds), E. J. Wall (London), H. Snowden Ward (London), Major-General J. Waterhouse, I.S.C. (London), S. B. Webber (London), J. B. B. Wellington (Elstree), and A. Werner (Dublin).

Mr. H. Snowden Ward proposed a hearty vote of thanks to their hosts at Derby (the Mayor and the Town Council). He said they had never been better received than they had been at Derby.

Mr. W. Crooke seconded the motion, which was unanimously agreed to.

The auditors were re-elected, and the Chairman said that they did not often get members at the meetings from the British dominions beyond the seas, but this year they had three members from Cape Town attending the Convention.

Mr. Furniss proposed that the balance-sheet of the Society be circulated amongst all the members of the Society, and this was agreed to.

The Hon. Secretary (Mr. F. A. Bridges) said that the Society had about £450 in hand, and of that amount £300 had been collected since he had held the office of secretary.

The meeting concluded with a vote of thanks to the Chairman for presiding.

THE GARDEN PARTY.

On Wednesday afternoon the President and Mrs. Strutt gave a garden party at their charming residence, Bridgehill, Belper. Besides the members and their lady friends, invitations had been extended to a number of well-known local amateur photographers, and considerably over 200 ladies and gentlemen assembled at the Midland Station, Derby, on Wednesday afternoon, and proceeded by the 2.15 train to Belper, where they were joined by several others who had motored over. The weather was gloriously fine, and the splendid grounds at Bridgehill were seen perhaps at their best. Upon arrival at

Bridgehill Mr. and Mrs. Strutt held a reception in the house, and extended a most cordial invitation to all present. The company spent an exceedingly delightful afternoon in wandering about the grounds, listening to the fine band of the 1st V.B. Sherwood Foresters, under the conductorship of Bandmaster Seddon, and partaking of Mr. Strutt's generous hospitality. The band was situated on the upper lawn, and the following is a programme of the pieces played:—Overture, "A Merry Monarch" (Herold); waltz, "Wiener Kinder" (Strauss); selection, "The Toreador" (Monckton); cornet solo, "Shepherd of the Fold" (Piccolomini); fantasia, "A Life on the Ocean" (Miller); piccolo solo, "Lilliputian" (Brewer); selection, "Faust" (Gounod); waltz, "Fesche Geister" (Strauss); selection, "The Red Hussar" (Solomon); negro dance, "Sambo's Holiday" (Tchakoff); selection, "My Lady Molly" (Monckton); fantasia, "Irish Melodies" (Hare); "God save the King." During the course of the afternoon the whole of the members of the Convention assembled on the upper lawn, and the "official" photograph was taken by Mr. C. Barrow Keene, a reproduction of which is presented with this issue of THE BRITISH JOURNAL OF PHOTOGRAPHY. A key to the group will be published in our next issue. Tea was provided in a large tent on the lower lawn, whilst on the upper lawn there was a large tent for fruit and other refreshments. The catering was satisfactorily carried out by Mrs. Stone, of the County Hotel, Derby. Mr. and Mrs. Strutt did all in their power to make the gathering a delightful one, and they were eminently successful in their efforts. The party left Bridgehill shortly after five o'clock, and travelled to Derby by the 5.30 express, which was specially stopped for them at Belper.

THE ANNUAL DINNER.

The annual dinner of the members of the Convention was held at the Royal Hotel, Derby, on Wednesday evening, and proved very successful, the gathering being graced by a number of ladies. Mr. G. Herbert Strutt, J.P., presided, and he was supported by the chief officers of the Convention. Amongst the local gentlemen present were the Mayor (Councillor C. Boam), Councillor Dr. Laurie, J.P., Councillor H. Arnold Bemrose, J.P., Dr. E. Collier Green, Messrs. C. B. Keene, F. Cooper, G. Walker, H. G. W. Dawson, W. Crowther, W. R. Bland, and others. An excellent repast was provided, and at its conclusion an interesting toast list was submitted. The loyal toasts having been duly honoured, Mr. H. Snowden Ward proposed the toast of the evening, "The Photographic Convention of the United Kingdom." He said that the Convention was progressing extremely well, and in a manner which must be satisfactory to them all. Some critic of the Convention went so far as to assert when the Convention visited Glasgow the second time that it was a great mistake. However, the members of the Convention were so satisfied and gratified with their second visit to Derby that they had decided to visit Dublin for a second time next year. In Derby they had not only been treated extremely well by the Mayor and Corporation, but by the people as a whole.

Mr. F. A. Bridge, the hon. general secretary, in responding, mentioned that the Convention possessed a balance of cash in hand of £450. There had not been quite such a large gathering at the present conference as last year, but everything had been decidedly satisfactory and enjoyable. The members never had a better welcome, and great trouble had been taken to make the gathering a success. He could not forget that Derby was the first place at which the Convention met, nineteen years ago, and the good fellowship which existed in Derby in 1886 had continued up to the present time.

Mr. John Stuart (Glasgow) gave the toast of "The Mayor, Magistrates, and Corporation of Derby." In doing so he said it was not only the magistrates and the Mayor who had given

them such a hearty welcome and treated them so well, the whole town. Everyone had done his best to make it happy and comfortable. They owed Derby, its Mayor, and Corporation a deep debt of gratitude, and he assured them the members were quite satisfied.

His Worship the Mayor expressed his delight, and thanked his brother magistrates and the Corporation, to receive a second visit from the Photographic Convention, and he trusted it would not be long before they came again. He was very glad the members had been favoured with such fine weather, and hoped the remaining time of the visit would be spent under equally favourable conditions. His Worship paid a tribute to the beneficial results derived from the Convention, and to the good fellowship which it kindled. He wished it every success.

Dr. Laurie also responded to the toast, and endorsed the words of welcome delivered by his Worship the Mayor. He was very glad the Convention had grown to the extent it had, and he wished it every success and continued prosperity. Many people had a habit of crying down their own cities or towns, but he had never seen that Derby was worse than other towns, in fact, he considered it better than some of the towns. It was one of the healthiest large towns in England. He was very glad to say that the housing problem in Derby was not in any way acute, for the amount of overcrowding was almost reduced to an invisible unit. He joined with the Mayor in hoping that the town would soon have the pleasure of another visit from the Convention, to which he wished every success.

"The Derby Photographic Society" was the toast submitted by Mr. E. J. Humphery (London), who said they all thanked Mr. Strutt very cordially for the very pretty and highly enjoyable garden party to which he entertained them that afternoon. Mr. Strutt was the president of the Derby Photographic Society as well as holding the office of president of the Convention. Then they possessed enthusiastic gentlemen in Mr. Collier Green and Mr. Keene, a vice-president of the society who was the worthy son of a most worthy father. He asked them to honour the toast of the Derby society with every sincerity and cordiality, and he coupled with the toast the name of Mr. W. Crowther, who had been officiating as secretary for the arrangements, etc.

The Town Clerk (Mr. G. T. Lee) responded. He said the members of the Derby Photographic Society were only pleased to receive a visit from the Photographic Convention, which would no doubt urge on those who had allowed their interest to flag, and encourage those who perhaps had not done quite so well as might be.

Mr. William Crowther, who also responded, thought the Derby Photographic Society was doing everything they could to help the good cause. The Derby Society yielded to none in enthusiasm and good fellowship, and he sincerely hoped the local society would be attended with every prosperity.

Mr. George Davison submitted "The Professional Photographers' Association." He said there was one fault he had found with that association, and that was that so few of the members of that organisation were present at the annual Convention. He had hoped that they would have seen a large section of that body to share with them the enjoyments and pleasures of the Convention. However, he trusted that would be made up at another gathering, and certainly, although perhaps they lacked numbers, they did not lack quality. He coupled the name of Mr. Alfred Ellis with the toast.

Mr. Alfred Ellis, the president of the Professional Photographers' Association, in responding, said that in many of the cases the professional photographer was his own operator, it was very difficult for him to attend that Convention for a few days or a week. There was a depression in trade, which, of course, affected the business of photography more than others.

Mr. C. H. Bothamley gave "The President," and, in doing so, said that the head of their Convention was a gentleman of great importance, and he thought in every way they might congratulate themselves on the selection of the President of the Convention for the year 1904. They had a President who had taken considerable part in the preparation of that meeting, and they had all had personal experience of the kindly and generous hospitality of Mr. and Mrs. Strutt. They had found their president of the present year not only an enthusiast in the art of photography, but a thoroughly good fellow.

The toast having been drunk with musical honours, the President, in replying, assured them that when he accepted the presidency of that Convention he did so not without trepidation, but he was assured that he would get along all right as long as he helped the organising secretary and did what was required of him in that direction. He could not help feeling—and that was one of the reasons why he accepted the presidency of the Convention—that the importance of photography was not yet fully recognised. People treated it as an amusement, and as an artistic occupation, and so on, but the time had not yet arrived when people treated it as a means of making a record—a traditional record which could be valued as history. He did feel that if photography had been invented 150 or 200 years ago, records of those days would have been most valuable to the public bodies of the present day. On his own estate he never thought of having alterations made without first photographing the house or whatever it might be, and then saving the alterations photographed. He was proud to say that he had had some small influence upon the county council of the county, and if they went to the offices of that body they could see a record of the last fifteen years—a most carefully photographed record, which was the property of the ratepayers throughout the whole county. There were photographs of such things as alterations to the boundaries of the county. They were not interesting and not artistic, but they would be of great importance, and would save a vast amount of labour, to those who had to come after them. Another institution that he was deeply interested in was the Derbyshire Royal Infirmary in the town, of which they were very proud. It was an institution in which was the means of doing a vast amount of good in the town and county of Derby. Dr. Collier Green and himself met constantly there, had introduced photography, and not only did they take ordinary portraits, but, thanks to the X-rays, they "did" interiors as well. He could honestly tell them that the introduction of the X-ray into the Royal Infirmary had been very beneficial to the many who were unfortunate enough to get such things as needles into their bodies. They had found the X-rays absolutely necessary. In conclusion the president said it was an extreme pleasure to him to be able to show them any little hospitality during their stay in Derby.

The other toasts included "The Press" and "The Ladies," and the gathering concluded with the singing of "God save the King." During the evening songs were given by Mr. H. W. Hambridge, Mr. Turner, and Mr. F. A. Bridge, whilst Mr. S. Deville Cox presided at the pianoforte.

On Thursday morning the members of the Convention left Derby for Hardwick Hall, under the guidance of Dr. Green and Mr. C. B. Keene, travelling by rail to Stretton Station, and thence by coach to Hardwick. A large number of members participated in the excursion, which was a very interesting and highly enjoyable one, and many excellent negatives of the Hall and surroundings were secured. In the evening at the headquarters of the Convention, the Mechanics' Institute, a paper on "Telephotography" was given by Mr. Clifton, in the presence of Mr. T. R. Dallmeyer, F.R.A.S., who was unfortunately indisposed. The paper is given in another column. There was a good attendance, which included the chief officers of the Convention. The lecture, which was capitally illustrated

by lantern slides, was listened to with great interest, and a number of slides, prepared by members of the Derby Photographic Society, were afterwards thrown on the sheet, under the direction of Dr. Collier Green.

On Friday a visit was paid to Chatsworth and Haddon Hall under the guidance of Mr. A. H. Bennett, and in the evening, after a most enjoyable day, the meeting at the Mechanics' Institute was well patronised. Mr. H. Snowden Ward gave a paper on "Figures in Landscape," illustrated by lantern slides.

Saturday witnessed the close of the Convention, which may be marked down as one of the most successful of the series. The particularly propitious weather had no doubt much to do with the enjoyment experienced by the visitors to Derby this year, and we trust that next year's gathering at Dublin will be similarly favoured.

During the week an exhibition of photographs and photographic apparatus was held in the Albert Hall. The exhibition included unframed prints, the work of members of the Convention, and a special section was reserved for pictures taken at the Perth meeting last year. Particularly worthy of note were the exhibits by Kodak Limited and the Platinotype Company of work by the most prominent American professional photographers. Messrs. J. J. Griffin and Co. and the Adhesive Dry Mounting Company also had a display of their specialities on view. An exhibition of professional work by members of the Professional Photographers' Association was also open during the week at the Corporation Art Gallery. A brief review of this appears in another column.

In addition to the usual amount of real hard work undertaken by Mr. F. A. Bridge, the general hon. secretary of the Convention, special mention must be made of the efforts of Mr. W. Crowther (local hon. secretary) and Miss Crowther, and Messrs. J. B. Copeland (hon. secretary Derby Photographic Society), C. Barrow Keene, A. H. Bennett, T. A. Scotton, S. Finney, G. Walker, Dr. Collier Green, Bendle W. Moore, F. Willatt, and W. Wilkinson, in endeavouring to make the Derby Convention, 1904, a signal success.

THE PRESENT POSITION OF TELEPHOTOGRAPHY.*

TELEPHOTOGRAPHIC lenses have now been before the photographic world long enough for a just estimate of their practical value to have been formed, and the following remarks are intended to summarise the experience of more than a dozen years of intercourse with workers in the field of telephotography. It is unnecessary to deal with elementary principles, or to give working instructions here, for telephotography has now a literature of its own, and the beginner will find reliable guidance in the books of Mr. Ernest Marriage, the late Dr. Deller, in addition to the booklets issued by the manufacturers of the necessary instruments. Ten years ago the telephotographic lens was regarded as a scientific curiosity, which might have its uses, but that these uses were so limited, and the manipulations of the instrument so difficult, only the most ardent and skilful enthusiasts dared to invest in one; to-day it is usually due to financial considerations if the amateur's outfit does not include one, while, more wonderful still, even the professional photographer is beginning to become conscious of their existence and to realise that there is money in a lens that enables him to accomplish work which he would otherwise have to refuse as impracticable.

We can only compare the progress of telephotography with that of the phonograph, which has in like manner developed from a scientific marvel to being a source of enjoyment to the million and an instrument of real value to the scientist and

* A paper read before the P.C.U.K. by Mr. E. Clifton, F.R.P.S.

historian. I will now, with your permission, give you some reasons why people use telephotographic lenses.

The greatest and almost sufficient reason is that they allow of objects being taken from a better point of view than is usually the case, the size of the image being at the same time capable of variation between very wide limits. (This was well illustrated by the two slides shown, taken from illustrations published while the telephoto lens was a struggling youngster and showing St. Albans Abbey as photographed from a near point of view, with all the horrors of exaggerated perspective, and the same building taken at a distance of nearly a mile, of course with a telephoto lens. Here the true proportion of the Abbey towering above the surrounding buildings was seen, and the intentions of the architect are truly recorded. Almost similar was the case illustrated by Mr. Cleveland's view of Salisbury Cathedral, only here as a contrast the rendering was given by an ordinary lens at the same distance.)

Taking another case, we may find that our desired object is entirely inaccessible and that the only possibility of securing a picture is by the use of the telephotographic lens. Architectural details may be classed with the foregoing, and I am glad to say that the student of architecture has not been slow to avail himself of the new power. One of the most recent developments of telephotography is its application to the rendering of very near objects sometimes on a slightly reduced scale, and again sometimes larger than natural size. Anyone who has had experience in the photography of flowers, articles of jewellery, and the like, has felt the urgent necessity for a lens of such focal length that a comparatively distant standpoint can be chosen. The charming studies by Mr. H. T. Malby illustrate this.

From such subjects we turn naturally to portraiture, and it is gratifying to be able to record a growing tendency to use the telephoto lens in one or other of its forms in the studio. Besides the simple uncorrected telephoto lens which was made at the instance of Mr. J. S. Berghem, negative attachments of low power are frequently used for what are commonly called studies, but which it is to be hoped will become the usual thing in the near future. Work by Mr. Hewitt, Mr. Cadby, and Mr. F. H. Evans illustrate in the most striking manner the value of the telephoto lens in ordinary portraiture. A few words regarding the choice of a telephoto lens may not be amiss. Telephoto lenses may be roughly divided into two classes—high power, i.e., having a negative lens with a focal length of less than one-half that of the positive lens, and the moderate power, in which the negative focal length is one-half that of the positive, or even greater.

Broadly speaking, it may be said that the high power combinations are mostly useful for mountain scenery, architectural details, and all subjects where the maximum magnification obtainable with any given camera extension is desired. The principal drawback to their general use is that ordinary-sized plates are not covered to the corners with low magnifications.

Moderate power combinations have in every sense a wider field. They are the tool of the pictorial worker, covering, as they do, the normal-sized plates with a minimum magnification of about three diameters—(by normal-sized plates I mean the size for which the positive lens was originally chosen)—and this at practically the infinity focus of the positive lens. With most modern cameras magnifications up to $4\frac{1}{2}$ or 5 diameters may be obtained, and this degree of enlargement will be found ample for most subjects. For portraiture, the focal length of the negative lens may advantageously be longer, equalling or even exceeding that of the positive lens, and it may here be pointed out that owing to the softening effect which results from the combination of a portrait lens with a negative, the full aperture of the former may be used, so that a magnification of $2\frac{1}{2}$ to 3 diameters may be obtained with little increase of exposure

as compared with the positive lens used alone and stopped down sufficiently to get an apparently equal amount of depth of focus. In eight years the telephoto lens will attain majority as a practical working tool, and I trust—I may almost promise—that I shall then be able to chronicle further developments in its construction and use.

T. R. DALLMEYER, F.R.A.S.

SOME UNCONVENTIONAL OBSERVATIONS AT DERBY

By A BLAND OBSERVER.

MONDAY.—Reception by the Mayor and his great Gold Chain. Mr. C. H. Bothamley, in an effusive way, eulogised the President, Mr. G. Herbert Strutt, and the illustrious family from which he has sprung. Mr. Rodger, of Perth, then spoke, but he couldn't be heard, and afterwards produced what appeared to be an infernal machine. It proved, however, to be harmless, and merely contained an 18-carat gold Maltese cross which only a Convention President wears. Mr. Strutt rose gracefully, and it was stuck on him, and the honour was so enthusiastically received by the admiring and envying audience that he subsided quietly into his chair, and blushed like a maiden. There was only one smoke-room, and nearly enough chairs in it, so we sat on one another's knees on the table, the window-sills, and the floor. There were matches, and foraging parties were instituted. (Convention members can do without chairs, but they cannot do without matches.) *Per con.*, there were two refreshment-rooms—a most excellent and praiseworthy arrangement. Members lived in the hotel until the waiters knew them, then they went to the other, subsequently returning to the first one as strangers. The writer did it himself, and was poorly the next day. The only regret was that there was no whisky on draught.

TUESDAY.—Dovedale.—The writer didn't go. He knows that any one who expects to get there a pictorial picture out of a hundred photographic pictures is a—knows not what he is let in for. As a just judgment the train in the evening was three-quarters of an hour late, which gave a thunderstorm chance, and some of the members got very wet, and returned to Derby to go to bed. There was no meeting in the evening. Good job!

WEDNESDAY.—The writer was not elected a member of Council. With Japanese pluck he, undismayed, went to President's garden-party, and, following the example immediately set, found himself in the refreshment-tent, and had tea and sweet things. Shortly after he found another tent, much cooler than the first one, and claret cup and champagne cup in it. He had them. The band played, and a bugle called as per programme. The bugle called the Convention group together—see photograph, the back row, with two feet on chairs. A well-known Conventioneer pulled himself up into position by them, and, hoisting a hand-camera, essayed to snare the Convention snapper. At the critical moment he dropped the camera, and whether he reappeared with it in time to be included in the group or not the photograph will show.

WEDNESDAY.—Dinner (at the Royal Hotel).—Very well done. Waiters attentive and numerous, but no matches, not even when they were asked for. A few of the speeches were good, but short, some rather turgid and long. The President spoke well, so did Mr. Humphries and Mr. F. R. Salmon (who replied to "The Press," notwithstanding that he divided his brief speech into three heads). Mr. Humphries had a congenial subject for the toast of "The Ladies," to which Mrs. Snowden Ward responded, and was received and accompanied with plauds. Mr. F. A. Bridge and Mr. William Crooke contributed to the musical portion of the evening. The former was warmly encouraged, and the President performed departed from his room and allowed it. The second song was very pretty. Mr. Bri-

brought it out perfectly, and must have been a sad dog in his prime. Mr. W. Crowther, the local hon. sec., also gave vent to a recitation, which was vociferously applauded. The writer was again poorly the next day.

THURSDAY.—Hardwick.—Very enjoyable excursion, all but Hardwick. Photography inside the Hall was not allowed. To add to the disappointment, Mr. Seaman, of Chesterfield, discovered in some occult way that the housekeeper had orders, which she had misread, to allow the members of the Convention to photograph interiorly. The glad news was spread about at once, but, as the members were then about to pack up for the return journey it only made them wilder, and the usual urbane glee did not spontaneously illumine the remaining hours of that day. Mr. Dallmeyer was announced to read a paper on "Telephotography," and sent Mr. Clifton to do it for him. He did it, and showed a grasp and lantern-slides of his subject. The grasp was better than the slides from a pictorial point of view, the latter lacking in artistic lighting, but still good enough to illustrate the technical points of the subject. Dr. Collier Green followed with an exhibition of slides by members of the Derby Photographic Society, together with some effectively-coloured slides of flowers brought by visitors from Cape Town. (N.B.—It was slides that they brought.)

FRIDAY.—Chatsworth and Haddon Hall.—These quite wiped out the Hardwick disappointment, and the evening showed everyone to be jubilant. One member exposed fifteen plates in Haddon, and how he did it in such a crowd the writer can't imagine. Perhaps he snapshotted for the "Daily Mail" competition. There was a large audience at the Mechanics' Institute at 8.30 p.m., and Mr. Snowden Ward made an excellent speech. His subject was "Figures in Landscape." He emphasised the opinion that figures might be made a great help to landscape, and that landscape might be made a great help to figures. He showed many lantern-slides, the best of them—and two were artistically good—having been made by beginners. Some slides sent from Perth followed, several of which were of a very high degree of merit, but were spoilt by white lettering on them of the title of the subject and an index number. This meeting over, Mr. Snowden Ward, feeling more dry than usual, was conducted by a friend to the bar of the local Slater, at which he was received with cheers by Conventioners already there, and had something to drink, with ice in it, and was poorly the next day.

SATURDAY.—Going-home day, and visits to the Penny Bank on arrival for withdrawals. Some members who weren't in a hurry to go home went to Winfield Manor, a fortified domestic hall possessing cannon balls left in it by Oliver Cromwell.

FINAL.—The local members of the Convention are feeling sore. Their character has been impugned. The writer, together with the other local members, was given a Convention badge, ornamented with wings of white ribbon. This, it was explained, was that people would know him when they saw him, and if they wanted anything would ask him for it. His personal friends, however, have cut him, believing the white ribbon to mean that he has joined the Derby Vigilance and Purity Association. On his complaining of this to the local secretary, Mr. Crowther, the only reply he got was: "You may be quite sure that none of your friends who *know* you would ever think that of you."

The following formula for producing soft, warm tones on platinum papers is given in "Photographic Scraps." The amateur should, however, realise that the chemicals employed are exceedingly poisonous. Four stock solutions are to be made up, viz.: (a) Oxalate of potash 4oz., water 16oz.; (b) copper chloride 125 grains, water 8oz.; (c) mercuric chloride 1oz., water 16oz.; (d) lead acetate 32 grains, water 4oz. To twelve parts (a) add four parts (b); then add four parts (c) and one part (d). Heat to 175 deg. F. Slightly overprint the platinum paper and develop full out.

CARBON PRINTING.*

The carbon process possesses the advantages of great permanence of the prints, wide range of colours obtainable, and great latitude. Dense and thin negatives produce most satisfactory prints under certain conditions, and as the tissue can be sensitised, exposed, and developed within a few hours, the process universally commends itself, and no other process is capable of producing more exquisite pictorial results. The varieties of surface are also very great as exceedingly smooth, medium, or rough surface papers can be used according to the nature of the subject. Opal, glass, or ivory can also be used as a final support. The process depends upon the action of light upon pigmented gelatine, associated with a chromic salt. The tissue can be sensitised during manufacture or subsequently. A disadvantage of ready sensitised tissue is its inferior keeping qualities, although great improvement in this direction has been made. The ready sensitised tissue will keep for several months, however, if properly stored in boxes. The keeping qualities of tissues sensitised after coating are dependent upon the strength and condition of the sensitising bath. The first requirement is a good, pure paper which will retain its toughness when wet. It may be coated with a solution made as follows:—

Nelson's opaque gelatine	1 lb.
Coignet's gold label gelatine	4 oz.
White loaf sugar	6 oz.
Potassium bichromate	1 oz.
Water	80 oz.

Colouring matter (to suit requirements).

The potassium bichromate should be converted into double-chromate of potassium and ammonium by the addition of ammonia. The warm solution or jelly is placed in a suitable dish, and the band of paper to be coated is drawn over the surface. Another method is to draw two bands of paper together through the solution, one side of each being coated in one operation. The paper is then dried, generally upon rollers or laths.

Probably to the majority of those present the most interesting method of producing carbon prints is that known as the single transfer process, which offers many advantages over the double transfer process. By single transfer prints can be produced upon almost any surface, whereas the double transfer process limited one in that direction. In the single transfer process it is necessary first, to have a reversed negative, the graduations of which should be carefully considered. Negatives known as "plucky" require a tissue sensitised in a bath stronger than that required by a thin, delicate negative. The negative must be "safe-edged," and a good way of "safe-edging" is to paint about $\frac{1}{4}$ in. or $\frac{1}{2}$ in. round the margins of the negative on the glass side. The paint need not be opaque, and if it be slightly transparent it will answer very well. Black or brown paper pasted round the margins of the negative also answers the purpose. If potassium bichromate containing a large quantity of free acid be used in preparing the sensitising bath, difficulties will be experienced. To secure a satisfactory bath, a good sample of potassium bichromate should be taken, and liquid ammonia added, drop by drop, until the solution changes to a light orange colour, due to the formation of a double chromate of potassium and ammonium. The neutral bath will work well for a considerable time, but if used for a few prints and put aside for some months, it will deteriorate more or less. A standard sensitising bath is a 4 per cent. solution of bichromate of potash and ammonium, in equal parts, or bichromate of potash converted into a double chromate of potassium and ammonium. The tissue should be cut somewhat larger than required in the finished print, placed in the bath, face upwards, any airbells that may form being removed with a brush passed over the surface. The tissue is then turned face downwards in the

* A condensed report of a demonstration given before the Royal Photographic Society.

bath, and the back also brushed. Three minutes' immersion in the sensitising bath is sufficient, the temperature being about 50 deg. to 60 deg. F. The tissue must not be allowed to float or curl above the solution, nor adhere to the bottom of the dish. It is then placed upon a clean zinc-covered board, and squeegeed evenly and gently with a sufficiently wide flat squeegee, in order to remove excess of solution from the paper. Vigorous squeegeeing is not necessary, and will lessen the rapidity of the tissue. The tissue is then laid face upwards upon a blotting board and allowed to dry for five or six hours in a temperature not higher than 65 deg. F., or in a current of warm, dry air. A proper drying cupboard is desirable, but the drying can be effected in an ordinary room, care being taken to exclude fumes of gas or the products of combustion. In its wet state the tissue is insensitive, but as it dries it becomes sensitive, and must therefore be protected from the faintest rays of white light. Incandescent light will affect the tissue if allowed to reach it for any length of time at a short distance; but ordinary gas light has practically no effect. Another method of sensitising, which is strongly recommended when a properly ventilated drying cupboard is not at one's disposal, is the following:—A piece of plate glass is thoroughly cleaned with hydrochloric acid, well washed with water, dried, polished with powdered talc, and lightly dusted. Instead of squeegeeing away the excess of sensitising solution on the zinc-covered board, the tissue is placed face downwards upon the polished surface of the glass, and lightly squeegeed into perfect contact. Any moisture remaining upon the back of the tissue should be removed with a cloth, otherwise unequal sensitising will result. A good surface resembling patent leather in appearance, which gives good contact with the negative, and better results when fine detail is required is obtained by this method, which is very useful for miniature work upon ivory. The tissue takes longer to dry upon glass than in the ordinary way, but if placed in a current of air at a temperature of about 65 deg. F., it will be ready in eight or nine hours. If difficulty be found in keeping the tissue from white light during drying in this way, the glass on the opposite side to the tissue may be painted with an opaque substance, or covered with black paper, when the tissue may be dried in daylight.

The printed image is practically invisible, and it is necessary to use an actinometer to determine the exposure. The tissue is rendered insoluble in water in varying degrees, according to the gradations of the negative, by the action of the light. The more soluble portions are washed away by the application of warm water. For the support, a good paper, such as Whatman's is prepared with a substratum of gelatine. The surface of the paper may be smooth and shiny, when the print is required to possess the brilliant richness or the sheen characteristic of the carbon print; or a matt surface can be obtained, especially with the new matt tissues. The conditions of drying also affect the surface considerably. For single transfer the paper is coated with a mixture prepared as follows:—

Nelson's opaque gelatine	1 oz.
Water	20 oz.
Chrome alum	15 grains.
Water (warm)	1 oz.

The gelatine is soaked in water for several hours, until quite soft, heated on a water bath, and vigorously mixed with—

This mixture is then laid upon the surface of the paper with a broad camel-hair brush. Rough paper should have two coats of the solution, the second after the first is dry. The brushing should be first in one direction and then across, to ensure an equal coating. Paper thus coated keeps almost indefinitely if preserved perfectly dry; before being used for the development of a print it simply requires soaking in cold or tepid water for about one hour. Rough papers require longer soaking, but as an alternative the temperature of the water may be raised

to 150 deg. or 200 deg. F., when a short soaking will suffice. Care should be taken to remove any air-bells that may form upon the tissue when placed in the water, and also upon a single transfer paper; and when the tissue has been arranged upon the transfer paper and squeegeed in contact with it perfectly, it is placed, under slight pressure, between the blotting boards. It was pointed out that tissue dried upon the glass would not curl much in the water during the soaking previous to mounting in contact with the transfer paper; and that should never be allowed to curl in the opposite direction. Re-sensitised tissue will curl more than tissue dried in the ordinary way; and when the support is rough or thick it requires more vigorous application of the squeegee than when smooth or thin papers are used. Care should be taken not to allow the tissue to remain in the water too long, or frilling of the edge or difficulties in mounting may follow. The print should remain under pressure between the blotting boards for at least twenty minutes, or, if very rough paper be used, half an hour or forty minutes will not be too long.

The sensitising bath recommended in the case of thin negatives is of 2 per cent. strength; negatives of medium density require a 4 per cent. bath; while very strong and dense negatives require a 6 per cent. bath. It is possible to work with baths as weak as 1 per cent. and as strong as 8 or 10 per cent., but they are not recommended on account of their tendency to work indifferently. It has been recommended that tissues, required to be of different sensitiveness, should all be sensitised in the same bath, and allowed to remain according to the degree of sensitiveness required. This method, however, is less satisfactory than that of different baths of various strengths. When the bath shows signs of fogging it should be rejected; and if it becomes acid it should be neutralised with ammonia. A properly-made bath should work well for a month or two.

The developing is a simple matter, provided the previous operations have been properly carried out. The water should be heated to about 100 deg. F., and it should be unnecessary to greatly increase the temperature afterwards. If, however, the exposure has been very long, it may be necessary to raise the temperature to 110 deg., 120 deg., 130 deg., or even 140 deg. F., but an over-printed tissue is best developed at about 120 deg., plenty of time being given, instead of forcing by higher temperature, with which the risks of blistering or frilling are increased. Over-exposure may be corrected by the addition of a little ammonia to the water, but care must be taken or blistering and frilling will ensue. A few minims of a 2½ per cent. solution of sodium hydate in a little water applied with cotton wool will be found to work well for local development, or, added to the developing water, to cause more general reduction. Too much sodium hydate, however, causes blistering. If the gelatine appears to be dissolving quickly, with a loss of detail in the high lights, the temperature of the water should be reduced to about 90 deg. or 85 deg. F., and development carried on more slowly. By reducing the temperature of the water a much under-exposed print that would be spoilt by water of a higher temperature can often be saved. Development is better commenced at a temperature of 90 deg. or 95 deg. than 100 deg. F., because, when commenced at high temperature, there is danger of washing away the delicate parts of the print. A word of warning is necessary again using a wet blotting board for placing the prints between after mounting and before development, as this is frequently the cause of dark markings upon the print. The greater the delay of the printing the more soaking in the water at 90 deg. or 100 deg. is required before stripping the tissue. Stripping too soon is apt to cause blistering or frilling, but if one end happens to get broken or frilling commences, it is a good plan to leave that end and start stripping from another. While developing it is advisable to have another bath of cold water at hand,

which to plunge the print at the right moment, to stop further development.

The various coloured tissues necessitate somewhat different fitting—for instance, a red chalk tissue requires much more tinting than black or a dark brown.

The chief causes of failure are found in the insolubility of the tissue. This may be due to free acid in the bichromate of potash; too long drying of the tissue; the action of gas fumes the products of combustion; the action of white light when the tissue is dry, or almost dry; the tissue being dried in a damp atmosphere; too long keeping of the tissue after sensitising; or, of course, over-exposure. Unlike most other printing papers, a little white light falling upon the carbon tissue, before, or in the course of printing, is apt seriously to affect it; for in the carbon process we have to guard against the continuing action of the light. A small amount of light upon the surface of the tissue, either before or after exposure, will continue its action in the dark, and in a few hours produce total insolubility upon the surface. This continuing action of light might be utilised in under-exposure, caused, say, by unexpected failing of the light. In such a case the print should be placed in a box or drawer, protected from white light, and allowed to finish in the dark; eight or ten hours there was the slightest moisture about being enough perhaps to finish it. In addition, however, to the continuing action of light there is a lateral or spreading action; and a print taken from the frame and allowed to continue printing will not, therefore, show such delicate and fine detail as when development is started directly after exposure in the frame. Development should always be full; all soluble gelatine should be washed away, otherwise there may be a want of fine detail or murring and the print may show unequal depths. The surface of the print should not be touched with the fingers during development; but a flat print, one lacking brilliancy, may be improved by applying cotton wool to the high lights, to increase them. Shadows when too deep may also be reduced by rubbing the cotton wool over them. Slow drying of the print tends to give a more matt surface than rapid drying; and if laid upon blotting paper, and dried for about twenty-four hours, the print will be more "flat" than if it be dried quickly, whilst a print dried by heat will show more brilliancy in the shadows. Reticulation, or a series of blisters all over the print, is a peculiar difficulty, which may be caused by some of the defects already mentioned. A common cause of reticulation is the use of water at too high a temperature. If new tissue suffer by the washing away of the high lights, it will be found to improve by keeping for a few days.

After development, the print is transferred to cold water and then to a 5 per cent. solution of alum to harden the gelatine and fix the print. The alum also helps to increase the permanence of the print, and to remove any colour which may have been imparted to the paper by the chromic salts. The prints should be allowed to remain in the alum bath for ten minutes or a quarter of an hour, but, if they still show colour from the bichromate salts, they may remain longer in the alum. They should then be washed for about ten minutes in running water, and hung up to dry (the best way is to suspend the prints on a line to dry, not to blot them); after which they can be mounted in the usual way. Difficulties due to frilling may be found if the print be immersed too long in the water before being brought into contact with the support; when the safe edging has been imperfectly performed, or if it be done upon the film side of the negative instead of the glass side. Frilling may also be due to unequal squeegeeing; to the tissue being under pressure for too short a time, or to the water being too hot at the commencement of development.

Then comes the work which few prints do not require, namely, potting or touching up. The best way to do this is to make a little solution of gelatine mixed with some of the same

coloured pigment as that in the print and work it on to the print through an air brush. It is not advisable to use much colour in the brush; and, of course, it is necessary to keep the gelatine solution warm while using it. If this part of the work be done carefully no objection can be raised against it; but when a brush is used some artistic skill is, of course, required.

In the double transfer process a thick paper is first coated with hard gelatine, quite insoluble, to act as the temporary support. This is treated with waxing solution, made as follows:—

Yellow resin	3 drams.
Pure beeswax	2 drams.
Turpentine	10 oz.

A little of this solution is taken upon a flannel and rubbed in a circular motion over the surface of the temporary support. Then the surface is polished, and about an hour allowed for the spirit to evaporate. The waxed temporary support is then placed in the mounting water and after a few minutes the exposed tissue is also placed in the mounting water; it is then squeegeed into contact the same as when mounting a single transfer print and developed as previously shown; after stopping development with the addition of cold water the print is placed into the alum bath, care being taken that the print is soaked long enough for all discoloration from the bichromate solution to be removed from the temporary support before the print is transferred to the final support. The washing then has to be continued until the print is free from alum, and the print dried before transferring to the final support. If the print be not dried at this stage there is a danger of the image being blurred. Afterwards the tissue is soaked for a short time in cold water, and transferred to the final support, which is best when smooth, rough paper not being nearly so suitable. The final support should be previously placed in a 2½ per cent. alum bath for at least half an hour, and then placed in tepid water with the print upon the temporary support. The final support should be a little smaller than the temporary support, but a little larger than the print. The print is brought into contact with the final support under the water and then well squeegeed into contact upon the zinc-board. The prints are then blotted off and hung up to dry.

Difficulty is sometimes experienced in bringing the dry hard tissue into perfect contact with the negative in the printing frame; but if both be placed in the frame, and if the tissue be allowed to lie upon the negative for ten minutes without pressure from the springs, it will be found that better contact can be secured. The printing should always be carried on in diffused light.

Ivory and opal work should be done by double transfer, although the latter may be done by single transfer. Care should be taken that the opal is absolutely clean. The print is developed upon a waxed temporary support, and, when dry, transferred to a piece of smooth ivory, treated with a solution of—

Nelson's opaque gelatine	½ oz.
Water	10 oz.

The gelatine is first washed and soaked and dissolved by raising the temperature of the water, when it is filtered through a piece of linen or muslin. The following is then added:—

Chrome alum	6 grains.
Water (warm)	½ oz.

and the mixture is well stirred.

The ivory should be placed in a warm dish, and the warm solution poured upon it. The print is adjusted upon the ivory; squeegeed from the back of the print upon the temporary support into contact, and hung up to dry, after which the support can be stripped off, leaving the print upon the ivory. It should be noted that, although the high lights on the print when wet may appear quite white, they may show a distinct tone when the print is dry.

The only objection to the use of chromate of ammonium instead of the potassium bichromate converted into a double chromate of potash and ammonium is its expense, the latter being very easily made in solution and cheaply. It is not advisable to put the tissue under great pressure, as suggested, with a view to hastening the drying between mounting and development. A better plan would be to use only slight pressure for a short time and then facilitate the drying by placing the mounted tissue in a current of warm, dry air.

JOHN H. GEAR, F.R.P.S.

Exhibitions.

PROFESSIONAL PHOTOGRAPHY AT DERBY.

THE normal aspect of the interior of the Corporation Art Gallery at Derby was considerably altered last week, and the janitor at the door was bemoaning the lack of colour and glaze and gold frames, and "suspected" that the aspect of the more sombre show of pictures on view was responsible for the fact that the inhabitants of Derby were not flocking in their thousands to view the exhibition of pictures by the Professional Photographers' Association. Be it whispered, however, that the said janitor was more or less right when he designated the show as a "bit dull an' all," and we trust that the members of the Convention who visited the exhibition did so with an open mind and a complete ignorance of the two exhibitions round the corner, of work by American professionals, as exploited by the Platinotype Company and Kodak, Limited.

Not that one wishes to make odious comparisons. The trend, characteristics, and styles of the two classes of workers on either side of the "herring pond" are too diverse to admit comparisons, and each possesses both its giants and its dwarfs. Possibly, too, the American exhibits were more representative than the English, but the fact remains, the exhibition at the Derby Art Gallery, although containing works by such eminent workers as Wm. Crooke, Harold Baker, Frederick Hollyer, Ralph Robinson, T. Lee Syms, and other well-known men, was as a whole distinctly dull. One's first impression on entering the room was that of oppression—not the kind of oppression experienced by the anti-gummer on his first visit to the Salon, but more the oppression occasioned by lack of something fresh, and one instinctively asked oneself, "Is this a representative show of English professional photography?" A glance at the catalogue, which contains but twenty-two names of exhibitors, convinces us that it is not; whether this is due to the lack of interest taken by the English professionals in the work of the Convention, or whether time or other circumstances did not permit a gathering together of a greater number of works, we do not know, but the general effect seemed to be that in many cases the English professional had endeavoured to emulate the amateur at the provincial show, instead of exhibiting his best work as supplied to his customers. One seemed to know that the pictures shown by the aforesaid Americans were replicas of those dispensed among their clientèle in the ordinary way of business—picked specimens, no doubt, but still ordinary straight work. The bulk of the English pictures, on the contrary, created just the opposite idea. They struck us as being pictures produced in most instances, with an effort, for exhibition purposes, and distinctly not indicative of the everyday work of the professional photographer as known to the purchaser of his photographs, which is surely what we desire to ascertain, and which should be made quite clear in an exhibition of this character. The pictures, too, were hardly done justice to by the rather depressing chocolate-coloured matchboarding covering the walls on which they were hung. Surely the exhibition was worth a little adornment in the way of hangings, especially as the room was so splendidly lit both by day and in the evening.

To the visitor, the works of Wm. Crooke, of Edinburgh, immediately claimed attention as quite the finest specimens of portraiture in the room. These pictures have a dignity all their own, and doubtless impressed the visitor at Derby as much as they did at the House Exhibition at the Royal Photographic Society. If one were inclined to be capitious, exception might be taken in some instances to the lettering in imitation of titling on an old steel engraving. The idea is excellent, but when in some cases, as particularly in No. 79 (William Downey) the portrait itself is slightly

blurred, possibly by movement of the sitter, the whole effect is ingruous. Mr. Lee Syms exhibited a good selection of his quiet good portraiture. As specimens of clean, unemotional work pictures are in the very best taste, as well as being technically excellent.

Harold Baker's three exhibits are rather disappointing. No. "The darkened roof rose high," does not rise beyond the ordinary architectural study, and the texture of the stone has been spoiled by giving it quite another texture, i.e., that of bolting. No. 102, "Miss Lily Hanbury," has always been successful, this particular print struck us as rather poor in quality. John C. showed many old friends that have appeared at various provincial exhibitions. He has evidently made "genre" take an important place in his profession.

C. and F. Dereské are local photographers who show some excellent work. No. 87, "On the Canal," is practically the only picture pure landscape in the room, and it was well worth looking at a second time. The work of Messrs. Dereské throughout the show is characteristic, inasmuch as it is bold, clean, and straightforward. No. 88, a portrait of an Indian cricketer batting, being full of action. Frederick Hollyer showed several of his well-known examples of copying work. Martin Jacollette had one or two big things in portraiture, notably No. 55, "Madame Sassard." We wonder if this is direct work?

Ralph W. Robinson's "Child Reading," No. 63, is good, and other works show knowledge effectively applied. John C. Spiers' pictures are also noteworthy, being restrained in tone, and well framed; No. 56, "Miss ———," was particularly noteworthy. We wonder why H. H. Chapman sent No. 66, "Shrimps," as an example of professional work? These two enlarged snapshots hardly likely to make a splash. Messrs. Alfred Ellis and Walter "George" Alexander as François Villon" was rather hot, but apparently an ordinary print stained red. The technique is splendid, however. R. Fellows Willson had two of his dainty portraits, which were as good as anything of their kind in the exhibition, and I. Connell's work was also distinctly clever. There were other good things on view, but also much that was unworthy, and but for the sprinkling of really good pictures here and there, the exhibition would have to be marked down as mediocre only.

FORTHCOMING EXHIBITIONS.

August 1.—Andover and District Horticultural Society. Photographic Section. Hon. Secretary, W. L. Gradidge, Jubilee House, Andover.

August 16-20.—Royal Cornwall Polytechnic Society Photographic Section. Secretary, Edward Kitto, The Observatory, Falmouth.

September 16 to November 5.—Photographic Salon, Dudley Gall, Egyptian Hall, Piccadilly. Hon. Secretary, Reginald Craigie, Photographic Salon, 1904, Dudley Gallery, Piccadilly, London, W.

September 20-28.—Newbury Photographic Society. Hon. Secretary, E. J. Forster, Guildhall Club, Newbury.

September 22 to October 29.—Royal Photographic Society's Fortieth Exhibition, New Gallery, Regent Street, London. Secretaries, A. W. W. Bartlett, 66, Russell Square, London, W.C.

October 1-30.—Berlin International Photographic Exposition. Franz Goercke, Berlin W. 62, Maassen-Strasse 32, Germany.

October 19-22.—Rotherham Photographic Society. Hon. sec., H. Hemmingway, Tooker Road, Rotherham.

October 18, 19, 20.—Kettering Church Institute Photographic Exhibition. Hon. Secretary, E. Claypole, 112, Hawthorn Road, Kettering.

November, 1904.—Ilford and District Photographic Society. Hon. sec., W. N. Beal, 155, Thorold Road, Ilford.

November 2, 3, 4, 5.—Newark Photographic Exhibition. Secretaries, L. C. B. Appleby, Barnbygate House, Newark.

November 3.—Frome M.I. Photographic Society. Hon. Secretary, B. J. Mitchell, 3, Willow Vale, Frome.

November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Secretary, James Dunlop, Myrtlebank, Motherwell.

November 9.—Hackney Photographic Society. Hon. Secretary, Walter Selfe, 70, Paragon Road, Hackney, London, N.E.

November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.

November 22-23.—Ipswich Camera Club. Hon. Secretary, R. Sutton, 37, Henley Road, Ipswich.

November 23-26.—Hove Camera Club. Hon. Secretary, A. R. Argent, 55, The Drive, Hove.
 November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., W. Simmers, Aberdeen House, Ramsgate.
 December 2-8.—Southsea Photographic Society. Hon. Secretary, J. Lawton, 20, Clarence Square, Gosport.
 December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104, West 101st Street, New York.
 December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.
 December 13-20.—Southampton Camera Club. Hon. Secretary, S. G. Kimber, Oakdene, Highfield, Southampton.
 December 28-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 138, Glasgow Road, Wishaw.
 January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, V. A. Frame, 28, Bank Street, Hillhead, Glasgow.
 January 20-21, 1905.—South Essex Camera Club. Hon. Secretary, Michell, 180, Browning Road, Manor Park, E.
 January 28-February 12, 1905.—Photographic Society of Marseilles. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.
 February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.
 June, 1905.—Northern Photographic Exhibition. Secretary, F. G. Scott, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

September 1.—"Photographic News." Quarterly Competition. Photographic News," 9, Cecil Court, Charing Cross Road, London, W.C.
 October 1.—Thornton-Pickard. £100 cash prizes for pictures taken with Thornton-Pickard cameras and shutters. Thornton-Pickard Manufacturing Co., Altrincham.
 October 10.—Luna paper. £240 cash prizes for prints on Luna paper. Union Allegre and Co., 59a, New Oxford Street, London, W.C.
 October 15.—Belgian Association Lantern Slide Stereogram Competition. Secretary, M. Vanderkindere, 97, Avenue Brugmann, Brussels.
 October 31.—Coxin. 68 prizes for users of Coxin. Judging twelve pictures. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.
 November 1.—The "Graphic." £50 in cash prizes. Manager, Photo Competition, the "Graphic," Tallis Street, Whitefriars, London, E.C.
 December 31.—Barnet. Nineteen classes. Prizes valued at £500 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.
 March 15, 1905.—Ilford. £750 in prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

New Book.

Bibliothèque Photographique." Manuel Pratique de Photographie sans Objectif. L. Ronyer. Gauthier-Villars, Quai des Grands-Augustins, 55, Paris.

In this small volume M. Ronyer has very ably put forward the claims of the pinhole as a substitute for the lens. Those, who find artistic attractions in photographs taken under the simple optical conditions this method implies, will find much that is useful in the book. Never yet have the conditions been more favourable for pinhole photography. We have dry-plates of extreme sensitiveness, that the exposure may not be tediously long for some subjects, and printing papers are to be had in such variety that it is an easy task to find one which is peculiarly adapted to the wants of the negative. We fail to follow the author in his claim for a wide applicability of the pinhole process, as stated in the preface. This may depend upon difference in appreciation of pictorial beauty, and we must leave the question to be decided by time. The charm of the pinhole photographs lies in its suppression of small detail. But this is a limitation, which must be accepted, whether desired or not. On the other hand the prolonged exposure is a serious drawback.

LIGHTING THE SITTER.

PORTRAITURE has come to be something more than the professional usual thing. Time was when the amateur looked askance and doubtfully at the taking of the human face divine, and confined his labours to landscape work; but nowadays he is teaching the professional a new departure, and all manner of artistic effects are the outcome of his endeavours at posing and lighting, and effects are produced which make the old-fashioned professional shut his eyes with holy horror, however much the artist may laud. But what is it the reasonable man, professional or amateur, who is not amuck for bizarre effects, desires in a well-illuminated head?

In a recent issue of "The Camera" Mr. J. Bartlett states that the problem to solve is how to get the greatest amount of gradation combined with perfect relief in the model and with the shortest amount of exposure? These desiderata may be had in any kind of a studio, and we do not think it at all necessary to have recourse to extraordinary methods of illumination. Indeed, it always seemed strange to me why the photographer should go to the expense of having a great expanse of light, and then cover it almost entirely up with opaque curtains. The first requisite toward obtaining anything you want is, first of all, to know what you want. If a photographer cannot tell by looking at a face whether it is illuminated artistically, all the monkeying with curtains would not give him (unless by accident) an effective picture. He may hit it by accident, but then, ten to one, he will not know it until some appreciative friend digs it out of the waste basket and labels it for the Salon.

To know when a head is properly (artistically) illuminated, one must train oneself to observation of faces and comparison with works of painters; that is, he must accustom his eye by watching outside the studio what is beautiful and then try to repeat it under the skylight. For, after all, the studio or skylight is only vade mecum of the photographic artist. It is one of his moulding tools for making pictures which shall please the eye which is not used to living under a skylight. The most successful photographer is he who best succeeds this way. The advantages of a well-constructed skylight are that we have the agent under better control for securing every desired effect than we have in our ordinary room or out of doors. In the ordinary dwelling room or out in the open we may produce what we want, but with greater trouble than under the skylight.

When, through observation outside the studio, we see some effect of light and shade which strikes us as charming, we ought to analyse, as far as possible, the cause. A good deal of training of the eye is necessary to secure good effect in photography. Experiments with lighting of marble or plaster busts in lieu of the human face is something quite different from the illumination of human tissue. The marble bust under certain conditions seemed to possess wonderful delicacy, as well as relief, and when the human head is placed under like conditions it, too, seemed to look as lovely; but, photographically, the delicacy was not in it.

The high lights and the next adjacent lights are rendered beautifully in the negative, but its deep shadows and those allied to them are far too heavy for photographic purposes. Where the photographic subject is a blonde, with flaxen hair, and her garments some of white, light fluffy material, the relationship to the semi-transparent marble is closer, so that the sculpture lighting is in such cases effective. There is enough light carried into the shadows by reflection from the white drapery to soften, while the character of the lighting employed gives enough relief. Even in a well-lit living room most of us have noticed the fine effect produced by a lady, dressed in diaphanous material, seated near an open window. Put a black-bearded man with a swarthy complexion and a suit of black clothes and a boiled shirt, in the same position, and note the effect.

Mr. Felix Raymer has given some most excellent suggestions to "The Camera" readers for employment of ordinary room light, and we would suggest to pose some of your fair-complexioned lady friends, dressed up in soft white material, seated near a lofty side window (like some of our old-fashioned high-ceiling houses have), the lower portion of which is covered with a semi-transparent material, a suitable system of reflectors being used to carry light into the deepest shadows; but be careful not to overdo the reflections—just enough to lessen the contrast. All over you are aware of the flatness of outdoor exposure. With light acting all around, there can be no relief, or next to none. But you can get the same results, and some photographers get nothing else in the best-appointed studios. Flatness is just as easy to get in

a studio with unrestrained illumination as it is out in the open. But it will be good practice, in the meanwhile, for the photographic novice to look about him and study faces as he sees them in the street cars, the theatre, or at his own home.

AN ACID-PROOF TABLE TOP.

THREE or four years ago the writer saw in a pharmaceutical journal a formula for a black finish for table tops. The article did not give the author's name nor the original source of the formula, but stated that the method was "used abroad." Further acknowledgment cannot, therefore, be made. The formula was as follows:—

I.	
Copper sulphate	1 part.
Potassium chlorate	1 part.
Water	8 parts.
Boil until salts are dissolved.	
II.	
Aniline hydrochlorate	3 parts.
Water	20 parts.
Or if more readily procurable:—	
Aniline	6 parts.
Hydrochloric acid	9 parts.
Water	50 parts.

By the use of a brush two coats of solution No. 1 are applied while hot; the second coat as soon as the first is dry. Then two coats of solution No. 2, and the wood allowed to dry thoroughly. Later a coat of raw linseed oil is to be applied, using a cloth instead of a brush, in order to get a thinner coat of oil.

The writer used this method upon some old laboratory tables which had been finished in the usual way, the wood having been filled, oiled, and varnished. After scraping off the varnish down to the wood, the solutions were applied, and the result was very satisfactory.

After some experimentation the formula was modified without materially affecting the cost, and apparently increasing the resistance of the wood to the action of strong acids and alkalis. The modified formula follows:—

I.	
Iron sulphate	4 parts.
Copper sulphate	4 parts.
Potassium permanganate	8 parts.
Water, q. s.	100 parts.
II.	
Aniline	12 parts.
Hydrochloric acid	18 parts.
Water, q. s.	100 parts.
or	
Aniline hydrochlorate	15 parts.
Water, q. s.	100 parts.

Solution two has not been changed, except to arrange the parts per hundred.

The method of application is the same, except that after solution No. 1 has dried the excess of the solution which has dried upon the surface of the wood is thoroughly rubbed off before the application of solution No. 2. The black colour does not appear at once, but usually requires a few hours before becoming ebony-black. The linseed oil may be diluted with turpentine without disadvantage, and after a few applications the surface will take on a dull and not displeasing polish. The table tops are easily cleaned by washing with water or suds after a course of work is completed and the application of another coat of oil puts them in excellent order for another course of work. Strong acids or alkalis when spilled, if soon wiped off, have scarcely a perceptible effect.

A slate or tile top is expensive not only in its original cost, but also as a destroyer of glassware. Wood tops when painted, oiled, or paraffined have objectionable features, the latter especially in warm weather. Old table tops after the paint or oil is scraped off down to the wood take the above finish nearly as well as the new wood.—"Journal of Applied Microscopy."

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

July	Name of Society.	Subject.
25.....	Southampton Camera Club	Developers and Development. Debate.
27.....	North Middlesex Photo. Soc.	Playtype. Demonstrated. Mr. S. E. Puddy.
28.....	Watford Camera Club	Competition—"Sunlight and Shadow."

Commercial & Legal Intelligence.

At a public auction sale at 66, Farringdon Street, on Wednesday 27, at 12.30, over 100 cameras, lenses, and other accessories to be sold without reserve. On view Tuesday previous, 1 to 5 p.m. Catalogues on the premises, and of the auctioneer, J. Theodor Albemarle House, Hounslow, London, W. A good chance is offered to anyone desirous of "picking up" some cheap apparatus.

CHROMO Syndicate, Limited.—The above-named company has registered with a capital of £100 in £1 shares. Object, to carry the business of manufacturers of and dealers in speaking apparatus, pictures, and all machinery and tools for making the same, mechanical engineers, manufacturers of and dealers in machinery and apparatus of any kind, etc. No initial public issue. The signatories appoint the first directors. Qualification, two shares. Remuneration as fixed by the company. Registered office, 59, Moorgate Street, London, E.C.4.

YEATES and Son, Limited.—The above-named company has registered with a capital of £5,000 in £1 shares, for the purpose of leasing, purchasing, or otherwise acquiring the business of optical money-lenders, or otherwise acquiring the business of optical money-lenders, now carried on by Arthur Mitchell Yeates and Son, at 2, Grafton Street and 33, Nassau Street, Dublin, and the business of optical money-lenders, etc., now carried on by Percy C. Curtis under the title or firm of Curtis Optical and Photo Company, at Dawson Street, Dublin, and amalgamate the two businesses. Directors, not less than two more than seven, the first being Messrs. Arthur Mitchell Yeates, Arthur Yeates, and P. C. Curtis. Registered office, 2, Grafton Street, Dublin.

CINEMATOGRAPH LOSSES. At the London Bankruptcy Court Thursday last, before Mr. Registrar Hope, the first meeting of creditors interested under the failure *re* Oscar Lotinga, professional known as "Oscar Luck," was held. It appeared that the petitioner was filed against debtor in bankruptcy by Messrs. Fieldings, Limited, money-lenders, of Cardiff, creditors for £95. The debtor had been a troupe known as "The Six Bros. Luck," for the past twelve years, and two years ago he left the troupe and commenced touring with cinematograph entertainment, but within a few weeks he had to leave it, owing to the heavy losses he made. He estimated his liabilities at about £600, and assets nil, and alleged his failure to have been caused through loss in connection with the cinematograph exhibition referred to. Eventually the estate was left in the hands of an official receiver for summary administration in the usual manner.

At the Bromley County Court on Friday, Mr. Cooper, the landowner of the Railway Hotel, West Wickham, sued Mr. Bullock for £12s. the price which he charged for a photographic enlargement. Holroyde appeared for the plaintiff, who said that the defendant, who at his house, asked him to make the photographic enlargement question. About a month after, when the question of payment was referred to, the defendant told him that the said enlargement was present, and that no charge was to be made. The defendant's agent brought the photograph back and said that he could keep it, but replied that he would not have it. The defendant stated that Mr. Cooper now had the photograph. It was denied by Mr. Cooper that the photograph had been returned; but his Honour directed that there should be a non-suit. Later in the day, however, this judgment was set aside by his Honour. Immediately the decision had been given, Mr. Cooper despatched a messenger to the defendant's house and the photograph in question was given to him. This messenger, Charles Steven Lane, stated that he went over to Mr. Bullock's house to fetch the photograph produced. The servant gave it to him. The judge said that it was a serious case of perjury, and the judgment must be set aside, as the plaintiff may have suffered injustice. All he could do that day, however, was to order the case to be restored to the list. There was no doubt a frightful amount of perjury committed in the County Courts, and an example would, perhaps, have a beneficial effect.

RE Charles James Angel Gunn, photographer, lately carrying on business in co-partnership at 2, The Quadrant, Richmond, and 1, Sloane Street, S.W. This debtor made an application for his discharge at the London Bankruptcy Court on July 7, before Mr. Registrar Hope. Mr. Chapman, official receiver, reported that receiving order was made on the petition of creditors early in 1903, the public examination was concluded in May of that year. The debtor filed a statement of affairs, showing liabilities expected to reach

inst the estate for dividend amounting to £2,303 10s., and the assets were estimated to produce £4,945 11s. 11d. The trustee of the estate, Mr. Percy Estcourt Metzner, of 40, George Street, Richmond, reported that the proofs lodged amounted to £2,320 15s. 3d., and the assets would probably realise £142, so that there was no probability of any dividend being paid to the unsecured creditors. The debtor, in estimating the amount of his assets, returned the sum of £1915 as being the estimated surplus of the value of his house in Sheen Road, Richmond, after paying off the mortgage, and the interest on the partnership business, after deducting the charges thereon, but the surplus had not been realised. The bankrupt in 1886 purchased £1,000 a photographer's business at 2, The Quadrant, Richmond, to be paid by instalments. He then entered into partnership with his brother-in-law, and they jointly carried on the business. Their capital at the time consisted of £456 given them by relatives. In 1896 they also acquired, for £450, a branch business at 162, Sloane Street, W., and the partners carried on both businesses together until May, 1902, when, in consequence of disputes between them, the debtor's partner commenced an action against him for the dissolution of the partnership. The debtor's failure has been caused not through business, but from the extravagant expenditure he incurred in respect of the private house built to his order in Sheen Road, Richmond. Mr. Lickfold, who appeared on behalf of the debtor, argued that the debtor's assets were sufficient to pay 10s. in the £. The partnership business had been sold for £4,850, and after deducting partnership debts there remained a sum of £2,797 for division between the partners, so that the debtor was entitled to about £1,400. The Registrar said the discharge would be suspended for two years, with liberty to apply to vary the order if the assets realised more than 10s. in the £, on the amount of the unsecured liabilities.

News and Notes.

The first specimen of the new Lumière process of colour photography, as described in our issue for July 8, was shown at the Derby Convention by Mr. P. K. Grant.

Mr. J. W. WRIGHT has taken over the hon. secretaryship of the Sheffield Photographic Society. His address is 62, Vale Road, Sheffield.

LONDON and Provincial Photographic Association.—On Thursday, July 23, a lantern lecture will be given before the members of this Society by Mr. A. L. Henderson entitled "Athens: Its Monuments and Palaces." Visitors are invited.

HER Royal Highness Princess Christian of Schleswig-Holstein made a visit to Messrs. Langnier's studios, at 23a, Old Bond Street, this week, and M. Langnier had the honour of photographing her Royal Highness.

Mr. EPSTEIN, of 48, Great Hampton Street, Birmingham, has just started business in the wholesale moulding, picture frame, glass, and mount-cutting line. We understand that frame making for photographers will be one of his specialities.

THE Austin-Edwards Monthly Film Negative Competition.—The best camera for current month has been awarded to George C. Morgan, of 15, Anerley Park, Surrey, for his negative, "Ludgate Circus and Paul's."

A CERTAIN photographer called the other day on Messrs. Chas. Lummernann and Co., of St. Mary-at-Hill, in reference to their new mount paper, which is developed with the aid of fine sawdust. He stated that he had tried the paper, but had spent hours dissolving the powder developer (1) in hot water.

AN interesting group of pictures, designated as "History Photos," exhibited in the British Section of the Liberal Arts Building at the World's Fair. The Photographs cover the four walls of one of the galleries or rooms of the section, and form a pictorial view of British history and customs in England.

MUCH of the success of the Derby Convention is due to the efforts of the local executive, who worked untiringly to make things go. The indefatigable local hon. secretary, Mr. W. Crowther, was particularly to the fore, and a special meed of praise is due to him and his daughter, Miss Crowther, who assisted her father materially.

WEST London Photographic Society.—As the excursion to Dedham (notified to be held on July 30) has fallen through owing to lack of hotel accommodation, it has been decided to hold an outing to Hayes Common on August 6. All intending to be present should communicate with the Hon. Sec., F. C. Hart, 37, Willcott Road, Acton Hill, W.

MR. JONES, photographer, of Northgate Street, Gloucester, is exhibiting in his shop window a mark of his enterprise in the shape of a photograph embracing the whole landscape between May Hill and Bredon Hill, in the valley of which lies the City of Gloucester. The photograph measures about 36in. in width and 15in. in depth, and was taken in three sections from Robinswood Hill.

CONGRATULATIONS to Mr. R. J. Kindon, the popular hon. secretary of the London and Provincial Photographic Association. He has just been made a proud papa. The new arrival is a boy. We can in fancy see him expounding to a future generation of the L. and P.'ites the latest intensifier, or a sure cure for pinholes, and a new method of time development, while the inevitable oldest member tells him, "I did all that before you were born, my boy."

A PROCESS Exhibition.—The recent collection of engravings opened for some time at the Victoria and Albert Museum, South Kensington, will be followed in October by a loan exhibition of photo-engravings in monochrome and colour. All who are practically engaged in the work, or who may have examples of technical or historical interest, should communicate with the South Kensington authorities. The space at disposal for the exhibition being limited, applications to exhibit should be submitted without delay.

"LA Photographie Artistique."—Under the title of "La Photographie Artistique," M. Annibale Cominetti will shortly produce an illustrated publication dealing with matters photographic. Well-known writers on the subject will contribute articles, and the illustrations will pass before a committee composed of artists and sculptors before being inserted. The articles will be printed in French and Italian, and the subscription is 10s. per annum. All letters and inquiries should be addressed to M. Cominetti, 12, Rue Finanze, Turin, Italy.

CINEMATOGRAF of Executions.—Visitors to the St. Louis Exhibition, says the Hong Kong "Daily Press," will shortly be able to witness a novel succession of cinematograph pictures portraying the execution of 200 prisoners at Canton. A short time ago a Hong Kong photographer paid a visit to the Viceroy, and came to an arrangement with him whereby all executions were to be postponed until a date towards the end of the present month. A cinematograph was meanwhile on its way from the United States, and is now in the colony awaiting transhipment on its gruesome errand.

INCOMBUSTIBLE Celluloid.—It is reported that two Frenchmen, MM. Mabillo and Lerclerc, have patented a process for making a kind of celluloid which is incombustible. To a solution of celluloid is added a mixture of ether and alcohol containing iron salts. A clear liquid of the consistency of syrup results, and if the solvents are driven off from this, an incombustible non-inflammable celluloid remains. It would appear from the announcement that a chloride of iron is used, since it is stated that should the celluloid become heated the gases of the chlorine components would extinguish the flames. The material can be worked as easily as ordinary celluloid, and it is thought that it will be valuable in the manufacture of electrical apparatus. Its application to photography is obvious.

DR. ISAAC ROBERTS, the well-known astronomer, died suddenly on Sunday at his residence, Starfield, Crowborough Beacon, at the age of seventy-five. A large part of Dr. Roberts's life was devoted to science, in which he included practical investigations in geology, microscopy, spectrum analysis, astronomy, etc., carried on formerly

in Liverpool, but for the last thirteen or fourteen years at his residence at Crowborough, where he had a capably-equipped observatory. He was an expert in stellar photography, and was the inventor of a machine for measuring the magnitudes and positions of the stars. The results of his experiments have been published in the "Proceedings of the Royal Society" and in other scientific periodicals. In 1893 and in 1900 he issued two volumes of photographs of stars, star-clusters, and nebulae, with scientific deductions founded upon them.

THE Optical Convention.—It is proposed to hold an optical convention in London next year. At a meeting held on Monday last, in the rooms of the Society of Arts, Dr. R. T. Glazebrook, F.R.S., the president of the Optical Society, occupying the chair, an executive committee was elected, and the following were elected honorary vice-presidents:—Lord Crawford, Lord Rosse, Lord Rayleigh, Lord Blythwood, Sir William Abney, the Hon. Alban Gibbs, Mr. W. H. M. Christie (the Astronomer Royal), Mr. T. R. Dallmeyer, Mr. J. Stuart, Sir Howard Grubb, Dr. Glazebrook, and Lord Kelvin. One of the honorary vice-presidents will be asked to take the position of president of the convention. The chairman said that it was proposed to hold in conjunction with the convention an exhibition of optical goods. It was hoped that the exhibition would be representative of the British optical trade as a whole, and one in which all firms would co-operate as far as possible. Some discussion ensued with regard to the date, which one member of the committee suggested might be April or May of next year, but the matter was eventually referred to the executive committee.

SURGICAL Photography.—Cinematograph records are now made of all operations performed by a certain physician and surgeon in Paris. The latter entered some time ago into an arrangement with an artist of the bioscope, who has taken pictures for the doctor on several occasions. It is stated that the records in question are invaluable as scientific documents. One of the surgeon's operations which had been cinematographed was that by which the link of flesh connecting the Mindu twins, Radica and Doddica, was severed, and which was pronounced to have been a remarkable success, though, to be sure, both twins died of it. The famous doctor has now fallen out with his photographer in ordinary. Having looked in at several fairs, the surgeon found that mutoscope views of operations of all sorts performed by him, from common bone sawing to delicate cases of trepanning and laryngotomy, were being exhibited in the chambers of horrors side-shows at ten sous for grown-ups, children under fifteen half price, those under ten not admitted. The doctor is accordingly bringing an action against the photographer for infringement of a new kind of copyright. He argues that the defendant has no right to make use of the records of cinematograph pictures without his consent, as the proprietary rights belong in a great measure to the surgeon who performed the operations and thus supplied the subject of the views.

THE Print Portfolio Secretary (Mr. W. H. Atkinson) of the Yorkshire Photographic Union has just returned the loan prints which have been circulating among the societies in the Federation during the last half of the winter session in the form of a portfolio of invited work. The portfolio contained twenty-seven prints by the late H. P. Robinson, eight by Ralph W. Robinson, and fifty-six by members of the Postal Camera Club, of which Mr. W. R. Bland is the secretary, made up as follows:—L. E. C. Dapples (2), C. T. Holding (2), Walter Benington (2), Arthur Marshall (2), Hubert Waters (2), Dr. F. Graves (4), James Gale (2), P. M. C. Grove (2), F. J. Mortimer (2), John C. Warburg (2), Miss A. B. Warburg (2), Miss Bessie Stanford (3), Miss Hilda Stevenson (2), Mrs. A. O. Jennings (2), T. Lee Lyons (2), Dr. Barr (2), Dr. Crump (2), Percy Lewis (2), Hector E. Murchison (2), J. M. Whitehead (2), Rev. C. T. L. Barnwell (2), W. R. Bland (9). The names of the various workers will show the class of work lent and its educational value to the different societies. During the period named the portfolio has been shown at twenty-three societies' meetings, and at several conversations and larger gatherings, and has consequently been seen by hundreds of photographic workers. The heartiest thanks of every member of the Yorkshire Photographic Union are due to all those who have so kindly contributed copies of their work for the benefit of other workers.

WHAT Makes a Photograph Unfit for Publication?—The editor of "The Inland Printer" department was called upon recently to settle

a dispute between an advertising manager and the editor of a metropolitan newspaper. The question was as to the fitness for publication in half-tone of a photograph supposed to advertise a corset picture was of a most voluptuous woman, photographed in her wearing the corset over a specially short petticoat, while she was presumably fastening her slipper. A special effort had been in the woman's pose to make her anatomy from the bottom petticoat down the conspicuous feature of the picture. The editor decided against the reproduction of the photograph, and the advertising manager became furious. He demanded to know what was the rule that decided the unfitness of a picture for publication. Pictures, he said, were printed of South African women and aborigines almost nude, chorus girls, acrobats, trapeze performers; bathers in all manner of poses were printed. The object to his corseted woman? The exact dividing line between decency and indecency is not easily drawn, still an answer has been formulated to this advertising manager, and it was as follows: "Photographs of human beings in costumes or poses in which they would not appear in public are liable to be unfit for publication in an ordinary newspaper." This seems about as reasonable a definition of what makes a picture unfit for publication as we are likely to get.

BLUE Tones—A New Process.—A curious method of giving tone to a bromide print is communicated by Professor Namias, of "Das Atelier." It depends on the reduction of molybdenic acid to a more properly speaking, of an alkaline molybdate, for the acid is soluble in water to only a very slight extent. The compounds of molybdenum, like those of vanadium, present a whole series of colours, but few of them have hitherto been supplied in photographic processes. Professor Namias' procedure is not very complicated. He makes a stock solution of ammonium molybdate and mixes it with three times its bulk of water, adding thereto potassium bisulphite in the proportion of 22 grains per ounce (5 per cent). The print, after a brief immersion in water, is placed in this mixture and in the course of fifteen or twenty minutes, attains a violet tone with appreciable increase of intensity. Professor Namias does not claim technical perfection for the process with which, he says, it is difficult to preserve the high lights pure. The toning process takes place in these portions resists a thorough washing (with tap or pure water Professor Namias does not say) and is more efficacious; alkalis destroy the blue colour. The molybdate solution used in the above formula is made by dissolving 175 grains of molybdenic acid in 2 ounces of a mixture of strong acid and water. This solution is then poured little by little into 4 ounces of diluted nitric acid—1 part strong acid, 1.4 specific gravity, 1 part of water.

THE Testing of Sight.—A report of the Ophthalmological Society of the United Kingdom on sight-testing by spectacle makers, issued by the president, Mr. John Tweedy, dated July 8, states that the Ophthalmological Society, having had its attention called to the fact that the Company of Spectacle Makers proposes to include the subject of sight-testing in the examination for its diploma, and to give certificates of efficiency therein, wishes to express its opinion that, while approving of any measures which tend to increase the efficiency of opticians in their technical work, it considers that such a proposal would be misleading and dangerous to the public to countenance a proposal to certify as competent to advise and prescribe for the correction of vision any one who has not had an efficient medical and surgical training. A diploma such as the Company of Spectacle Makers proposes to grant may lead the public to believe that its possessor is competent to diagnose and treat diseases of the eye, and thus the consequences might follow. Errors of refraction often occur in connection with diseases of the eye. The mere correction of the refraction by means of spectacles would ignore a condition which might do harm, or even leave the life of the patient in danger. Moreover, many errors of refraction can only be accurately measured after the local use of a drug, which should only be employed or prescribed by a medical man, since its indiscriminate use is calculated to aggravate one of the gravest diseases to which the eye is liable. Finally, on general grounds, it is undesirable and dangerous to encourage the public in the belief that affections of any organ of the body can be safely treated by any one unacquainted with its anatomy, physiology, and with the various morbid conditions to which it is liable.

New Materials.

Self-toning Aristo Postcards. Sold by Kodak, Ltd., Clerkenwell Road, London, E.C.

The self-toning Aristo postcards are the latest production of the Kodak Company. They are made, we understand, by the American Aristo Company, whose long experience and success in the matter of Kodion papers is a sufficient guarantee of the excellence of this product. The Aristo self-toning papers give delightful prints, bringing out everything that can be printed from the negative, and for accuracy of results and ease of manipulation are hard to beat. The postcards have the same good qualities, and, being on stiff card, can be used for other purposes than actual postal service if necessary. The colour obtainable on the self-toning Aristo paper and postcards is simple fixing only is a rich and pleasing brown, whilst by treatment in a solution of common salt, a fine purple tone is secured. The results we have obtained with both methods of treatment have been entirely satisfactory. The fine semi-gloss of the surface is particularly adaptable for either broad effects or the rendering of fine detail. The cards are sold in the usual packets, and are not at all expensive.

Crossed Swords Pigment Paper. Sold by Messrs. Chas. Zimmermann and Co., 9 and 10, St. Mary-at-Hill, London, E.C.

This new introduction in printing papers is a carbon paper for direct printing without transfer, for cold development. The paper for direct sensitising and exposure appears to be lightly coated with pigment, and is similar in appearance to paper prepared for the bath in the bichromate process. It requires to be sensitised in a bath made of one part of a stock solution composed as follows:—

Ammon. bichrome.....	6 grms.....	1½ ozs.
Soda carbonate (cryst.).....	1 gm.....	¼ oz.
in water	100 ccm.....	25 ozs.

and 2 parts of strong methylated spirit.

This diluted solution does not keep, and must be prepared every time it is wanted. The pigment paper is now laid face upwards on a sheet of blotting paper or blotting board. Then in subdued daylight the spirit-diluted solution is brushed over the surface with a flat, soft brush quickly and evenly. It is not necessary to dry the paper in a dark room; simply hang it up by the corners, still attached to the blotting paper, with the film towards the wall. In 5-10 minutes the paper must be dry, and is now at least as sensitive as P.O.P. The paper must be used as soon as possible after sensitising; it becomes useless after forty-eight hours. As the paper gives no visible image, a photometer should be used as a guide to this process. As soon as the paper becomes saturated it must be removed to a dish containing an 8 per cent. solution of acetic acid, at a temperature of deg. R. = 100 deg. Fahr.; sufficient solution must be used to cover the print, and the solution may be used repeatedly. The solution must be allowed to act for one minute. The print is removed and laid on a zinc or glass plate, and laved with a thin sawdust broth, which should not be warmed. This operation is best conducted in a basin or deep dish, which will hold a quantity of the broth, and to which the broth may be ladled by means of a deep ladle or cup. Preparation of this broth, which need not be renewed very often, is made by mixing about 1 oz. of fine sawdust in 30 to 40 oz. of water, to which has been added 30 to 45 grains of Pot. Carb. When directly exposed, the lights will appear at once after the first or second laving; complete development taking place in a very few minutes. Such parts of the picture which require more bringing out could be treated by gentle brushing with a camel-hair pencil. The final operation is to remove any bichromate salts that may remain in the paper. This is accomplished, after rinsing off any adhering sawdust, by placing the prints for half-an-hour in clean water. Then hanging the prints up to dry.

The difficult and many operations entailed by the carbon process has hitherto barred it from use with many amateur photographers, also the effects of the bichromate salts in combination with hot water has often proved a difficulty, but this new paper removes both of these difficulties. The paper, first of all, absorbs no bichromate salts, these are so sparingly applied and so quickly dried, that the sensitising solution is in the pigment surface only; this is immediately removed by the first immersion in cold water, the paper is then dipped in the acetic acid bath and developed in cold water; thus having removed the necessity of single or double transfer, of redeveloping, and of prolonged dabbling in hot water impregnated with bichromate salts. The whole process, sensitising, printing, and developing, can be completed within fifteen minutes, if necessary. It will not enlarge further on these advantages, but can say that in our hands the process has yielded admirable prints, and we have every confidence in saying that the photographer with artistic yearnings and a desire to manipulate his final print so as to obtain a variety of effects has here all that he can desire.

Correspondence.

- * * Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.
- * * We do not undertake responsibility for the opinions expressed by our correspondents.

NEW ADDRESS OF KODAK, LIMITED.

To the Editors.

Gentlemen,—Owing to the renumbering of Clerkenwell Road by the local authorities, we now find ourselves Nos. 57, 59, and 61, instead of 41 and 43. May we ask you to publish this fact in your valuable journal?—We are, yours faithfully,

KODAK LIMITED.

July 14, 1904.

THE PHOTOGRAPHIC CONVENTION.

To the Editors.

Gentlemen,—There are probably many members who, like myself, were absolutely staggered to hear on Wednesday last week, at Derby, that the P.C.U.K. had amassed a "nest egg" of £450. That a provision for a possible rainy day is commendable everyone will admit, but surely the above sum is quite out of all reason, and it is, I imagine, hardly the aim and purpose of the P.C.U.K. to amass nest eggs in order to hatch out silk umbrellas.

May I also ask why the convention cannot strike out into fresh country and not revisit the old places as has been so often done of late. I gathered from private conversations that many are in accordance with the above views, which are those of

ONE OF THE RANK AND FILE.

A NEW ZEALAND PHOTOGRAPHIC SOCIETY.

To the Editors.

Gentlemen,—Under the heading, "Colonial Photographic Societies," in the B.J. Almanac, you include the Canterbury Philosophical Institute, photographic section. Though the institute flourishes the photographic section has been dead many years. A new society was formed some three or four years ago, of which I send you the programme, giving official designation, officers, etc. Being much away from Christ Church, I have not joined this new society, but I have no doubt you can rely upon the accuracy of the booklet.—Yours faithfully,

CHAS. M. PHILLIPS.

Box 425, Post-Office, Christchurch, New Zealand.

June 7, 1904.

[We are obliged to our correspondent for drawing attention to this matter, and also for sending particulars of the Christchurch Photographic Society, which appears to be a very flourishing concern.—Eds. B.J.P.]

RED SENSITISERS.

To the Editors.

Gentlemen, Some few weeks back Mr. Thorne Baker stated in your pages that he had been quite unsuccessful with Dr. Eder's formula for sensitising plates with Wollschwarz 4B. To those of your readers who are interested in the subject, and who are also members of the Royal Photographic Society, I would point out that Dr. Eder has just presented the Society with a copy of the work, "Beitrag zur Photochemie und Spectralanalyse," in which will be found a very fine photogravure spectrogram taken on a Wollschwarz plate, which shows not only the Fraunhofer lines C, B, a, and A, but even traces of the infra-red Z line, all quite clear, and with a practically even band of deposit from D ½ E to "little a." This work has been in my possession for some time, but I knew it was no use referring to it, unless a copy was generally available, and now this is the case.

In the same paper Mr. Baker gave a formula (April 8, p. 287) containing a 1 per cent. alcoholic solution of Wollschwarz. Being desirous of comparing Dr. Eder's and Mr. Baker's formulæ, both in the spectrogram and practically, I started to follow the latter, but find that I cannot make a 1 per cent. solution of Wollschwarz, there being a considerable residue undissolved.

There is no question about the identity of the dye, but there may be about the alcohol. Perhaps Mr. Baker will tell me whether he used rectified spirit, absolute alcohol, methylated spirit, or what, and also the specific gravity and temperature of solution, so that I can make comparative results, which are required for purely academic and not commercial purposes.—Yours faithfully,
Foots Cray.

E. J. WALL.

A WARNING. To the Editors.

Gentlemen,—I write these lines to put my fellow-photographers on their guard against an individual of respectable appearance who calls on photographers stating that he is a gardener of some well-known gentleman (in my case fictitious, in a neighbouring town) and hands them a written order to photograph a group of twenty—12in. x 10in. (sometimes 15in. x 12in.), at his master's house, and after getting into the photographer's confidence, asks him to advance him some money, as he has run short, which he usually gets, and on going to the house the next day to execute the order, finds it is a fraud. Description.—Dressed in brown jacket, black bowler hat, collar and tie; moustache usually waxed at ends. His right leg is about 4in. shorter than the left (which would easily identify him). The above particulars I have obtained from the police. Fortunately in my case I advanced no money, as I never do so to strangers as a matter of business. He promised next day to call and drive me over, and of course never turned up. He is wanted by the police for several cases in this district. Trusting you will find room to insert the above—Yours truly,
Chippenharn, Wilts.

T. A. TROTMAN.

Answers to Correspondents.

- *.* All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.
- *.* Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.
- *.* Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & Co., 24, Wellington-street, Strand, London, W.C.
- *.* For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration or copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

- W. Morrison, 22, Bore Street, Lichfield. Photograph of Cat and Mouse, in Chapter House, Lichfield Cathedral.
Miss J. H. Fischer, 18, May Street, Chorlton-on-Medlock, Manchester. Photograph of the Rev. Dr. Carsatelli, seated, in Robes.
Frederick Whaley, Weston Villa, Cheltenham. Photograph of an Enlarged Photograph of six Samoyede Dogs, Hornessed to a Sledge, with Arctic Background Worked in with Black and White Chalks and Dogs Finished off with Black and White Paint.

J. H. FISHER.—“(1) If the circumstances be as stated in your letter we think you have done right in withdrawing the order. (2) If you find your copyright being infringed, at once consult a solicitor well versed in copyright law.

OLD NEGATIVES.—“S. M. H.” writes: “Could you kindly oblige me with the name and address of a firm who accept old negatives?” In reply: We scarcely understand your query. If you want to get rid of the negatives out of your way the local dust-cart will doubtless relieve you of them. If you want a firm to accept them in exchange for new plates there is no one who would do so.

SECONDHAND PHOTOGRAPHIC BOOKS.—W. ANDREWS AND SON say: “We would feel much obliged if you could kindly let us have the names and addresses of firms or private individuals likely

to purchase books on photography.” In reply: We know firms that make a speciality of buying secondhand photographic books. Your best plan, we should think, would be to advertise them in the photographic journals. We do not reply to respondents by post.

TEXODERM.—“PYRO” asks: “Can you inform me the address of a firm from whom I can purchase a kind of celluloid ‘Texoderm?’ It is, I think, an American production, and used for carbon printing.” In reply: We do not know material under that name, but it is probably a form of celluloid. As you say it is of American manufacture, it is possible Messrs. Guiterman, of 35, Aldermanbury, E.C., can supply them; they are the English agents for the American Celluloid Company.

EARLY THREE-COLOUR WORK.—C. HARRAP writes: “As we are at present anxious to determine the exact date of the earliest production in three-colour printing, either British or foreign, may I ask if you can in any way assist us, and at the same time tell us, where such a print can be seen?” In reply: I refer to the Almanac for 1899 (page 682, *et seq.*), you will find some “Bibliographical Notes,” reprinted from “The Journal of the Society of Arts,” and written by Mr. Bolas. These will doubt give you the information you desire.

ARTIFICIAL LIGHT IN STUDIO.—C. GORHAM says: “I had an apparatus made of thin metal sheeting and asbestos, intended to fit incandescent gas lights for our studio, this shape (3ft. 1½ft. deep). The landlady is now having the entire premises installed with electricity. Do you think I could make work with electricity? If so, how many incandescent lamps should I use for very quick exposures?” In reply: A reflector will answer as well with incandescent electric light as it would with gas of equal illuminating power. The greater candle-power of each light the smaller will be the number required. Messrs. Adamson, Charles Street, Hatton Garden, we believe, supply lamps up to two hundred candle-power more.

WASHING BEFORE TONING.—“JODYZER” says: “Some time several paper-makers advised P.O.P. toning as follows:—the prints into toning both without previous washing; and then plunged them direct into the fixing bath.” We find the same makers say:—“On no account must the previous washing be omitted.” We are using a paper where the previous washing is advised and can do nothing with it except by the old method of putting prints direct into toning, and from direct into fixing. Then we find it goes admirably. We asked the people who are supposed to make this paper what happens when not previously washed, and if the fading parties are likely to be increased; they say ‘If you can get results keep to your way, but with regards to the fading properties the question is too complex.’ Can you, please, an opinion on previous washing and no previous washing. In reply: As the makers recommend that the prints should be washed before they are toned, it is pretty clear that failure must be due to your manipulations. It is usual with papers to wash prior to toning, and we ourselves always find that practice. We should say that that treatment conduces to greater stability in the result.

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EX CATHEDRA.

A Check to the Free Portrait Swindle.

A salutary lesson to the free portrait brethren has just been given at the Chester Assizes, which ought to have the desirable effect of checking to some extent this persistent nuisance. An account of the prosecution appears in our Legal and Commercial Column. The astonishing frequency with which this swindle occurs and thrives, in spite of the repeated warnings in the Press, gives rise to the reflection that there are still many gullible individuals about who are blest with the beautiful idea that much promiscuous philanthropy abounds in England.

The American Fiasco at St. Louis.

A new aspect of the inner workings of American photography is disclosed by the article we reprint in another column from our New York contemporary, "The Photographer." That factions and dissatisfactions exist in American photographic circles we are well aware. It would be strange if it were otherwise. This same state of things obtains in greater or lesser degree in every community in every country. It is a sure sign of vitality. But that internal differences should have so disrupted the great body of American camera workers, in the face of such a big national event as the St. Louis show, to the extent disclosed, will come unkindly to the ears of the admirers of American "hustle." At the same time, our contemporary, whether with full knowledge of the facts or otherwise, pays a tribute to the English photographic section

that will be eagerly seized upon by those more particularly concerned in its achievement.

Ortho Plates.

It has been recognised for some time that the ideal process of orthochromatising plates would be one in which the silver salt alone was dyed and the gelatine quite unstained, thus avoiding the screening effect. Dr. Karl Kieser, of Elberfeld, has now taken out a German patent for effecting this by separating the silver haloids by a centrifugal separator, dyeing them, washing out excess of dye, and then emulsifying. This process would enable one or two useful sensitisers to be used which are now excluded from practical work because the dyes stain the gelatine very deeply, and are not removed in the operations of developing, fixing, and washing.

The Action of Light on Bichromated Gelatine.

Messrs. Lumière and Seyewetz, to whom photographers are under a debt of gratitude for placing on a scientific basis explanations of many obscure photographic phenomena, have increased this weight of obligation by publishing the results of an investigation they have been making upon the composition of gelatine rendered insoluble by the salts of chromium sesquioxide, and the theory of the action of light on gelatine treated with metallic chromates. Briefly, they find that, in the treatment with salts of chromium, the gelatine seems to fix the chromium directly. The acid salt of chromium, though retained strongly by the gelatine, does not seem to have anything to do with the phenomenon of insolubilisation. A constant maximum proportion of the sesquioxide—between 3.2 and 3.5 grammes—is fixed by a certain weight of gelatine, no matter which salt is used for insolubilisation. The dissociation of chromised gelatine by repeated treatment with hot water can be prevented either by washing the chromised gelatine in ammoniacal water under suitable conditions, or by adding to the gelatine, before the chromium salt is introduced, such an amount of ammonia as would in theory saturate the acid of the salt.

Standardising Light Filters.

In 1900 the International Congress of Photography instituted a committee to consider the formation and possible standardisation of coloured screens, and M. Clerc has now presented the report, which is rather interesting, and the suggestions made, if adopted, would lead to considerably more uniformity of results. The reports states, *inter alia*, that M. Monpillard, one of the members of the committee, has proved that the method of coating glass with gelatine

and then staining cannot lead to uniformity, and that however thick the gelatine, the dye had penetrated right through the film, and that therefore varying thickness must give varying intensities. A better method is to add a given quantity of dye to the vehicle and pour a given quantity of the same on a given area. When liquid filters are used, they recommend that the internal cell space should be one centimetre, that the formula for the solution should be expressed in grammes for solids and in cubic centimetres for liquids, and the total bulk should be 1,000 cc. Further, they recommend that when possible the chemical formula of the substance used should be given, and in the case of the organic dyes, the name of the maker and any special marks or numbers of his catalogues describing the dye should also be given. To determine the exact absorptions, when liquid filters are used the absorption of the cell filled with the colourless solvent should be given, and also in the case of dyed gelatine, the absorption of the uncoloured gelatine.

* * *

The Lyceum Theatre.

Our respected opposite neighbour, which for some months has been in process of demolition until little but its façade remains to remind passers-by that a temple of Thespis once stood there, was the scene of a remarkable demonstration just one century ago. To be precise, it was the old Lyceum which stood on the same site in Wellington Street, and which met with the fate of most theatres in the year 1830 by being burnt to the ground, at which the event occurred. Sir Joseph Banks, President of the Royal Society, we are told in the *Times* of July 2, 1804, "went last Thursday evening with a large party of his noble and scientific friends to the Lyceum, to witness the incredible effects of smoke." But this smoke had nothing to do with the conflagration which some years afterwards destroyed the building. As a matter of fact, it was not smoke at all, but coal gas, with which the theatre was experimentally illuminated. "The whole theatre was light with the same, in a novel and pleasing manner; the arch of lights above the stage had a very striking effect, and from the English grate on the stage (which may be fixed in every room) issued a very brilliant and fanciful light." We presume that the scheme included a small gasworks, and that the "English grate" on the stage was the means employed for heating the retort. And this seems certain from what follows: "The products of tar, ammonia, and coke were produced, and much approved of." There is nothing said about the aroma of these interesting bye-products of gas manufacture, but possibly a pungent smell was believed, in the days of tallow "dips" and oil lamps, to be inseparable from any system of illumination.

* * *

Photographs of Paintings.

The physicist and the chemist will tell us that there is no such thing as destruction of matter. It may take upon itself a new form, but, like energy, it is indestructible. But if we turn to the severely practical man, he will say that this is all nonsense, matter can be destroyed and is destroyed, and to prove his point he will probably appeal to statistics which show that the destruction wrought annually by fire in the metropolitan area alone amounts to so many hundreds of thousands of pounds. It is certainly small comfort to the owner of valuable articles like oil paintings by artists of repute, to be told that they have simply been converted by the action of fire to carbonaceous products. "Not lost, but gone—" into the condition of charcoal and gas. Some comfort, however, there would be to owners of paintings, even under such melancholy circumstances, if they had taken the precaution not only

to insure their works of art but also to have them photographed. Every now and then we hear of some disastrous fire, generally at a country mansion far from any effective appliances for dealing with it, in which famous pictures have been burnt to a cinder, and no copy of them remains. The Arundel club, the formation of which we called attention to a few weeks ago, has now been instituted, with sufficient number of subscribing members to enable beginning to be made upon this very necessary work of obtaining a photographic record of old works of art in private collections. Sir Martin Conway is the chairman, and the committee numbers among its members Lord Balcarras, Sir Walter Armstrong, Mr. John S. Sargeant, and other gentlemen well known in the world of art. The committee is now engaged in selecting pictures for reproduction by photography, and we may feel quite sure that in this work they will meet with the cordial co-operation of those who have in their possession pictures of note.

* * *

Cameras as Advanced Luggage.

Some two or three years back, when a cabbie had a dispute with the railway companies, he adopted the unjustified expedient of dumping passengers' property on the pavement outside the stations, refusing to take it inside. Ever since the companies retorted in a manner which has cost a cabbie dear. They started the "luggage in advance" system, by which a traveller's personal belongings are collected in London, and delivered at his country address for a fee which would be regarded with disdain by Jellie. The question has now arisen whether a traveller sending a photographic apparatus with his luggage under the new scheme can recover from the railway company in case the articles are lost in transit. The luggage consigned by Mr. F. Smith, a schoolmaster, to the L. and N. Railway Company in April last contained various photographic apparatus (including two cameras), of the value of £17, and the Company contend that they are not bound to make this portion of the lost luggage good, on the ground that in their list of rates for the conveyance of goods by passenger train (published in their time-table) cameras are excepted, and have to be declared and paid for at an increased rate. But the plaintiff declares that such provision does not apply to passengers' luggage in advance, and that no warning of anything of the kind appeared in the document which he accepted when he parted with his property. The Judge of the Holy Trinity County Court, before whom the action was brought for recovery of the value of the property, made the remark that nine out of ten persons now carried cameras with their luggage, and that the point raised was such an important one that he would take time to consider the decision. It is such a common and reasonable proceeding for a traveller to wrap up photographic apparatus with articles of clothing, so as to protect it from damage while travelling, that many will look with interest to the conclusion at which the Judge arrives.

* * *

The Dark-Room Light.

The number of appliances available in the dark-room for altering the quality of the light is surprisingly small in contrast with the variety of forms of apparatus for far less important purposes in photography that can be purchased. We have the well-known incandescent electric bulb within a globe of coloured liquid, but this is comparatively costly; and where a special purpose has to be made the same can be said of the old silicic dipping baths utilised for similar purposes. We have coloured glasses, gelatine-coated glasses, fabrics, papers, and gelatines innumerable, it is true, and possibly

is the cause of the dearth of appliances; but the spirit of true scientific investigation calls for something more. It does not want to be confined to nameless tints that cannot be reproduced from a written description; needs apparatus to render available any variety of chemical solution that can be repeated at will by investigators at the other side of the world as easily as by the experimenter at home; and, as we say, there are few such pieces of apparatus at present available, and still fewer economical. Some little time ago there was described at a meeting of the Quekett Microscopical Society a little contrivance devised for obtaining coloured light for the microscope, but which would be equally useful for dark-room or other lights. The inventor is Mr. J. G. Kingsford, and at the meeting referred to he exhibited several of his tanks in use. Mr. Kingsford (referring to the generally leaky nature of the tanks supplied for such purposes—an objection substantiated by the President's experience) stated that one of his tanks had been in use for over two years without developing any defect. Another at advantage of his vessel was the ease with which it could be cleaned. It consists of two glass discs forming the sides of the tank. A band of metal, thin and flexible, lined with sheet rubber, forms the edge of the tank, and a metal bolt or clip is provided to draw the ends of the band towards each other.

* * *

Sea water seems to have as great a charm for some persons as sea air has for others. We do not mean sea water in the abstract, but as a necessary part of scenic display more especially connected to holiday folk, but as a specific preparation of salt water. Some have held that a glass or two of this compound is an excellent appetiser for breakfast, possibly because of its undoubted nastiness, for many hold that medicinal remedies are useless unless they provoke a feeling of nausea in the swallowing. At this time of year some surprising amateur is sure to start the notion of using sea water for photographic purposes, and he writes to the editors either to say that he has used it with advantage, or to ask whether it can be used with impunity. Most certainly it can. If the distressed inquirer happened to be picked, and one of the few survivors in a small boat which for days had been the sport of the cruel waves, with no water, water everywhere and not a drop to drink," he would be compelled to develop his photographs and even mix his developer and fixing bath with ocean. We can assure him that developing photographs *cum grano salis* would not lead to any great disaster. But unless he is thus *in articulo mortis*, as one might say, he would certainly do better to use fresh water. The amount of soluble salts in a gallon of sea water is not great, and there is nothing in them which will come into serious conflict with the chemicals employed in developing, fixing, washing plates or films. But we should advise those who from circumstances beyond their own control are obliged to use sea water to give their photographic plates, at a final rinse in fresh. Bathers in the sea are aware, less their skins be of an unusually insensitive kind, of a slight stickiness which clings to the hands and face after a morning dip, and some are never quite comfortable until they have had an opportunity of access to fresh water. We may assume that the delicate gelatine surface of a plate film must suffer the same experience, although it cannot express its feelings in the same way. Sea salt is hygroscopic, and we can imagine that when tiny particles of it are left entangled in the gelatine we have the nucleus of disintegration. For moisture in any shape must be kept from gelatine if we want to preserve it, and a final rinse, or, better still, soaking in fresh water is obviously

the remedy for possible difficulties with plates brought about by the enforced employment of that which is salt.

* * *

The New Cyanines in Lippmann Emulsions.

Dr. Neuhaus, whose name is so well known for his researches in connection with the Lippmann process, has been testing ethyl-red, orthochrome, and pinachrome in emulsions for this process, and he gives some spectrograms which show that not only is the old sensitiser of cyanine + erythrosine + glycin-red superior as regards red sensitiveness, but that it gives far more even deposit—that is, there are no recognisable minima of sensitiveness, as is the case with the three other dyes. The mixture sensitises close up to the C line, whilst pinachrome, the most satisfactory of the other dyes, only sensitises up to about D $\frac{1}{2}$ C. Neuhaus emphasises the importance of not being misled by spectrograms, and points out that although there is apparent even density, the blue and violet regions appear before the others, and that actually the emulsion is about three times more sensitive to the more refrangible rays, and that in camera work a yellow filter is necessary. The addition of glycin-red to ethyl-red, orthochrome, and pinachrome emulsions improves the sensitiveness to yellowish green and greenish blue, without increasing that to red. The following passage is worth careful attention:—"If a plate sensitised with cyanine, erythrosine, and glycin-red, and exposed to the prismatic spectrum, be developed, the deposit of silver from the red to the violet appears absolutely equal. From this the conclusion must be drawn that the plate possesses equal sensitiveness for all colours. We have seen above that this conclusion is false, for the plate has at least three times too great a blue and violet sensitiveness. The prismatic spectrogram thus gives rise to a fallacious conclusion of the worst kind. Would that these facts were more generally appreciated! The expert can naturally make a correct deduction of the colour sensitiveness of the plate from the results obtained with the prismatic spectrum. When, however, as happens every day, spectrograms of this kind are published in journals destined for lay readers, there is again caused in wide circles quite false conclusions over the actual sensitiveness of the plates. To the plate makers this may be agreeable, but 'the man in the street' has no advantage from it."

—————

THE Occurrence of Radium with Uranium.—A little time back Mr. B. B. Boltwood published in the "Chemical News" a preliminary notice of an investigation of the ratio of uranium to radium in various minerals. The Hon. R. J. Strutt has for some time been engaged in a similar investigation, which, though the results are not yet matured, seems to be leading to the conclusion that this ratio is constant, as in Mr. Boltwood's experiments. An interesting case is the mineral torbernite, or copper uranite. This mineral forms transparent green tetragonal crystals the composition of which is accurately represented by the formula $\text{CuO} \cdot 2\text{UO}_3 \cdot \text{P}_2\text{O}_5 \cdot 8\text{H}_2\text{O}$. The substance dissolves easily in sulphuric acid, forming a perfectly clear green solution. This solution, when boiled, gives the radium emanation, and the quantity of emanation produced in one day is about the same as that yielded by the same weight of Joachimsthal pitchblende. The percentage of uranium is also about the same. If the radium in this mineral has been produced since the formation of the mineral (and the recent quantitative experiments of Sir W. Ramsay and Mr. Soddy on the absolute rate of production of the emanation seem to make that certain), there is practically no choice as to what the parent substance should be. Uranium is the only candidate. The great complexity of most of the radio-active minerals may make it difficult to obtain conclusive evidence by studying them. But here there seems to be no alternative but to conclude that uranium is the parent.

PHOTOGRAPHY AS A PROFESSION AT HOME AND ABROAD.

On more than one occasion of late we have referred to the present state of the photographic business in this country, and the poor future there seems to be before it, both for employees and employers. Our object has been to advise all those who contemplated entering it as a business or profession—whichever it may be called—to give the matter their serious consideration before coming to a decision on the point. The present state of the business, especially as regards portraiture, is at a very low ebb, with but little prospect of immediate improvement.

In our issue of the 8th instant we directed special attention to the present state of the labour market in England. In Germany it seems that a very similar state of things obtain as here. On reference to page 585 ante it will be seen, from a return made by Stores' Studios, reprinted from the "Photographische Chronik," that the wages paid to assistants range from 25s. to 300s. and 350s. a month; but the number that receive the latter sums is limited to one each. The average wage, it appears, is about 110s. a month. Out of the numbers quoted sixty-two earn more than that sum, and eighty-two less. The hours worked are mostly long, ranging from 8 to 11, but only six worked the shorter time.

In the United States things seem to be very similar. On page 591 ante will be found an article by Mr. Dundas Todd, Editor of the "Photo Beacon," who has devoted a great amount of time in investigating this subject. In it he says that before a recent convention "I made the statement that I believed that at least 75 per cent. of the fraternity, whether employer or employee, did not have an annual income exceeding \$500, and urged my hearers to contradict me if I was wrong; but it was admitted unanimously that my figures were correct." Now, \$500 in America are equivalent to £100 in England, and we should say that at the present time, in this country, fully 75 per cent. of photographers—employers and employees—are not making even so much as a hundred a year net profit out of their profession.

On former occasions we have mentioned that our advertisement columns, "Situations Vacant" and "Situations Wanted" are a pretty fair indication of the existing state of the labour market. But the columns devoted to "Businesses and Premises" are also a good indication of the state of business by showing the number of businesses there are for disposal and the stated returns they make. Of course, there are many reasons why businesses come into the market, but we venture to say that in the majority of cases whatever other reasons may be given, the profits made are not in accordance with the ideas of their owners, hence the disposal.

It is interesting to note the returns that are mentioned in some of the advertisements, and we may well surmise that, as quoted, they are not understated. We will quote from one or two advertisements that have recently appeared: "Takings £5 weekly," "Takings £4 weekly," "Returns £250," etc. Now, when one considers that out of these sums rent and, probably, taxes have to be paid; material—plates, paper, mounts, as well as enlargements and finishing, have also to be reckoned as out-goings; also an assistant of some sort is necessary; the profits on such businesses must be reduced to a very small figure. Another point in connection with these small businesses is that, generally, the prices charged for the work are exceedingly low, and must, necessarily, leave but a small margin of profit.

There are many businesses in the suburbs of London, in small country towns, that we venture to say do bring their owners anything like the income mentioned by Mr. Dundas Todd, namely, a hundred a year, all expenses are paid.

The so-called "coupon system" has done a great deal of harm to those in a small way of business, at least in London and its suburbs. Here three cabinet portraits are taken for half-a-crown, and the sitter is supplied with four "coupons." If he, or she, disposes of three of them to friends, he or she gets another three portraits free of commission. This means that there are negatives to take, retouch, and prints to make and mount for ten shillings. Of course, if a large business is doing these lines it can be made to pay. But if only five or six sitters a day are taken, what can the net profit amount to per year? It is true that something is, at times, obtained by way of extras, but this does not amount to much at all. When all these matters are taken into consideration there is little to wonder at that there are so many small businesses in the market.

Let us for a moment consider what has brought about the state of things about, for photography was at one time a very lucrative business and it still is with a comparatively few who have a wealthy clientèle and do the high class of work. It is the simplification of processes and the methods of working. Plates, papers of various kinds are now sold ready for use, and there is very little knowledge required to use them, and that is quickly acquired so as to produce a clear, clean photograph which, we sorry to say, satisfies a considerable portion of the public. It follows as a matter of course that any business in which there is very little to learn is sure to be quickly drenched with mediocre practitioners in every country. Bankruptcy reports that have from time to time appeared in our columns often show that the bankrupt statesman or business knowing very little about it at the time, frequently with borrowed capital. Some employees, owing to the difficulty of obtaining engagements and the salaries offered, have been induced to commence business in a small way on their own account, with the aid of friends, thinking that if they could only clear journeymen's wages they would be better off. Alas for some of them and their friends. In the above, and previous articles, we have pointed out to those who imagine otherwise, that photography, either for employees or those who contemplate starting in the business, is not by any means so lucrative as they suppose. The same conditions, we find, prevail also in Germany and America, and probably in all parts of the world, that is not at all surprising, for the reasons mentioned.

THE Sun's Luminous Clouds.—When the sun's surface is examined or photographed with a good telescope it is seen to possess a most intricate structure, which has been compared to the appearance of snow upon a grey cloth. The bright spots which give this impression are luminous clouds floating in a solar atmosphere, just as the clouds of the earth are suspended in the air. The light we receive from the sun comes from the luminous clouds, which cover an area of about one-fifth of the surface. When relatively cool vapours collect in depression in any part of this surface, dark sun-spots are produced, and when parts are elevated above the general level their brightness is increased, and they appear as patches of a greater brilliancy on the mottled surface. These lucid patches can often be seen of the sun with an ordinary telescope, but investigations of recent years have shown that what is thus visible is but a small part of what actually exists. For several years Professor G. E. Hale, Director of the Yerkes Observatory, Chicago, has been perfecting a method of photographing this flocculent material, most of which is invisible any time when the sun is shining.

PHOTOGRAPHIC TAXIDERMY.

ACCORDING to the dictionary definition, taxidermy is "the art of arranging, preparing, and preserving the skins of animals, so as to represent their natural appearance," and it does without saying that a successful taxidermist must be an artist. But the modern method of setting up what used to be called "a stuffed animal" is very different to that which obtained a few years since, and as we shall presently see, photography is lending potent aid in the work. That the art of taxidermy has advanced of recent years by leaps and bounds must be evident to any one who has paid a visit to the Mammalian Galleries or the Bird Gallery of the Natural History Museum at South Kensington. And more especially is this the case with any one who is old enough to remember the terrible specimens of stuffed animals which have been exhibited at the British Museum in Bloomsbury. Animals with visible stitches along the whole length of the abdomen, with a tuft of straw sticking out here and there to emphasise the fact that they were really stuffed, and not alive. In a recent number of the *Scientific American* a number of photographs are reproduced which illustrate the method of building up an animal form, to be clothed with a natural skin, as now practised at the American Museum of Natural History. First of all, a rough framework is constructed which agrees in its measurements with those taken of the animal to be represented immediately after it was shot. To this framework are attached in their proper places the skull, legs, shoulder blades, and pelvis of the animal, and it is strong enough to support the weight of the modelling clay, which is now attached to represent the muscles. The workman, it need hardly be said, is not a common mechanic, but a sculptor, and he works mainly from photographs. These pictures have been taken, wherever possible, from life at the Zoological Gardens and elsewhere, the animals having been narrowly watched by an expert photographer and snapshotted whenever a good pose presented itself. With wonderful patience the clay is applied to the framework with frequent reference to the original measurements and the photographs, while occasionally the skin, which has been carefully prepared and partially tanned, is stretched over the growing form by way of trial. At last the clay image is completed, and then a plaster mould is made from it. From this mould the complete animal is subsequently cast, the clay model and the bones being entirely discarded, iron rods supporting the legs and body. Nothing of the original animal remains but the skin, and this fits the finished structure like a glove. Of course, there are some minor finishing touches to be given with colour to the margins of the eyes and other parts, and it should be mentioned that the hoofs, nostrils, etc., are conveniently made in papier maché. It is evident that the mould once made, the rest of the work, except the finishing touches, is more or less of a mechanical nature. The finished animal can be made of any light plastic substance, of which there are many to choose from. The main point of interest to our readers is that camera pictures furnish the copies to work from, and huntsmen of big game are so often photographers that they will be able to work with a view to the after preparation of any rare specimen which may fall to their lot.

The Sheffield Photo Company accomplished a smart piece of work in Liverpool recently. Three cinematograph cameras, two of which were operated by Mr. Mottershaw's sons, were taken over in view of a visit of their Majesties the King and Queen, and 1,500 feet of film were exposed from favourable situations. The pictures were once developed, and part of them were exhibited the same evening in Liverpool.

KÖNIG'S COLOUR FILTERS.

DR. KÖNIG, whose name is so well known in connection with the new cyanines as sensitisers, has suggested the following as suitable filters for three-colour negatives for printing from:—

Stock Solution for Blue Screen.

Violet crystals	4 g.
Acetic acid	5-6 drops.
Hot water	100 cc.

Stock Solution for Green Screen.

Flavazine T.	3 g.
Patent blue	6 g.
Green I.	9 g.
Hot water	330 ccm.

Or—

Flavazine T.	2.5 g.
Patent blue	6 g.
Naphthol green	4 g.

Stock Solution for Red Screen.

Red I.	5 g.
Warm water	200 cc.

The actual screens are made as follows:—

Blue Screen.

Stock dye solution	6 cc.
Gelatine solution, 8 per cent.	100 cc.

Green Screen.

Stock dye solution	5 cc.
Gelatine solution, 8 per cent.	100 cc.

Red Screen.

Stock dye solution	4 cc.
Gelatine solution, 8 per cent.	100 cc.

Of these coloured gelatines 7 cc. should be poured on to every 100 sq. c. With these screens the relative times and exposure with a plate sensitised with orthochrome is respectively 1, 3, 6; with pinachrome plates, 1, 4, 3. M. Monpillard has determined the exact absorptions of these screens, and states them to be as follows:—Blue screen transmits from $\lambda 410$ to $\lambda 460$, or from "little h" to $F \frac{2}{3} G$, the first green screen transmits from $\lambda 500$ to $\lambda 550$ or $b \frac{1}{2} F$ to $D \frac{1}{2} E$, and a band in the extreme red from $\lambda 700$ to $\lambda 730$, which is the region of "little a"; the green screen containing naphthol green passes the same band on the green, but absorbs the red band. The red screen only passes from $\lambda 590$ to $\lambda 680$ or from D to B. It is obvious from the above that certain portions of the spectrum are entirely missing, namely from A to B, which would in the ordinary way have no effect on a plate, then from D to $D \frac{1}{2} E$, and from $b \frac{1}{2} F$ to $F \frac{2}{3} G$, and also the violet beyond "little h."

THE French motorists who have taken part in the De Dion tour through the southern counties of England during last Saturday's run from Oxford to London, through Windsor and Henley, included an inspection of Windsor Castle, for which the King had given special permission. Every member of the party was an ardent photographer. The use of the camera was sternly forbidden within the castle, but dozens of snapshots were taken from the Terrace, and the Dutch Gardens were photographed from every possible point of view. Private O'Brien, of the Coldstream Guards, who was on sentry duty on the Terrace, was turned out of his box, and the prettiest French lady of the party was installed in his place. O'Brien, with shouldered rifle, was stationed in front of his fair prisoner, and half a dozen cameras snapped the picture. Private O'Brien, who was obviously nervous, begged for a copy of the photograph, and a Parisian lady doctor took his name and company and promised to send him one.

ELEMENTARY THREE COLOUR WORK.

I.

To the would-be student of three-colour work, unless he decides to take some particular text book, such as Klein's Translation of Hübl's classic work, the various scattered papers on the subject are extremely confusing, and if he follows each writer the result must be a most hopeless muddle.

In the first place, a spectroscope is always considered to be an absolutely essential part of the outfit, and it certainly is for the theoretical student, but for the practical worker, he who wishes to obtain results with the least expenditure of time and trouble, it is not only quite unnecessary but a delusion and a snare. In the first place he, as a rule, cannot correctly interpret his results, and the results can be quite misleading. It is far better for him to at once purchase Hübl's book and use the charts given with it, and adjust the light filters by the aid of them alone.

It is necessary in the first place to decide whether liquid or dry filters are to be used. The one and only convenience of liquid filters is that the actual composition and consequent absorption is fixed, when working to a given formula, and that it is extremely easy to adjust a filter by the addition of dye or water. The disadvantages are first that to be of any use they must be optically worked and are then extremely costly, secondly, one has to use the same cell for all three filters, which entails taking to pieces and cleaning in between the exposures, and thirdly, there is no proof that the solutions used will keep.

To elaborate the first point is hardly necessary, as anyone may refer to a price list of optically-worked cells to find out their cost. The second point is that the same filter-cell must be used for all three exposures; this is important, because the cell walls may differ in thickness, or the cell itself in internal diameter, though only slightly. It is a point strongly insisted upon by Hübl, and one which, if I may be allowed to speak from personal experience, may easily lead to troubles, not necessarily in absorptions, but in noncoincidences and image points. To assume for one moment that it is possible to use (3) separate cells and keep them filled with solutions and obtain constant results, is to carry assumption too far. Dr. Eder has carefully measured the absorption of a methyl-violet liquid filter after some weeks' preservation and proved most conclusively that the spectrum absorption alters most markedly, and be it noted that this was kept in the dark and is merely a single dye solution. Tartrazine, as I have already pointed out, in solution, by comparatively short exposure, loses some of its yellow constituent ray and becomes more green, and, when some years ago, using Hübl's acid green and picric acid filter; I found that the mixed solution would not keep three days in the dark, without becoming perceptibly paler, more yellowish, and this without any perceptible precipitate. In fact it was not till totally erroneous results in colour rendering was obtained that the fact was noted.

Most of the filters recommended for three colour work are solutions of one or more organic dyes and these are extremely sensitive in some cases to external influences, such as the chemical action of glass, if one may call external the action of the interior of a bottle. For more than 12 years now one of the ready tests of the hardness of glass has been to keep a solution of eosine in it and measure the difference in colour due to the action of the salts dissolved from the glass, light in this case playing no part. Possibly this may be the reason why when stock solutions of aniline dyes are kept for some considerable time, although prepared with distilled water and kept in the dark and carefully filtered, one frequently finds a flocculence or distinct change of colour.

Dry filters I think are preferable, but they are a little trouble to make, and the majority of the directions given in articles and text-books are to me simply anathema maranatha

and evidence of careless haphazard working. Let us take for instance, the normal instructions for preparing such dyes which usually run after this fashion: "patent plate glass coated with a 50 per cent. solution of Nelson's No. 1 gelatin at about 95 deg. F., and placed on a levelling slab to set, then dried. Fixed out lantern plates, washed and dried to answer the purpose." Now I would point out that following these directions one may obtain a film of gelatine of about .003 or .1 of an inch, and if these two films are soaked in dye solutions the absorptions are totally different.

Whilst it may be convenient to coat up, in fact it is more convenient to coat up a number of screens, there is no reason so far as I can see, why a definite amount of gelatine and dye should not be apportioned to a given area of glass, and König's instructions are in this respect a model to other writers, for he gives dye solutions of definite strengths, a given amount of the same and gelatine per unit area of glass so that one can easily calculate out the necessary quantities for any sized filter.

Lumière's directions differ from this in that a given quantity of gelatine is recommended, a given strength of dye solution and a given time and temperature of soaking, so that the result is practically the same, because given one kind of gelatine one strength of dye, and a fixed temperature, the absorption is constant.

If a liquid filter is given, there is no difficulty in calculating out the necessary quantities of dyes for a dry filter, and if it is kept constant the amount of gelatine may be practically varied without any noticeable alteration of the absorption. As an example, I may give the following three filters, which were calculated from the liquid filters used in a cell of 1 inch internal width, and proved to be correct. The liquid filters were:

RED.			
Bisberich scarlet	1:500		
GREEN.			
Picric acid	1:5000	45 parts	
Acid green	1:5000	55	,,
VIOLET.			
Pyoktannin	1:5000		

The cubical contents of cell were measured and the result was to make a dry filter of corresponding absorption, every square inch of glass had to contain or be covered with gelatin containing 0.001 grammes of pyoktannin; 0.0725 g. picric acid by 0.18125 g. of acid green and 0.035 of Bisberich scarlet respectively. Obviously then with such directions the amount of gelatine and water are immaterial.

It will be noted in conjunction with above that merely the names of the dyes are given. This is not sufficient, the maker's name must also be given, and further, the plates for which the screens are adjusted, those above being thus more clearly defined, Bisberich scarlet being made by Kalle and Co. Bisberich, and acid green and pyoktannin by the Berlin Actiengesellschaft für Anilin fabrikation, and the plates Lumière panchromatic.

There is another important point in connection with filters, which the theoretical student must decide for himself, and that is what absorptions he is going to work to. Rough speaking, filters may be divided into three classes:

(a) Those that divide the spectrum into three zones, namely from red to D, from D to about F, and from F to the violet that is to say, three spectral zones without overlap or lacunae or vacancies.

(b) Those that divide the spectrum in three zones, each zone overlapping its neighbour, and

(c) Those that divide the spectrum into three zones with lacunae or gaps in between.

As to which is correct and which is wrong I am not going to enter at any length, but will point out that Dr. Miethe

those trichrome prints are the finest I have ever seen, adopts the "a" system; he is supported by Eder, and also Howard Farmer, and Gay Symmons. Newton and Bull adopt the "b" system, as does also Hübl. Whilst the third or "c" system, that adopted by Carbutt and König. Mr. Newton and Bull's paper on trichromatic filters (B.J., May 13, 1904) should be referred to for further extension of this division. Personally I believe that all three systems will give satisfactory results, and that more depends upon the exposure than has hitherto been pointed out, because in practical trichromatic work, we do not get pure spectrum colours, and with varying exposures the three systems run one into the other, because, take for instance, a yellow pigment, and it reflects not only yellow but red and green spectrum rays as well, and so on with every other colour. In fact it is an invariable law that any coloured pigment reflects that on each side of its chief spectrum colour.

Having said so much, I may as well add that these notes are again but the "idle thoughts from an idle hour" and by no means intended to be absolute, but they are at least the outcome of many years experimental work whether right or wrong.

E. J. WALL, F.R.P.S.

SOME QUALIFICATIONS OF A SUCCESSFUL PHOTOGRAPHER.

The following paper, delivered by Mr. A. A. Bish, of Chippewa Falls, Wis., before the Eighth Annual Convention of the Photographers' Association of Wisconsin, and reprinted in "The St. Louis and Canadian Photographer," contains a fund of advice and suggestion which, if followed by professional photographers, will do much to raise the standard of the profession. It also affords a clue to the methods of the American knights of the camera in the advancement of individual professional photography worthy of the attention of English photographers. Some of the qualifications of the successful photographer, as a subject of much importance to the profession, and one in which much of interest might be said. That some men succeed in photography and others do not, as is the case in all their lines of human endeavour, is to be expected; but to be able to prove absolutely just why one man can succeed when another in the same field of usefulness fails dismally is not an easy task.

"For the past ten years those of us who have been attending the conventions have heard much about the art side of photography—have heard it from those who are authorities on this subject. Not only have we listened with profit to the artists with brush and pencil, but to those who are equally artistic (in their field) with that magic tool, the camera. To-day the results of this education on the mass of photographers, as shown by the high class of work now done as compared to that produced even in the early nineties of the past century, is simply wonderful. We were not then so well aware of our many weaknesses as we are to-day, but no doubt the awakening came at an opportune time, and that period might even now be most appropriately called the 'dark ages' of photography. Yet we are as yet only well started toward the light of a brighter and a better day.

We have heard much about the picture-making side of photography (and it was sorely needed), yet it has been only within the past year or so that much has been said, either in the platform or through the columns of our professional magazines, on the subjects pertaining to the business side of the photographic profession.

I will not attempt to define a successful photographer, but will, rather, endeavour to call attention to some of the things that, in my judgment, go far toward making a man successful, whether he be engaged in this business in the city or in the country towns; but more especially may these remarks apply

to the worker in the smaller cities, as it is here that he comes into closer communion, as it were, with his fellowmen and with his customer.

Now, in order to discuss this matter, I propose to classify my few remarks under the following heads, namely: (1) Honesty, (2) Health, (3) Ability, (4) Industry, (5) Knowledge of the Business.

The first subject that claims our attention is "Honesty." I am sorry that there is so much that might be said on this theme. This virtue alone, if carefully practised in all our business and social relations, would do much to firmly establish the profession on the high plane where it rightfully belongs. I hold in my hand a business letter to a gentleman in my town from the proprietor of what, a few years ago, was, perhaps, one of the best known studios in the Middle West. I will now read this letter that you may better understand my point:

C——, I——, September 3, 1903.

Mr. S—— J——,

Chippewa Falls, Wis.

Dear Sir,—Yours of September 3, with cheque enclosed, at hand. Thanks.

We have never sent a portrait without a frame, and it is not safe—it would surely spoil the picture. Why not have one of our gold-leaf frames we wrote you about? Think either one would be beautiful. The patterns of the frames are of the latest designs. We can make up a frame for 18 dols., a little narrower than the one we wrote about.

Would not advise you to get a cheap frame, as the portrait is beautiful, and you would surely spoil it. Awaiting your early reply, we remain,

Yours truly,

I. SOAKEM ART CO.

Now, the portrait referred to in this letter was a sepia enlargement, finished and mounted on 16 by 20 cardboard, just as we all get them by mail or express from those who make a business of this class of work. The gentleman who brought me this letter is a customer of mine, a well-posted and well-to-do business man. He had placed the order for the portrait with this firm on my advice, as they had the original negative, he having only a small sepia platinum print from the same. He paid them 35 dols. for this portrait, which was the price they had made him, but, as he expressed it, he did not propose to be held up for an 18-dols. frame. I did not appear on the surface in this deal until he brought me this letter, inquiring of me if it were true that a picture of this character could not be sent safely unframed. I answered the letter myself, on my own business letter-head, and, I guess, rather pointedly, too, for the portrait came by return express, and, needless to say, it did not surely spoil it to send it without a frame, thus proving, in the mind of his customer, that this firm were either badly mistaken on the important point of shipment of their wares or else they were guilty of using unscrupulous and dishonest business methods. I dare say that the latter conclusion was the one arrived at in this case, and the firm has thereby lost a possible future customer, and the profession at large has at the same time been lowered just so much in his estimation. A man in any business who descends to methods, very properly called schemes and fakes, need not be surprised if he himself is classed with fakirs. The calibre of the man engaged in any business is what gives it standing. You may be an artist in your chosen line, but the profession to which you aspire is given credit or discredit in proportion to the way its individual members grace or disgrace it. The frame scheme, if it had come from some fake house, would have been different. Fakirs we will have with us perhaps, but let the gulf between us and their skin games be so wide that we cannot for one moment be classed with them.

Not only in these things, but in our work we are not honest with ourselves, or our patrons as well, unless we at all times do our very best, and even then strive to do better. It is not what we have within our grasp, but what we can see above and beyond us, and what we try for, that really helps us. Money is not the only thing we work for, and unquestionable business methods will drive more business away than all the ad. writers in the world can get and hold for you.

Now let us carefully examine ourselves on this most vital question and see if we are honest in our daily conduct of business, honest in our endeavour to better serve our patrons by taking advantage of every opportunity to improve, not being content to rest on the glory of past achievements, or to entertain for a single moment the arrogant impression that we have reached the acme of artistic or technical excellence, which is only a sure sign of rapid and complete decay.

In the matter of 'Health' I need not remind you of the great blessing that we enjoy in the possession of a sound body, and having this, we should guard it most carefully. In these modern times, with their attendant rush and bustle, the business man has much to try strength. Talents, either natural or acquired, cannot presume to take a high flight nor hold a steady course when housed in a diseased or pain-racked body. True, the photographer of to-day has been able to dispense with many obnoxious chemicals and not a little of the tedious and confining work which fell to the lot of the worker of other days, such as the preparation of his plates or paper, yet there is enough left of both to work havoc unless much care is exercised. Observance of careful habits and plenty of out-door exercise do much to assist nature in keeping healthy.

To those who are so inclined, a day or two taken occasionally from the daily grind, with rod or gun, is recommended, and I notice that those who combine out-door work along with that of the studio enjoy, as a rule, better health than those who do not do so, and from experience and observation I heartily endorse combining the two. A bright eye, a quick step and a cheerful manner indicate good health, and, possessing these, you are much better able to animate your sitter and assist in securing that indescribable 'something' individuality, which is the perfume of the flower of portraiture.

So, aside from the added enjoyment we are able to get out of life, we owe it to ourselves to keep our bodies healthy, that we may better attain our full measure of usefulness.

I will now pass to the third topic, that of "Ability." By this I mean a fitness to perform a given work. Business ability counts for much. First, last, and all the time the photographer should study business methods as well as the technique of his profession. To be sure the business end should not lead us near that dangerous rocky roof 'money madness,' yet it must be understood to be the motive-power in the studio which turns the wheels of progress.

Happy is the man who can combine the two in a clever way that neither the artistic on one hand nor the business end on the other seem to suffer. One thing especially I mention here, and that is, always carry out the promises that you make, even if you have to sit up nights in order to do so. We must be square-toed also in all our transactions, at the same time have it understood that you give full value for all money paid over your counter under all circumstances. One thing certain, our guns are all right, but very much depends upon the men behind the guns. *We must be men!* Men who have a capacity for independent action, not those burdened with moral stupidity, nor an infirmity of will that prevents one from 'catching hold and lifting.' Men who will not act for themselves will not count for much when the benefit of their effort is for all.

Next, perhaps, to his ability as a business man and a photographer nothing has so much to do toward making him success-

ful or otherwise, as does the manner in which he introduces his product to the public.

A few weeks ago I sat in the showroom of one of the best studios on the Pacific coast, talking to the educated and awake proprietor, when a lady stepped from the elevator passed into the office. The saleslady was busy, it was late, and she came to the room in which we sat and asked the proprietor if he could show Mrs. A. her proofs. He excused himself, and, stepping into the office, I heard him accost her pleasantly, not fawningly, mind you, after we from my position in the show-room, I saw him indicate her a chair near a window; he, seating himself opposite, began unrolling the proofs in question and sat discussing with her in a quiet, business-like way. I could not help but think how differently those proofs might have been shown her across a desk, without comment and without courtesy.

In the practice of medicine it is said that the person is almost as valuable to a man as scientific knowledge, and can all, no doubt, now recall to mind some good doctor of experience in whose presence you never failed to notice a quiet, dignified, yet forceful individuality which seemed to render him so different from other men. This quality may be acquired, to a greater or less extent, by us all, and, by cultivation, may be made to shed its beneficent rays on all with whom we come in contact.

But, returning to business methods more properly, it seems to me that it would be better if we photographers would regard ourselves as business men, and not pose so much as artists only. We need not lose sight of the artistic excellence to which we must all aspire, but let us do business in a business-like way, and be of some economic value in the community in which we live.

I am informed that less than one-third of the photographers of this section—and this is no worse than other parts of the country—seem to have an account at the bank and to do business through the banks. This state of affairs cannot be true in other trade or professions. No manufacturer or merchant would think of doing business otherwise. I am informed that it seems to be growing better slowly. No one would hope that everyone who has not tried this will hasten to do so immediately on his return home. Have your books, make it a business to deposit daily, or weekly, at least, your receipts, against which you can check all bills, which should always try to discount. This alone is quite an improvement and will amount to more during the year than you imagine. Then you come in contact with people who do business correctly, and you will unconsciously acquire better business methods yourself. Then keep a simple set of books, keep track of receipts, expenditures, and stock. If you do all this you will have less time to criticise the way our politicians run the Government or the equally-stirring subject of our times.

'Industry.' Without industry a man cannot succeed in photography any more than he can in some other vocation. Unless you have a capacity for hard work of the most painstaking kind you had better keep out of the ranks, if already in the business, the sooner you get out the better for all concerned. Honest labour degrades no one, but, on the contrary, it ennobles and enriches all. So much to do, yet it is surprising how much you can accomplish if you keep pegging away. However, we must work intelligently, and we need not make tread-mills of our studio work. In other words, we must like the work and put our whole souls into it. The captains of to-day in the industrial world are not men who have tinkered with this and with that, nor have they frittered away their precious time on fads and fancies, having set their eyes on the mark aimed at, they have sweated neither to the left nor to the right until the goal is reached.

Seest thou a man diligent in his calling; he shall surely prosper.

In conclusion, I wish to impress upon the minds of all that in order to enjoy a full measure of success in photography it is essential that one have a good broad knowledge of the subject, which comes through a liberal education. The principles of pure photography may be easily mastered, but when you have learned to focus a camera and develop a more or less printable image on a modern dry plate, it does not follow that you are a photographic artist any more than the young medical student is a doctor as he emerges, diploma in hand, from the class-room. Indeed, not as much, for, as a recent writer has said, the student of medicine or law has spent, and with good reason, much valuable time and not a little treasure in preparation in fitting himself to begin the practice of his profession, while, unfortunately, just the reverse is true of our work, or, at least, such has been the case in the past. We value a thing largely by what it has cost us in time and money; therefore, if a man or woman enter the broad field of labour armed with little or no training along either business or artistic lines, he or she cannot be expected to add weight or dignity to a vocation the past achievements or the future possibilities of which they are practically ignorant.

The American mechanic and specialist knows not only the technique of his profession, but its history as well and its relations to other trades and professions. He is up-to-date always, for he reads his trade magazines and journals, thus keeping in touch with his brother workers; he is energetic, wide-awake and progressive; he has a keen appreciation of success and its attendant joys as well as a more philosophic view of adversity. Now, if this be true in other trades and professions in our country it should also be true of photography, for, as in music, painting and other kindred arts, photography appeals to the higher and better nature of man.

A few educated men with some art training and a love for the work have done more in the past few years toward securing a recognition of the merits of photography than all the combined plodding of forty years of photographers. The day of the all-round man is past. We are now in the age of specialists. As yet, perhaps, only a few have had the courage to break away from the beaten path, but the result of their success, where known, will only be the means of bringing more and more to the breach, and what will be the result, you ask. It will be this. Each man in his chosen line will develop to the highest point his branch of the work, while his co-worker will do likewise in his. The public appreciation will follow even more rapidly than it now does, and as the call for still better work increases, as the public state is educated, the remuneration will increase as well as the demand. Then the unprincipled and dishonest man, the man with little or no ability, the lazy man, or the one with little pride in his work or in his profession, will fall farther and farther in the rear, while the intelligent, earnest disciple of the great Daguerre will succeed to the field which is now almost deserted by the portrait painters."

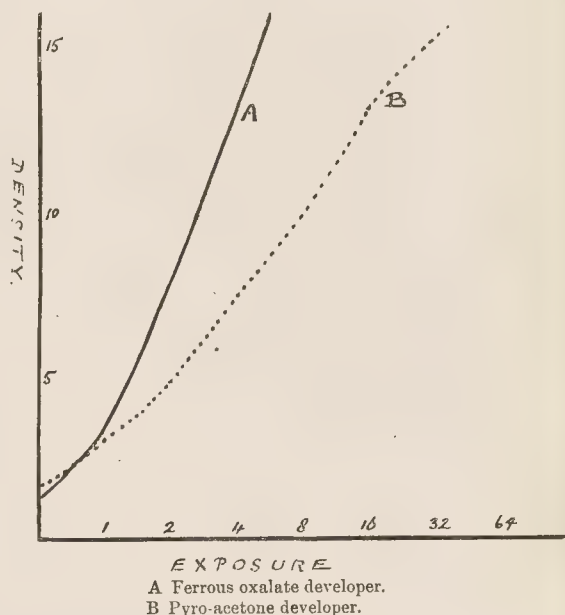
On Reading Advertisements.—The "Druggists' Circular" for July makes some pertinent remarks about the usefulness of the chemist and druggist in business reading advertisements. The writer asserts that, in addition to good reading, the advertisement pages of a pharmaceutical journal really form a most important part of the current literature of the chemist in business, and should be read as promptly and conscientiously as the other pages of the journal. He points out that the chemist who reads advertisements learns much about various things connected with his business which he may not have immediate use for, but which makes his reserve stock of information of greater value to him. We can fully endorse the pronouncements of our contemporary. Their application to the photographic dealer also is equally clear.

DEVELOPERS WITH ACETONE.

It is some time now since the attention of photographers was directed towards acetone as a substitute for the alkaline component of a developer. One or two formulæ for such developers have been spread abroad, notably that of MM. Lumière and Seyewety, but in almost every case they have been pyro-acetone formulæ, and pyrogallol seems to have been the only developer to which much success with acetone has been ascribed.

According to Eder's *Jahrbuch* for 1903, C. W. Cyapek experimented previously to Lumière with acetone, and partially replaced the potash in a metol-hydroquinone developer with it. But experiments seem to indicate that acetone can successfully replace the entire proportion of alkali, not only with pyrogallol acid, but with many other developers as well. Moreover, certain modifications of the pyro-acetone developers already published give such excellent results in our hands, that it has seemed worth while devoting some small space to an account of their behaviour.

A foreword regarding the exact behaviour of acetone is first



of all desirable, as the discussion between Drs. Eichengrün, Eder, and Lüppo-Cramer respecting Messrs. Lumière's explanation of the behaviour of this compound was sufficient to arouse considerable interest in Continental circles during the last two years. The question, to which there has been more than one answer, is whether acetone and an organic developing agent will work alone, as a developer, or whether the presence of sodium sulphite is also necessary? It has been contended that acetone bisulphite with hydroquinone will make a workable developer also, on the one hand, whilst against this has been brought forward the argument that the acetone bisulphite must have contained some sodium sulphite as an impurity. Certain it is, however, that acetone, hydroquinone, and sodium sulphite give a good developer, only our experiments pointed to a larger proportion of acetone being necessary with hydroquinone than with pyrogallol to ensure efficient working.

The accompanying diagram illustrates the difference between the character of gradation obtained with two H. and D. strips, one developed for eight minutes with ferrous oxalate (A), the other for three minutes with pyro-acetone.

Pyro-acetone gives a negative with abundant half-tone, good even gradation, and a plentiful supply of density, and should be very serviceable for portraiture, and also good for landscape work where sufficient exposure has been given.

The two following "stock" solutions will be found serviceable for portraiture: A. Pyrogallol, 1.5 gm., of 15 grs.; sodium sulphite, 10gm., or 100grs.; sulphuric acid, .5cc., or 5 drops; water 200 cc., or 4 oz. B. Acetone; ordinary pure acetone. In some cases a larger quantity of sulphite is recommended. Thus Vogel, in his *Taschenbuch der Praktischen Photographie* (1903), recommends twenty parts of sodium sulphite to 1.4 part of pyrogallol. Take for use, twelve parts of A and one part of B.

It might here be noted that in preparing the A solution the sulphite and acid should be added to the water before the pyrogallol, as if the sulphite and pyro be alone added, the sulphate which occurs generally as an impurity in the former oxidises some pyro, and causes the solution to have a pink colouration, which a normal amount of sulphurous acid does not remove.

Development with pyro-acetone is fairly rapid, and should be continued until the image is through at the back of the negative, and it seems thoroughly dense on examination by transmitted light. Great care must be exercised between development and fixing. If the plate be put straight into the fixing bath, the film will become marked with large spots or streaks. Owing to the greasy nature of the acetone, the negative must be held under a running tap for some moments before immersion in the hypo; the film is thus rid of acetone and its by-products with the developer, and fixing takes place readily.

If hydroquinone is to be used, about the same proportions as with pyrogallol may be taken. Thus, 1.5 part of hydroquinone, 10 of sulphite, and 200 of water suffice for A, whilst to every ten parts of this about one and a half of acetone must be employed.

Pyro-acetone works exceptionally cleanly, and bromide is not necessary except in cases of over-exposure. For this reason it is very suitable for panchromatic plates, and deserves special recommendation in this respect.

T. THORNE BAKER, F.C.S.

X-RAYING the Earth.—For five years two mining and electrical engineers and inventors, Messrs. Daft and Williams, an American and an Englishman, have been experimenting in British Columbia, in Alaska, in Siberia, and in the United Kingdom, with devices for discovering, by electrical means, deposits of metals that were undiscoverable by ordinary mining methods. In principle as in results the invention is most simple, though many electrical difficulties had to be overcome in perfecting it. A current of electricity conveying a series of taps or ticks like an ordinary Morse message, is put into the earth by means of special transmitters. This current makes its way through the earth over a larger or smaller area, yards or miles, as the operator may choose—but to what depth none can say—from one electrode to another. Then, with a telephone receiver and a steel spike, two operators walk over the charged areas, and, sticking the spike into the earth anywhere, pick up the current, and the mysterious ticking tells what is hidden in the earth as plainly as though one saw with an X-ray eye. Away up on the rocky steep slopes of the barren hills that frown down on Coniston Lake and Windermere there was seen a fortnight ago the result of a remarkable challenge, and the establishment beyond question of this new scientific discovery, as fascinating in its exposition as it is apparently destined to be valuable and revolutionary in its application. Half a dozen sceptical mining experts and as many non-scientific ordinary folk, who did not know a copper lode from a load of hay, climbed precariously over the barren heights with a telephone receiver in one hand and a steel spike in the other, prodding the earth, listening to nature telling over the telephone in language the simplest could understand of the existence and the exactest location of her stores of wealth, hidden hundreds of feet below in the heart of the rocky hillside. Then the rocks were dynamited, and the lode exposed to show that nature was telling telephonic truth.

THE FAILURE OF AMERICAN PHOTOGRAPHY AT THE ST. LOUIS EXPOSITION.

[From "The Photographer," New York.]

There are no photographs in the Fine Arts Building at the St. Louis Exposition.

According to Professor Halsey C. Ives, Chief of the Department of Art, there will be none. In spite of the United efforts of the photographic Press, in spite of the expectations of the pictorial workers in photography the world over, what, was proclaimed a photographic triumph one year ago turned out to be a bubble, the existence of which was seemingly dependent upon the whims of three men. These three men, with a nonchalance born of unlimited power in their respective positions, blew the bubble from one to the other until it burst.

The visitor in search of evidences of photographic endeavour at the world's largest exposition is directed to the Liberal Arts Building. If he be English, satisfaction will be his; and if American, sorrow.

Along one side of the immense building, housing anything from stuffed Polar bears to French millinery, is ranged a row of miserably lighted stalls, filled with a heterogeneous mass of photographs, ill spaced, and incoherently hung. The only means by which the identity of the display can be established is through several beggled placards, attached to some of the pictures, in which the names of several well-known professional photographers, evidently looking for all the advertising the law allows, stare at you from an immeasurable distance. There is no catalogue.

If the visitor approach the row of stalls from one end he is immediately impressed with the fact that photography at St. Louis consists of Paris panel portraits of more or less prominent St. Louis citizens. There are countless numbers of them. An attendant, one of the very few, volunteers the information that the rows of substantial citizenship had something to do with the exposition. This, then, is a reward handed to the citizenship in lieu of dividends! The fact is also disclosed that this acreage of Paris panels was not passed upon by the jury. Heaven forbid!

Further along the line there are evidences of the fact that a few of the big men were big enough to surmount obstacles or else, ignorant of passing events, were thoughtless enough to send a few pictures, and those not of the best.

In all about three hundred prints adorn the stalls. A free view of some of them is obstructed by various interesting and profitable additions. In front of one of the stalls a gentleman of persuasive mien adjures you to have a penny made into an interesting souvenir of the fair; at another, a woman gifted with a saintly expression and remarkable avoirdupois squirts Florida water at the passer-by, meanwhile proclaiming the fact that attar of roses can be had at a remarkably low price.

Germany, France, and Italy are all represented by a small, well-chosen collection of pictures. England, as usual, is thorough, and all other displays fade into absolute insignificance in comparison. Splendidly hung, well selected, and carefully catalogued, England's 242 prints bear eloquent witness to the fact that, whatever the internal strife may be, when necessity comes there is unity of purpose and determination to win. No vainglorious zealot here to say "What care we for national loyalty or the future of our art?" The mountebanks are hustled to the rear, and solidity, modesty, and reserve come to the fore. This is a world show, and England must maintain her position amongst the nations.

Upon whom shall we fix the responsibility of this miserable fiasco? Colonel A. J. Ockerson, Chief of the Department of Liberal Arts? Professor H. C. Ives, Chief of the Department of Art? or Alfred Stieglitz, Director of the Photo Secession?

Upon Colonel Ockerson, who promised?

Upon Professor Ives, who refused? or

Upon Alfred Stieglitz, who dictated?

But judge not, gentle reader, until you have heard what all three have to say. "The Photographer" has stated its position with absolute clearness and presents facts without bias and without comment other than is warranted by the situation as having a bearing on the future of photography.

Here is what Colonel Ockerson had to say to "The Photographer" in reply to numerous questions:—

"As far as I am concerned, the question of photography at the fair remains where it was several months ago. The photographers

assured that if there was room in the Fine Arts building photographs would be exhibited. It appears that there is no room, hence there will be no photographs in the Fine Arts building.

I do not wish to recount ancient history, but to make my position perfectly clear to the photographic public I feel some matters should be considered which entered into the matter of the photographic exhibition at St. Louis. In the first place, I am deeply interested in every branch of art displayed under the supervision of the department, and especially so in the photographic section. I assured early in the history of the fair that it would be a hard task to reconcile the photographic workers and bring them together amicably. This inspired me to spend considerable effort in the direction of convincing the photographic people that it was to their best interest to make the exhibition of photographs at the fair the most successful in years. I attended the meeting of the Photographers' Association of America, held in Buffalo in 1902, talked with the members of the association, and gained their support. I had correspondence with many of the leaders in photography, and endeavored to get at some method of harmonising all of the contending interests; and, while I could take no official notice of such a condition in the photographic ranks, did all I could towards bringing to light what seemed to be a lamentable condition of affairs.

I asked for suggestions from many sources, including the members of the Photo-Secession, the Photographers' Association of America, all of the leading camera clubs, and many of the leading photographers. As a result of the replies to these requests for suggestions I formulated a plan by which seven representatives of leading organisations in America were to act as a jury of opinion.

The invitations forwarded to the seven organisations selected representatives, the statement was made that the pictures were to be hung in the Liberal Arts building. This immediately started a crusade on the part of the ultra-artistic photographers looking for the installation of a photographic exhibit in the Fine Arts building. I took the matter up with Professor Ives, and he assured me that if there was room in his building he would gladly call a jury to consider the pictures submitted by the photographers, and would hang such as passed. This information was in due course submitted to the photographic public in a special announcement issued by my department.

Out of seven organisations invited to participate in the selection of pictures by sending a representative to serve on the jury of selection two responded. The two were the Photographers' Association of America and the Chicago Society of Amateur Photographers. The other five declined on one pretext or another. At this time I had a correspondence with Mr. Alfred Stieglitz, leader of the Photo-Secession. The sum and substance of the correspondence, which covered a period of several months, was in effect the statement on the part of Mr. Stieglitz that the members of the Photo-Secession would not exhibit their prints unless they were assured that at least one of the number sent would be hung without consideration of price. To this I replied that the rules of the department forbade such action, and that even such large corporations as the United States Steel Company had to submit their exhibits to the Exposition and they were accepted. Various arguments were advanced by Mr. Stieglitz, all of which I answered, reiterating my original statement.

The upshot of the matter was that Mr. Stieglitz, acting for the Photo-Secession, declined to exhibit, and the matter was dropped. In failing to gain the support of the seven organisations originally invited to send representatives, I appointed a committee of three men prominent in photography to act as a jury, and the pictures were then passed upon by these gentlemen.

I am disappointed at the showing made by the American photographers at the fair. The Exposition has spent several thousands of dollars in preparing for this particular exhibit, and the result has not repaid the effort. Very few photographers responded, and all those that did not send their best work. What should have been the representative exhibition of photography ever held in America is now a commonplace show at best.

It is not for me to name the cause of this unfortunate condition of affairs, but I feel a deep interest in the cause of American photography, and I hope that the day is not far distant when all of the workers in pictorial photography can find a common meeting-place, and at the value of the particular work each is engaged in, and, such another opportunity is given them, unite with shoulders to the wheel, and place American work and American workers to the front where they belong."

THE PREPARATION OF WATER DEVELOPMENT PLATINUM PAPERS.

PRINTS upon paper where platinum forms the main body of the image are obtained in several ways. The original plan was to develop the image upon, or more correctly by, immersion in a hot solution of neutral potassium oxalate. Beautiful prints were obtained by this method, but the use of a solution at 180 deg. F. proved to be a great drawback to its general adoption. The introduction of cold development for the production of prints in platinum in 1892 proved a great step in advance.

The subject to be dealt with here is the preparation of platinum paper that requires no special developing solution, the only requirement after printing the image being to submit the print to moisture, or to immerse it in water for complete development, or it may be held in the steam issuing from a tea-kettle, or placed in a damp box for several hours, at the end of which time development will be complete. The easiest and quickest process is to simply dip the print into plain water, when the development can be easily watched and stopped at the right moment. One of the principal and most important salts used in the preparation of any kind of platinum paper is ferric oxalate. Although this salt can be purchased very cheaply, it may be advisable in some instances to prepare it. This can be done with ease and certainty in the following way: Take one pound of chemically pure perchloride of iron (sometimes called sesquichloride of iron), place it in a two-gallon clean stoneware crock, pour upon it a gallon and a half of boiling water, stir with a strip of glass until dissolved, then pour into this hot mixture (stirring well at the same time) one pound of stronger water ammonia. The stirring must be done rapidly: The solution will quickly begin to thicken, and will closely resemble coffee grounds. Just as soon as the mixture thickens heavily the addition of ammonia should be stopped and the crock stood aside for the precipitate to settle. This precipitate is nothing more or less than pure iron rust, known chemically as hydrated peroxide of iron. As soon as the precipitate has settled well the clear liquid must be decanted off. This clear liquid is a solution of ammonium chloride. Fill the crock again with clean cold water, stir the contents well, and allow to settle again. When settled, decant once more.

Continue this operation until the washing is complete, which may be ascertained by adding a few drops of nitrate of silver solution to a small quantity of the clear decanted liquid. As soon as no opalescent effect is produced the precipitate of pure oxide of iron is ready for use. It must now be poured into a large glass funnel, with a strong filter-paper inserted, or, better still, use two filter-papers, with a small tuft of absorbent cotton pulled out like a cobweb, placed at the apex of the filter paper. When fitted into the funnel this cotton will prevent the paper from splitting at the point of greatest pressure. About ten ounces of distilled water should be added after the first filtering is completed, so as to wash out the ordinary water. The washing being now complete, dissolve half a pound of c.p. oxalic acid in one pint of boiling distilled water in a stoneware crock, take out the oxide of iron from the funnel with a glass strip, and place it into the hot solution of oxalic acid. Continue this until the whole of the contents of the funnel has been transferred to the crock. Stir well. If the oxalic acid has not all dissolved, it will not matter, because there will be a considerable quantity of water held by the oxide of iron, which will be more than enough to dissolve any excess of acid. When this mixing takes place it should be done under no stronger light than a gas jet or an oil lamp, because the salt which is forming, namely, the ferric oxalate, is extremely sensitive to light. In fact, the whole of the operation in preparing this salt of iron, from the time the oxide and oxalic acid are brought together must be conducted away from any actinic light.

The mixture must be stirred two or three times a day for about four days, when it will be found that nearly the whole of the oxide has been dissolved. The liquid that is left will be found upon decanting to be of a brownish-green colour, and when tested by the hydrometer will indicate 60 or 70 on the scale; this means 60 or 70 grains of pure ferric oxalate to the ounce of liquid. This is the ferric salt that is required for the preparation of the paper. It must be fully understood that the operations from this time on must be carried out under a yellow light. Ferric oxalate solution will be found to

clear better by settlement than by filtering. It must not be evaporated down to a solid, because the excess of heat for this operation would injure the salt and produce ferrous oxalate. It is this body that must be avoided if it is desired to produce a perfectly coated paper. The ferric oxalate being ready, proceed as follows:—

Procure the necessary number of sheets of paper to be coated (suitable paper can be obtained from any large photographic stock dealer). It must be plain paper, not salted. Sheets about 18 by 22 inches can be bought ready for use; sizing of the paper previous to coating is not necessary. Now make up the following stock solutions, using distilled water only: Gum arabic, white, 1 ounce; dissolved in hot water, 3 ounces; chloroplatinite of potassium, $\frac{1}{2}$ ounce; water, 6 ounces; oxalic acid, chemically pure, saturated solution; oxalate of potash, saturated solution; lactic acid, 4 ounces; potassium chlorate, 60 grains; hot water, 5 ounces; nitrate of lead, 240 grains; hot water, 4 ounces; ferric chlorate (chlorate of iron), $2\frac{1}{2}$ ounces.

Ferric chlorate for use in the preparation of this paper is made up as follows: Take two ounces of ferric oxalate solution and add thereto 4 drams by measure of the potassium chlorate solution above given. All the bottles used for this work must be amber-coloured glass, except for the gum arabic, so as to insure safety from action of light.

A drying box or closet will be required, a small cupboard in a room will answer, or a moderate size packing case may be used. If a cupboard is to be utilised several lengths of copper wire must be stretched from side to side, attached to screw-eyes, the same kind as used for picture frames. Allow space enough for the bottom of the sheets of paper to hang about eighteen inches above the top of a small gas stove placed upon the floor, beneath which a sheet of tinfoil has been placed for safety. Upon the top of the gas stove place another piece of clean tinfoil about a foot square. This is to distribute the heat. The products of combustion will not affect the paper, if it is not to be kept too long before use, say for a month. If a packing case is to be used, then a few one-inch holes must be bored in the top to allow the air to circulate and take the moisture from the paper.

A small gas stove must be used in the same manner as described for the cupboard, of course, allowing sufficient space between the heated sheet of tin and the bottom of the sheets of paper, so that they do not become scorched. Having the drying closet ready and a few dozen wooden photographic clips at hand, proceed as follows: Procure an amber-coloured glass tray, say, 8 x 10 inches, and cut the paper into strips 9 inches or $9\frac{1}{2}$ inches wide. Cut some strips of thick cardboard half an inch wide and 9 inches long, or strips of glass will answer better. Two dozen of these will be required for twelve strips of paper. The paper must be examined, and a mark made upon the back with a lead pencil so as to indicate the right side to coat. Now place a glass strip at one end of the paper upon the back, and clip it with three wooden clips, one at each end and one in the centre, reverse the paper and attach another glass strip in the same manner to the other end. Continue this until the twelve pieces of paper are complete and lying on top of each other ready for coating. The sensitising solution is to be made up in the following manner: Ferric oxalate solution (fluid measure), 4 ounces; ferric chlorate, 3 drams; chloroplatinite of potassium solution, 3 ounces; nitrate of lead solution, 3 drams; potassium oxalate solution, 4 drams; oxalic acid solution, 2 drams; lactic acid, 10 drops; gum arabic solution, 1 dram.

These may be mixed in an ordinary amber-coloured wine bottle, corked with a clean cork, and shaken up well, then filtered through absorbent cotton placed lightly in the neck of a glass funnel into a sixteen-ounce wide-mouth amber glass bottle. This is the sensitising solution. Pour this into the glass tray, take one of the clipped sheets of paper, holding the ends with each hand, bend the paper into shape like the letter U, bring one end down upon the surface of the liquid, then, by gently raising one hand and lowering the other, the paper will glide smoothly upon the surface of the sensitising solution and become coated as perfectly as if coated by a machine. Repeat this operation two or three times, hold up the sheet of paper cornerwise so that any excess of liquid may drain into the tray, and allow one corner of the paper to touch the inner edge of the tray. The paper must now be suspended in the heated closet to dry. Coat the other sheets of paper in the same manner. When all are dried they must be removed and laid aside, away from light, for a short

time to cool. They must then be coated again upon the same and suspended to dry in the reverse position; this is to equalise the coating. A sheet or two of blotting paper may be placed at the bottom of the closet to absorb any liquid that may drop, and of blotting paper may be clipped at the bottom of the sheets to prevent the liquid from falling.

As soon as the second coating is dry remove the clips, trim the ends by cutting off that part held by the clips. The paper is now ready for use. Any sensitising solution that may be laid aside and can be added to some fresh solution within a week; if not, it must be thrown into the waste can for saving platinum waste.

Having a suitable negative ready, cut the paper to the required size, say a 5 x 7 view, place it in the printing frame, and if possible to sunlight. Print the image well in. When removed from the printing frame and immerse immediately in a bath of warm water. Almost instantly the image will develop with intensity. It must now be placed in a clearing bath of muriatic acid, 1 part to water 50 parts. In a short time the image will be cleared and a rich warm black print upon a white ground will be the result. Two or three such clearing solutions should be used to insure complete elimination of the iron salts. The print should now be washed and dried, ready for trimming and mounting.

The paper that may be left over may be packed in an amber tin case, such as is used for platinum paper, with a thorough coating of chloride of calcium wrapped in several folds of clean paper, and either sealed or tied with string.

It will be found that this paper will print much better after being kept a short time. Should the paper become at all damp it will become well printed out when exposed in the printing frame. In the process of drying the paper do not use galvanised iron gas stove, or spots upon the coated paper will result from the specks of zinc carried off by the heat.

Paper for giving brilliant prints from weak or thin negatives made by this process by adding double the quantity of ferric chlorate to the sensitising solution and printing in very deeply.

To ascertain the best quality of paper for use it would be well to plan to test a few pieces before coating the larger sizes. Ordinary plain photographic papers may always be depended upon to produce reliable and satisfactory results. Papers that have a slightly rough surface produce the best results.

In preparing paper for water development it must be clear that any and every kind of paper cannot be used. Some papers contain a considerable quantity of kaolin and other matters, while others contain the residues of the chemical used in the bleaching process. All these bodies interfere with the action of the platinum contained in the sensitiser. Such papers, baryta where employed as a coating upon any kind of paper, prevent perfect deposition of platinum. The deposited platinum is extremely small in quantity, consequently the image is poor in quality, the colour being at all times a bluish or bluish grey.

The organic properties of the paper itself have much to do with the chemical action which causes the deposit of platinum.

Other salts can be used in combination with ferric oxalate as sensitiser for water-developed platinum paper, such as sodium oxalate and ammonium ferric oxalate, but in either case the image has a very weak appearance upon development, particularly the last-named salt, which will produce upon some papers a greenish appearance. It must also be understood that whatever the drying closet may be used it will be necessary to provide an inlet for the air. Also to take every precaution for the prevention of dust entering the drying closet.

The process of double coating may be facilitated by hanging sheets of paper after the first coating and drying in a moderate box or closet, the bottom of which has a sheet or two of paper wetted with warm water, the coated sheets of paper hanging upon stretched wires, the same as in the drying closet. Fifteen or twenty minutes in this closet will allow the paper to absorb just enough moisture to permit of its being bent and handled with freedom. It is not intended to make the paper damp, but to allow it to absorb enough moisture to make it pliable. This means the second coating may be effected with ease and without allowing the sensitiser to flow over the back of the paper.

The addition of the gum solution to the sensitiser en-

ing to be accomplished without previous sizing of the paper. The extra sizing of the paper has caused many failures in preparing paper for one's own use, rendering the paper more absorbent than if it had not been sized. This may appear strange, but it is nevertheless a fact. The paper should be passed through a calendering machine after sizing, to close the pores and thus give a suitable surface that is practically non-absorbent, no matter whether the surface is smooth or rough. These remarks have been made to prevent disappointment and to aid in producing a perfect paper without going into a course of experiments. This small percentage of gum enables paper to be used such as Whatman's. The only point to be attended to when Whatman's paper is to be sensitised is to reduce the quantity of ferric chloride solution to a fourth of that used in the formula given, otherwise the paper will give prints possessing great contrasts. The printing upon Whatman's paper will require double or treble the time that would be required for printing upon smooth paper. The process of clearing or fixing must also be continued longer than with smooth paper. If this is not attended to a considerable portion of the ferric salt will remain in the paper, and will soon cause a very decided yellowing of the white parts of the picture.

If muriatic acid is not on hand a solution of oxalic acid may be used, one ounce of oxalic acid to thirty ounces of water, using three separate baths. Should oxalic acid be used the hands must be washed in lime water to obviate risk of oxalate poisoning. A solution of muriatic acid (hydrochloric acid) is the best clearing agent for pictures made upon the paper described for water development.

A. J. JARMAN (Wilson's Photographic Magazine).

FORTHCOMING EXHIBITIONS.

August 1.—Andover and District Horticultural Society. Photographic Section. Hon. Secretary, W. L. Gradidge, Jubilee House, Andover.

August 16-20.—Royal Cornwall Polytechnic Society Photographic Exhibition. Secretary, Edward Kitto, The Observatory, Falmouth.

September 16 to November 5.—Photographic Salon, Dudley Gallery, Egyptian Hall, Piccadilly. Hon. Secretary, Reginald Craigie, Photographic Salon, 1904, Dudley Gallery, Piccadilly, London, W.

September 20-28.—Newbury Photographic Society. Hon. Secretary, J. Forster, Guildhall Club, Newbury.

September 22 to October 29.—Royal Photographic Society's Forty-ninth Exhibition, New Gallery, Regent Street, London. Secretary, W. W. Bartlett, 66, Russell Square, London, W.C.

October 1-30.—Berlin International Photographic Exposition. M. Franz Goercke, Berlin W. 62, Maassen-Strasse 32, Germany.

October 19-22.—Rotherham Photographic Society. Hon. sec., H. C. Lamingway, Tooker Road, Rotherham.

October 18, 19, 20.—Kettering Church Institute Photographic Exhibition. Hon. Secretary, E. Claypole, 112, Hawthorn Road, Kettering.

November, 1904.—Ilford and District Photographic Society. Hon. Sec., W. N. Beal, 155, Thorold Road, Ilford.

November 2, 3, 4, 5.—Newark Photographic Exhibition. Secretary, C. B. Appleby, Barnbygate House, Newark.

November 3.—Frome M.I. Photographic Society. Hon. Secretary, J. Mitchell, 3, Willow Vale, Frome.

November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Sec., James Dunlop, Myrtlebank, Motherwell.

November 9.—Hackney Photographic Society. Hon. Secretary, Walter Selfe, 70, Paragon Road, Hackney, London, N.E.

November 21-26.—Sheffield Photographic Society. Joint Secretaries, W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.

November 22-23.—Ipswich Camera Club. Hon. Secretary, R. H. Cotton, 37, Henley Road, Ipswich.

November 23-26.—Hove Camera Club. Hon. Secretary, A. R. Sergeant, 55, The Drive, Hove.

November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., W. Simmers, Aberdeen House, Ramsgate.

December 2-8.—Southsea Photographic Society. Hon. Secretary, J. Lawton, 20, Clarence Square, Gosport.

December 5-7.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104, West 101st Street, New York.

December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.

December 13-20.—Southampton Camera Club. Hon. Secretary, S. G. Kimber, Oakdene, Highfield, Southampton.

December 28-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 138, Glasgow Road, Wishaw.

January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.

January 20-21, 1905.—South Essex Camera Club. Hon. Secretary, T. Michell, 180, Browning Road, Manor Park, E.

January 28-February 12, 1905.—Photographic Society of Marseilles. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

June, 1905.—Northern Photographic Exhibition. Secretary, F. G. Issott, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

September 30.—"Photographic News." Quarterly Competition. "Photographic News," 9, Cecil Court, Charing Cross Road, London, W.C.

October 1.—Thornton-Pickard. £100 cash prizes for pictures taken with Thornton-Pickard cameras and shutters. Thornton-Pickard Manufacturing Co., Altrincham.

October 10.—Luna paper. £240 cash prizes for prints on Luna paper. Lucien Allegre and Co., 59a, New Oxford Street, London, W.C.

October 15.—Belgian Association Lantern Slide Stereogram Competition. Secretary, M. Vanderkindere, 97, Avenue Brugmann, Brussels.

October 31.—Coxin. 68 prizes for users of Coxin. Judging twelve pictures. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.

November 1.—The "Graphic." £50 in cash prizes. Manager, Photo Competition, the "Graphic," Tallis Street, Whitefriars, London, E.C.

December 31.—Barnet. Nineteen classes. Prizes valued at £500 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

March 15, 1905.—Ilford. £750 in prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

Patent News.

The following application for patents was made between July 4 and July 9, 1904:—

Colour Photography.—No. 15,204. "Improvements in apparatus for colour photography." William Norman Lascelles Davidson.

The following applications for Patents were made between July 11th and July 16th, 1904:—

Printing Frames.—No. 15,421. "Improvements in artificial light photographic printing frames." Benjamin James Hall.

Exposure Meters.—No. 15,498. "Improvements in photographic exposure meters and in the means of calculating depth of focus." R. and J. Beck, Ltd.

Apparatus.—No. 15,587. "A contrivance by which photography may be carried on without using an ordinary dark room." Archibald Whitehead.

Printing Frame.—No. 15,600. "Printing frame for photographic post-cards." James Thomas Milne.

Plate Holder.—No. 15,739. "Improvements in photographic plate or like holder." William Lawrence Parkinson.

FROM Messrs. A. E. Staley and Co., of 19, Thavies Inn, London, E.C., we have received two interesting little booklets which may be had for the asking. One is entitled "Flashlight Photography without Apparatus," and deals intelligently with the use of the various flashlight candles and powders made by Dr. G. Krebs, of Offenbach, now sold only by Messrs. Staley under the name of Geka Preparations. The other is a well illustrated and admirably got up catalogue of the well-known Premo Cameras.

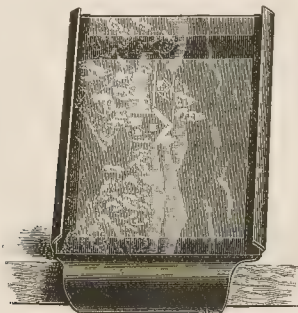
New Apparatus, &c.

The "Merito" combined Developing Plate Holder and Plate Dryer. Sold by W. L. Parkinson, Limited, 62, Dale Street, Liverpool.

This simple piece of apparatus is strongly made of black celluloid, and its utility and advantages are manifest at once. It is intended



to hold the plate during development and fixing, etc., and so avoid soiling the fingers, while later it can be employed to hold the negative in an upright position to dry. Being made of celluloid, it is easily



cleaned and not liable to contaminate or rust. As an accessory for developing, whereby the negative can be examined without risk of scratching or marking the film, it will appeal at once to the amateur. It is very cheap, and should have a good sale.

Bayer's Premier Combination Gold Salts. Made by the Bayer Manufacturing Co., 20, Booth Street, Manchester.

This preparation forms an excellent combined tone-fix bath, which is specially recommended for professionals. It appears to be very rich in gold, and therefore yields a pure gold tone on nearly every brand of P.O.P. It dissolves readily, and, owing to its mode of manufacture, yields immediately on solution a fully mature bath, ready for use. The temperature of the bath recommended when toning the prints should be 60 to 70 degrees F. In order to avoid spots, it is advisable to place the prints in the bath one by one, and keep them in constant motion until toned. A thorough washing completes the process. A bath of 20 oz. is sufficient to tone about 35-45 half-plate prints (6½ by 4½) or 80-100 quarter-plate (4½ by 3½). When the solution becomes weak, it can be strengthened by adding an equal quantity of fresh solution to the old bath.

The "Primus" Nature Postcards. Sold by W. Butcher and Sons, Camera House, Farringdon Avenue, London, E.C.

This series of postcards has many novel features, one of the best being that whilst the side upon which the print is mounted is one of a charming series of shades of art paper, the reverse side is of the ordinary white card. Some of the cards are printed with a series of chaste ornamental embossed designs in bold coloured inks, and a motto is also added, of which there are twelve selected from the poets; so that in many cases additional interest is added to the picture by this description. Others again have only an embossed

design, but all are in excellent taste. The packets contain an assortment, and are sold at popular prices.

V.B. Postcards. Sold by Albert E. Mallardain, 51, Cheapside, London, E.C.

These postcards are prepared in the same way as the well-known V.B. self-toning printing-out papers. They are faintly printed daylight and are fully developed in plain cold water. The application of a weak solution of hypo (about ½ oz. to the pint) for thirty seconds fixes them, and a final wash completes the process. The prints produced are of a fine Vandyke brown colour, and the simplicity with which they are produced, owing to the briefness of the exposure and the simplicity of the after processes, should secure a large sale for them. They are put up in convenient packets of ten, and are inexpensive.

New Books.

Photographische Bibliothek. Vol. 19. Die Farben-photographie. Dr. E. Koenig. Gustav Schmidt, Berlin.

This small volume is intended as a guide to three-colour work those who are interested in photography. The aim of Dr. Koenig has been to examine and explain, in a clear and succinct manner, theory and practice of the art, so far as it may depend upon action of light directly. Mechanical printing processes are there beyond the scope of the publication, which rather deals with colour photography in those forms that lie within reach of the amateur. Koenig's treatment of the subject is exceptionally lucid, and instructions are quite up to date.

Photographische Bibliothek. Vol. 20. Die Herstellung von Diapositiven. By P. Hanneke. Gustav Schmidt, Berlin.

This book on the preparation of positive photographs for lantern projection, or window decoration, will be a welcome addition to the library of many photographers. Herr Paul Hanneke, the editor of the "Photographische Mitteilungen," has the subject at his fingertips, and, as might be expected under such circumstances, we have here a very complete set of formulæ brought within a small compass which every admirer of the lantern slide will find useful. If we offer a suggestion for future editions, it is that more attention should be given to the collodio-bromide emulsion processes. They are of most beautiful, and, we think, the inclusion of reliable formulæ for the making of these emulsions would add considerably to the value of the book. It is true Herr Hanneke gives the name of one well-known maker of collodio-bromide emulsion, but to work with such material deprives the photographer of half the enjoyment attached to the process, besides the opportunity of exercising much skill.

"Photography on Tour." 132 pp., price 1s. Published by Dawkins and Ward, Limited, 6, Farringdon Avenue, London, E.C.

This little volume, being thoughtfully built on pocketable lines, likely to become a constant and reliable companion to the photographer who travels much, especially abroad. It contains sound advice and reminders on many things that the said photographer would probably overlook until the occasion arose, when it would be late, and touches in a practical way the numerous difficulties and dangers which beset the photographic tourist. The proper preparation and packing of apparatus; precautions in carrying and changing films and plates; photography on a cycle, on horseback, and shipboard—these are some of the subjects discussed in one section. In others, contributors deal with the treatment of special subjects such as animals, skies and clouds, yachts, heavy seas, architectural, alpine and other mountain scenery, flowers, street scenes, statues and monuments. For the benefit of the Continental tourist is a brief vocabulary (for use at a dealer's) in French, German, and Italian, also a letter in these languages requesting permission to photograph. Exposure is not omitted from the volume, but is presented in a manner calculated to appeal to the photographic novice, and as generally helpful little compendium of photographic information ready to be found elsewhere in one place, it promises to fill that curious void known as "a long-felt want."

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Inst.	Name of Society.	Subject.
.....	Nelson Photographic Society....	Reading. Mr. Ambrose Smith.
.....	Rotherham Photo. Society	<i>Odds and Ends.</i> Mr. J. Leadbeter.
.....	North Middlesex Photo. Soc.	Lantern Slide and Print Competitions.
.....	Hull Photographic Society	General Meeting.
.....	Watford Photographic Society	Informal Meeting.

Commercial & Legal Intelligence

LYNDHAM AND Co., Limited (Photographers, Acton).—Issue on 29 of £500 second debentures, part of a series created May 8, to secure £3,000, charged on the Company's undertaking and property, including uncalled capital. Holders—E. P. Martin, J. L. Radford, Cedar House, Hillingdon; and B. J. Taylor, Avenue Road, Acton. No trustees. Total amount previously issued of same series, £2,500.

ROBERT'S STORES, Limited, Bournemouth.—At the board meeting on the 16th inst., Mr. James I. May, Mr. William F. Thick, Mr. Thomas A. Twitchett were elected on the directorate of the Company. These gentlemen have been connected with the business in the capacity of managers of departments since the formation of the Company. It is anticipated that their election as directors greatly strengthen the board and promote the interests of the Company, the photographic department of which, we understand, is in a flourishing condition.

JUDD AND MANNERS, Limited.—Capital, £500 in £1 shares. Objects:—To acquire the business carried on by A. Manners at 76, Dean Street, E.C., as "Judd and Manners," and to carry on the business of wholesale and retail chemists, druggists, dyers, salters, oil colourmen, importers and manufacturers of, and dealers in, pharmaceutical and other preparations and compounds, makers of, and dealers in, proprietary articles, electrical, chemical, photographic, optical, and scientific apparatus, and materials, etc. No initial capital issue. A. Manners is first general manager and secretary.

On the last night of Henley Regatta, a man broke into the business premises of the Maidenhead Photographic Company, Station Road, and stole about £3 in money and some photographic apparatus, a cheque-book, a paying-in book, and other articles. He had carelessly packed up a box of camera lenses and prints, but, apparently having been disturbed, left it behind. He committed a good deal of damage on the premises. The man was afterwards arrested by London detectives with some of the stolen property in his possession, on Monday morning the Maidenhead magistrates committed him for trial. Detectives John Course and Charles Keys, L Division, saw accused enter the Hero of Waterloo and the Olive Branch public-houses in Waterloo Road on Saturday night, and, as he carried a suspicious looking parcel, he was watched, and finally arrested on suspicion. Prisoner gave the name of Henry Jarvis, 177, Whitechapel Road, London.

A PAINFUL case was heard on Monday by the Dewsbury Borough Magistrate, defendant being a young woman of attractive appearance, named Maud Lathom, late cashier for Mr. A. F. Gothard, photographer, Dewsbury, who was charged with embezzling £2 10s. on 22nd of March last. She had been in his employ for some years, the most implicit confidence was placed in her; but from circumstances brought to his knowledge he felt bound to question her; she owned that she had taken about £40, and that she promised to repay if he would forgive her. He promised to do so, but soon afterwards felt compelled to go into the matter again, and it was discovered that she had formed an intimacy with a man named

Whitehouse, and that this fellow had had from her a considerable amount in sums varying from 5s. to £2, and that the defalcations came to over £100. Though that was the case—and it was a painful discovery to make about a trusted servant—Mr. Gothard still asked the Bench to deal leniently with the girl, for the sake of her future. Only one case, that of embezzling £2 10s., paid to her on her master's account by Mrs. Wilson, of the Little Saddle Inn, for photographs, was taken, and to it the accused pleaded guilty. She said, in answer to questions, that she had repaid £1 3s., that she had no prospect of further employment, and that her parents were too poor to take her in; a sister, she believed, would do so. The magistrates said they had taken into consideration Mr. Gothard's wishes, and in the hope that this would be a warning to the prisoner and lead her to take another course of life, they would only bind her over in £10 for six months. This was done, and she was then set at liberty.

A FRAUDULENT Edinburgh Photographic Canvasser.—At the Edinburgh Sheriff Court on Monday, Thomas Menzies Bell appeared in answer to a series of charges of theft by fraud. In all twenty-two charges were preferred against Bell. Of these, nineteen were to the effect that between July 1, 1903, and April 30, 1904, he represented to different persons residing in Edinburgh, Heriot, Stow, Ormiston, Pentcaitland, Gladsmuir, and Melrose that he was canvassing for orders for the portrait of Jas. Swan, cattle salesman, Edinburgh, and that for payment of 21s. he would deliver to each of them a framed portrait, thus inducing these persons to give him £19 19s., which he appropriated to his own use. The other three charges were of a similar nature, the frauds being committed between April 25 and May 25 of this year, in Edinburgh and Roxburgh, when he said he was canvassing for orders for the portrait of another cattle salesman named Andrew Oliver. Bell pleaded guilty to the charges, and an agent stated on his behalf that he followed the calling of a photographic canvasser. Unfortunately, in the case at issue he had failed to deliver the photographs, but he actually had these at home ready for delivery. He had had a good deal of domestic trouble lately, his wife having died not very long ago, after a protracted illness. The fiscal pointed out that these frauds commenced in 1903, and that in point of fact, none of the parties, with one or two exceptions, had received any photograph at all. Those who did receive one, received a very inferior print and a very inferior frame. Sheriff Henderson said that, unfortunately for the accused, the present was not his first appearance in Court. Since 1896 he had been several times convicted for frauds of the very same kind. The sentence would be six months' imprisonment.

THE Free Enlargement Swindle.—At the Chester Assizes on Thursday last, before Mr. Justice Wills, Max Rottman, manager, Ernest Stevenson, salesman, and Mary Ellen Allcock, canvasser, were charged with conspiring to obtain photographs and money under false representations at Crewe, between February and May. There were four counts in the indictment. Mr. R. V. Bankes prosecuted, Mr. Owen Roberts defended the two male prisoners, while Mr. Wilkin appeared for the female prisoner. Mr. Bankes in opening said the prisoners were charged with a system of swindling which he was afraid was not uncommon. An office was taken at 51, Mill Street, Crewe, as a branch of the United Artistic Association, of which Rottman was manager, Stevenson local manager, and Allcock one of the canvassers. The mode in which prisoners proposed to plunder the public was as follows: Lady canvassers were sent round Crewe and invited persons to give them photographs to be enlarged free as a sort of advertisement for the association. The photos, which were particularly asked for were those of people who were dead, and which of course were held more in regard by the owners. Several people parted with photos, and these were taken to the office of the association, and when the owners of them asked for them back they were told they could not get them back unless they purchased a frame for 17s. 6d. with the enlargement. In each case when the young lady called and took away the photograph she left a receipt, which was always folded up, and hurried away from the door. This receipt purported to be an order for a frame from the United Artistic Association. It appeared that the canvassers were instructed by Stevenson to follow this method of delivering the receipts. It was a method of swindling the public on the part of three prisoners. Rottman was the head, Stevenson gave the orders,

and Allcock was the young lady who went about telling lies. Two young ladies who applied for situations would be called, and would give evidence that they were told to give these folded receipts to people who gave them photos, and to hurry out of the house before they had time to read them. Among the witnesses was a former lady canvasser named Maggie Mullock, who said Stevenson's orders to her were, "Don't give the receipts for photographs until you are leaving the door, and then get away as quickly as possible, or they may call you back and ask you for the photographs." Similar evidence was given by Cissie Mullock. William Welch, picture frame dealer, Crewe, deposed that one of the picture frames which had been sold for 17s. 6d. was worth 3s. 3d. (Laughter.) Another more massive and elaborate looking frame was shown witness by Mr. Owen Roberts, who asked what witness could sell it for. Witness replied amid laughter, "I'll make you one like it for 4s. 9d." Rose Egerton, a lady canvasser, said when she obtained employment Miss Allcock told her that there were a few lies to be told, and Stevenson said to her, "I'll tell you how many O.K.s and N.G.s you have got." The Judge: I suppose O.K. means "All correct" and N.G. means "No good." (Laughter.) This concluded the case for the prosecution, and the prisoners were called to give evidence on their own behalf. Rottman said he distinctly told the canvassers not to take the photographs unless the people knew the conditions. Stevenson said his instructions to Miss Allcock were to say the association would undertake to enlarge the photographs free if a frame was purchased at a cost of not less than 17s. 6d. Prisoners' counsel pleaded that the evidence did not prove that there was a conspiracy between them. The jury found the male prisoners guilty, but acquitted Miss Allcock. The latter verdict was received with applause. A detective stated that there had been several complaints about Rottman for similar practices. The Judge, in passing sentence, said prisoners had been guilty of gross deception upon poor people, and they would be sentenced to four months' imprisonment in the second division. Stevenson fainted on hearing his sentence.

News and Notes.

THE fifth summer meeting of the Southport Photographic Society was held on Saturday last, the place visited being Ingleton.

BY means of photography a ninth moon of the planet Saturn has been discovered, says the "New York Tribune," by the director of the Harvard Observatory.

THE Aldershot Camera Club has arranged for a trip to Windsor on Wednesday, August 10. The members will train to Staines, and proceed per steam launch to Windsor.

OWING to a slight delay in ascertaining the names of the assembled members of the Convention photographed at Derby, the key to the group we issued with our last week's number will not be given until next week.

THE Siberian Press announces that radium has been found near the village of Urovskaia, in the Nerchinsk district of Trans-Baikalia. An engineer is fitting out an expedition at Chita for the purpose of investigating the discovery and the local conditions.

THE judges of the recent Amateur Kodak Competition—Sir W. Abney, Mr. J. Craig Annan, and Mr. Frank Sutcliffe—have now made their awards. The complete list will be published in the BRITISH JOURNAL OF PHOTOGRAPHY next week.

AN English edition of the catalogue and illustrated price list of the Suter lenses and cameras is to hand from the sole British agents, the Altrincham Rubber Co., Altrincham, England. A copy can be obtained for the asking.

ALL stereoscopic workers are invited to send in their names and addresses for particulars of the United Stereoscopic Society. The entrance fee is 1s., and during the year a novel competition is held amongst its members. The secretary's address is A. J. Snow, 84, St. Andrew's Road, Walthamstow.

"Mounts Illustrated" is the title of Jonathan Fallowfield's new

price list of professional and amateur photographic mounts. The catalogue deals exclusively with mounts and mountants, and is complete. Every photographer should get a copy. A line to Charing Cross Road will secure one.

A COMPREHENSIVE catalogue of photographic materials apparatus has been sent us by Spiers and Pond's Stores, Victoria Street, E.C. It is exhaustively illustrated, and everything the amateur and professional can desire is listed. It is sent post free to anyone on application.

THE tropical summer has reminded all firms in the "dark and fields and pastures new." On Saturday last the staff at the W branch of Draycott, Limited, took their annual picnic in a and four to Brewood, one of the charming spots of the Black Country. We congratulate them, and hope to hear of the epidemic spreading.

"HOLIDAYS on the South Coast and the Isle of Wight" is the title of a neat little illustrated booklet issued by the Brighton Railway Company. It contains much useful information, and is printed in English, French, and German. A copy can be obtained free from the publisher, 30, Fleet Street, London, E.C.

A SCIENTIFIC inquiry bureau has been opened in Paris by municipal auspices, enabling any person desiring information on any scientific subject to gratify his thirst for knowledge. We can see this institution being made much use of by the peripatetic photographer, who is anxiously concerned as to "what stop" and "what exposure" to-day?

A COMPLETE pictorial record of the Grand Military Fête and Ball at Government House, Aldershot, was obtained by the photographic artists of Gale and Polden, Limited, who were specially commissioned for the work. This interesting collection will be on view at the studios in Wellington Works, and specimens will be submitted on application.

A NEW photographic list for 1904 is to hand from the Scientific Photographic Society, of 292, High Holborn, W.C. In this list a selection of lanterns, microscopes, field and opera glasses, artists' colours, etc., are included, in addition to a full range of photographic materials and apparatus. A postcard will send for a copy.

A NOTABLE personality has been lost to astronomy by the death of Captain William Noble, F.R.A.S. Taking astronomy as a hobby, he amused himself by taking observations of the less ambitious stars with a telescope, and for nearly half a century has entertained the Royal Astronomical Society by his outspoken and humorous remarks on matters which came before that learned body.

AT the Highland Agricultural Show at Perth last week photography played a prominent part. Almost every stall showed photographs of various machines or materials. The veteran Reid, of Wishaw, was hard at work with the prize animals. Brown, of London, was also busy—he was doing a great trade in postcards of prize animals, etc., and a local man, Mercer, was also seen busy at work.

WE understand that Kodak, Ltd., has undertaken, where two or more friends or more are gathered together in society, at home or at school, to send without charge a capable demonstrator, who will give instruction and explanation in the processes used in photography from the beginning to the finish, and he will do it in so simple a way as to enable hearers to start out with a camera right away and bring back successful pictures.

IPSWICH Camera Club.—The monthly meeting of members was held at the Museum on Wednesday evening last week, when a number of photographs were exhibited, the result of a recent visit to Ipswich Dock. An interesting lecture was delivered by Dr. Warburton, "Control in Printing," in the course of which he showed the various devices used by experienced photographers to improve their pictures, and also exhibited a number of photographs so treated.

M. STEPHAN LEDUC, professor of biological physics at the Faculty of Medicine of Nantes, has presented to the Société Française de Physique several remarkable photographs produced by electrical charges. His most successful method is to direct the electric charge on to the sensitive plate, so as to render it regular and symmetrical, producing designs capable of furnishing "motifs" for ornamentation, which may be indefinitely varied.

ROYAL Photographic Society.—An exhibition of photographs by members of the affiliated societies will be on view at 66, Russell Square, from Tuesday, August 2, to Saturday, August 27, daily from a.m. to 7 p.m. These pictures are selected from the prints sent in at the 1904 competition, and include the winning photographs, to which the R.P.S. plaques were awarded. Admission by application to the secretary, Mr. A. W. W. Bartlett, or by presentation of visiting card.

The Royal Cornwall Polytechnic Society's sixty-ninth exhibition will be held at Falmouth from August 16 to 20. The Bishop of Exeter, who has a summer residence on the shores of the harbour, will deliver the presidential address on the first-named day. The special feature of the exhibition will be Japanese art, and with the aid of the Japan Society and others it is hoped the collection will be representative and of deep interest. The other departments include the arts, ornamental art, and photography and its appliances.

A WATERPROOF Cement.—A writer in the "Bulletin Belge" gives the following method of preparing marine glue for making a waterproof joint:—Shellac, ten parts; pure rubber, one to three parts. The greater the quantity of rubber the more elastic it is. The shellac could be dissolved in as little methylated spirit as possible, using heat, so as to form a thick syrup; and the rubber should be also dissolved by heat in about ten times its weight of rectified turpentine and the two solutions mixed.

SOUTH Essex Camera Club Belgian Trip.—Ladies and gentlemen from London, Portsmouth, Bradford, and Liverpool have joined the club, and will leave London on Saturday, August 6th, at 8.40 p.m. An attractive programme has been arranged, including a special evening with the Belgian Photographic Association, when a lantern display will be given. The cost for the fourteen days' trip is a moderate one £5 10s., and Mr. Welford, who conducts, can still arrange for others to join. A letter or telegram to him at 166, Romford Road, London, E., will have prompt attention.

The entry form and prospectus of the Newbury Photographic Exhibition portends a successful show in September. Prizes amounting to nearly £70 in cash are offered, and the classes are both numerous and well selected. The judges will be Messrs. Harold Baker, Reginald Craigie, and A. Horsley Hinton; and the exhibition, as we have previously mentioned, is under Royal and distinguished patronage. The date of the show is given in our list of forthcoming exhibitions, and full particulars and entry forms are obtainable from the hon. secretary, Mr. E. G. Forster, Guildhall Club, Newbury.

The outing of the Ilford and District Photographic Society to Romford, on Saturday last, was favoured by splendid weather for photographic purposes. A goodly number of members journeyed down by train, while a few, in spite of the great heat, went by cycle. A round of the place was made, stopping en route to record several of the ancient houses, the church, the famous lych gate, and the hospital. This outing concluded the series for the present season, and an excellent programme is being arranged for the winter session. Attending members should communicate with the secretary, Mr. J. Cole, 160, Thorold Road, Ilford.

MESSRS. B. J. EDWARDS AND Co., Limited, have sent us from Castle Works, Ealing Dean, W., their latest catalogue of photographic materials. It is a beautifully-printed booklet, and contains in addition to the usual price list information concerning the dry plates, films, and other accessories manufactured by the firm, a complete epitome of general instructions for plate and film manipulation, many useful formulae, and a list of English and foreign dealers who stock photographic materials. The utility of this section to the photographer on tour is obvious. Many excellent half-tone illustrations are included. It is a catalogue that should be in the hands of every photographer.

TROPICAL weather is coming on again, so meteorologists are persuaded. A humorist of the Paris Boulevards says it is all M. Flammarion's fault. The latter insisted, as we mentioned in the Journal some weeks ago, on getting up a fête on the Eiffel Tower in honour of the sun. Fulsome speeches and verse were read, in which the glorious lamp of heaven was told that he was all in all to us, and that we could not live without him, which was true enough, but it

was a mistake to labour the point, although there were a great number of photographers among the party. The fact is that the sun has since been suffering from what Americans politely call "swelled head." Possibly the cold douche on Monday evening may have a beneficial effect.

STATE Aid for Science.—On Friday last an influential deputation presented to the Prime Minister various pleas for the further endowment of the universities. Mr. Joseph Chamberlain, as Chancellor of the University of Birmingham, spoke for the younger universities, while representatives from Oxford and Cambridge also gave sympathetic arguments for further State aid to these new creations. Mr. Balfour mentioned that he thought it improbable that so many representatives of learning in this country had ever been gathered together in one chamber. And certainly a list of names which included Sir William White, Sir Oliver Lodge, Sir William Ramsay, Sir Arthur Rucker, Sir John Wolfe Barry, Sir Henry Roscoe, and a number of other well-known scientists and friends of scientific work, makes it hard to believe that such a unique gathering ever took place before.

At a recent meeting of the Académie des Sciences, Paris, M. Darboux described a new mode of observing N-rays which is favourable to repetition of such experiments. Instead of simply watching the variations of brightness in phosphorescent sulphide of calcium under the rays, a method requiring good eyesight and expert observers, the experimenter only has to note the apparition of a narrow luminous ray on a background slightly illuminated. A line is drawn upon cardboard with a mixture of sulphide of calcium and collodion, and exposed to the sunlight. Then the cardboard is placed in a camera, and a ray of orange yellow light, coming through coloured glass, is allowed to fall upon it. The line of violet phosphorescence on the card thus lit by a complementary colour appears almost white, and when struck by N-rays or the material emanations from metals, recently observed by Blondlot, it suddenly brightens up.

SOME first-rate pictorial postcards have been sent us by Messrs. Hood and Co., Limited, of St. Bride Works, Middlesbrough. The majority of these are produced from half-tone blocks, and the whole of the work is done at the works. As an inducement to photographers to venture, and reduce the cost of the first outlay, this firm is starting a new method, which they call "System B," retaining the blocks themselves (under this system only), but charging them out at 33 per cent. less than their value. They rely on the hope of repeat orders to recompense themselves for this concession. A series of picture postcards of Old Newcastle are included in these sent us. They represent history both in a photographic and antiquarian sense, and it is not often authentic photographs of so great an age are able to be so satisfactorily reproduced. They are from original negatives taken over fifty years ago.

THE authorities of Framlingham College have just extended their accommodation for science teaching, and now it will compare favourably with any school in the country. Previously, the instruction in science was restricted to chemistry, and both practical and theoretical work were done in one room, the result being that the former was limited to only a few forms in the upper school. If scientific training is to be of value, a beginning must be made in the junior forms; and this was impossible under the old condition of affairs. Not only has provision been made for mere scholastic work, but a first-class dark room has been added, and here the members of the College Photographic Society are able to indulge in the completion of their special hobby. The plans for these improvements and extensions were drawn up by Mr. C. F. Bisshopp, of Ipswich, to meet the requirements of the Education Department, under the personal advice of the District Science Inspector.

A UNIQUE Photograph.—Under an Italian sky, some three hundred or more of poor folk, the inmates of Brighton's Workhouse, held a picnic at Plumpton one day last week. Towards the wane of the afternoon there was a gathering for an immense photograph. There are some among the women of the Brighton Workhouse who have lost their good looks, and among the men the rough lines of life have told upon their brows. They scoffed at the idea of being photographed. Their faces were too well-known already, they said. But there was still a grain of vanity in the most homely. By a

little wheedling and a little promise of good things to come, the old folk were gradually got together to face the camera, although some of the men stolidly smoked with their backs to the artist, and a few old ladies "didn't want no photo took." A successful negative was, however, eventually obtained, which will be all the more interesting when the fact is grasped that the united ages of the party amounted to no less than 20,102 years.

PHOTOGRAPHING Fortifications.—A correspondent of the "Morning Post" writes: "About a year ago while staying at Dover I sat down near the Castle and proceeded to sketch one of the gates, its only importance to me being its picturesqueness. I had not been occupied many minutes before a corporal from the guard appeared and informed me that sketching or photographing in the vicinity of the Castle was strictly forbidden, and I had to put up my sketch-book and my daughter her kodak. I read the other day in the papers that the officers and crews of a large foreign fleet, created, according to the expressed views of the public organs and authorities of the country to which the fleet belongs, for the special purpose of eventual war with this country, were allowed to inspect and photograph without restraint or interference the fortifications and workshops of our second principal naval arsenal. The crass absurdity of these two incidents when placed in juxtaposition needs no comment.

WHEN the memorial to Sir George Stokes was unveiled the other day Lord Rayleigh held up as an example, still to be followed, the simplicity of Stokes's experimental methods and the limitation of his apparatus to the bare essentials for the demonstrations he had in view. Professor George Darwin has well said that people are now-a-days too apt to think that science can only be carried forward with elaborate appliances, and yet many of the finest experiments have been made with cardboard, cork, and sealing-wax. Modern science has rendered necessary for many investigations highly-expensive instruments, and great laboratories are required for college purposes; but, observes Professor Darwin, "the number of great investigators has been but little increased by laboratories; and those who are interested in science, and have not access to laboratories, should not give up their study in despair." There are gentlemen living to-day who have spent almost as many thousands as Newton and Stokes spent pounds over their apparatus, and yet up to the present have not far eclipsed the two Lucasian professors.

NOVEL Colour Printing.—An exceedingly ingenious four-colour printing-machine was on view at the Dalziel Colour Press, Hatton Garden, last week. It prints perfectly to register at the rate of 900 quad royal sheets an hour, and is certainly an advance in the art of colour printing in this country. Briefly, the machine may be said to be four wharfedales rolled into one, the sheets being automatically carried over by a travelling gripper from one cylinder to another, hitting or missing any one colour as desired. Variations in colour and also in register have been the principal cause of wastage in the past, and have been responsible for most of the bad work that has brought discredit upon the Englishman as a colour printer. It is claimed that with the new machine all this is impossible, the parts working to such a nicety that an error in register cannot occur, whilst the fact that each sheet is completely printed in six seconds enables the printer to adjust any variation in the colour at once. The output per colour on the new machine—which, by the way, is a French invention—is, it is said, fourteen times that of any other, and this, too, without the employment of extra labour.

PACKING Photographic Plates on Tour.—The amateur who travels much and uses plates instead of films is frequently in trouble as to how to protect his exposed plates against injury. Some seem to think that the more they smother them in paper the safer they must be, and there are not lacking many who go the length of wrapping each plate in a separate piece of paper. When, as sometimes happens, that paper has printed matter thereon, the amateur finds on developing his plates that he has got a good deal of matter in the wrong place, for printer's ink has a strong liking for the sensitive side of a photographic plate, and will impress itself without any scruple across the choicest picture in the collection. Let the amateur eschew newspaper when he is packing his plates, or he will regret it when too late. The simplest plan of all, and as efficacious as simple, is to save the brown paper in which the plates are wrapped when

they come from the makers, and also the boxes in which they are packed. These are all the packing materials the amateur requires. The exposed plates should be put up in bundles of four, each plate film to film, and when the dozen has been returned to the box see that sufficient paper, folded the size of the box, is placed top-to make the contents fill the box to its utmost capacity. So packed will travel with perfect safety.

"ANCIENT" Photography.—According to a Paris correspondent there is a wealthy shopkeeper in the central quarter who is rather was, an enthusiastic amateur photographer. Lately he has made the acquaintance of a young man who was as ardent a devotee of the hobby as himself. While the shopkeeper thought that photography was a modern invention, the young man informed him that, like all other pretended discoveries, it was known centuries ago. An support of this bold assertion the young man produced a black parchment. He passed it through a certain process, and then a picture appeared. "It is the wife of Cæsar," he said. "But I can do something better than this. It is a papyrus which was found in a little village near Cairo, and on which is a very clear photograph of Sesostrius." The shopkeeper was greatly interested. And when he was told of the important things that would likely happen after the discovery was made known, of the honours and decorations that would fall to him, he had no hesitation in parting with a sum of £280 in order to enable the young man to travel to Egypt. He waited patiently for news of this wonderful papyrus that would make his name and fame. But the news never came. On Sunday he met his friend in joyous company at Montmartre. His first impression was to have him arrested. But the trickster said he had spent the money, and that if the shopkeeper had him arrested he would only bring ridicule upon himself by allowing himself to be swindled. The shopkeeper thought he had been fooled sufficiently, and decided to give the swindler in charge. He has, however, decided to give up photography.

Correspondence.

- * * Correspondents should never write on both sides of the paper, notice is taken of communications unless the names and addresses of the writers are given.
- * * We do not undertake responsibility for the opinions expressed by our correspondents.

THE COMPOSITION OF PAPER.

To the Editors.

Gentlemen,—With regard to the article in your issue of the 1st inst. on "Methods of Examining and Detecting the Composition of Paper," the writer is right in respect to the statement that sulphuric acid will change in sunlight, but this refers more particularly to unbleached pulp. If, on the other hand, the pulp is well cleaned and bleached white and washed clear of chlorine, it will not become yellow or go brown or yellow any more than rag or esparto when exposed to the sunlight.

The article referred to assumes that because phloroglucin is in conjunction with hydrochloric acid, that a paper immersed in the former and afterwards treated with the latter will turn black, and that this indicates the presence of wood-pulp; this is usually the case of mechanical wood-pulp being present, but if a chemical pulp only is used, that is the bleached pulp itself, the reaction mentioned is absent, and there is nothing to indicate whether the paper is made from wood, rags, or esparto, so far as this particular test goes.

It has been known to most paper-testing establishments on the Continent that all papers containing rosin size are more or less affected by the sunlight, quite apart from their composition or the material used as a fibre. Experiments made by the Leipzig Paper-testing Establishment have proved that the action of the air and sunlight on printing papers free from wood has shown a distinct change to a brown or low colour, according to the proportion of rosin sizing in the papers after they are saturated with rosin and submitted to a chemical test by which the paper is exposed to the vapour of nitric acid and then treated with ammonia. It

established clearly that atmospheric air has no influence on colour of pure cellulose paper unsized and free from wood. I have made some slight experiments with papers treated as described by the writer's article with phloroglucin, and then exposed to the air, the sunlight being very strong and the papers treated placed under a glass exposed to the sun's rays. The results were as follows:—No. 1 sample was a piece of the "Daily Chronicle"; No. 2 sample was a paper containing 70 per cent. of mechanical pulp bleached sulphite; No. 3 sample was a paper containing 30 per cent. of mechanical pulp and bleached sulphite; No. 4 sample was a paper made entirely of bleached sulphite pulp; No. 5 sample was a piece of a pure linen rag, bleached; No. 6 sample was a piece of a cheap paper pulp, bleached.

As mentioned before, these papers were all treated in the phloroglucin solution and afterwards hydrochloric acid so used to determine the presence of wood-pulp. In the cases of the Nos. 1, 2, and 3, the pulp was distinctly shown by the more or less red discoloration of the paper. In No. 4 there was no trace. No. 5 showed no trace, nor did No. 6; so that, relatively speaking, a pure wood-pulp paper under this test shows no trace of the reaction described by the writer of the article. Further, of the three pure cellulose papers, wood-pulp No. 4 was, if anything, the best colour after exposure. The use of phloroglucin and hydrochloric acid are associated entirely with the object of finding mechanical wood-pulp alone by a red discoloration of the paper treated. There are many tests besides this, but for the present it is sufficient that I deal only with the tests described to.

PETER SIMPLE.

July 19, 1904.

REPRODUCTIONS FROM "SELF-TONED" PRINTS.

To the Editors.

Gentlemen,—In the BRITISH JOURNAL OF PHOTOGRAPHY last week, under the heading "Ex Cathedra," you speak of self-toning paper being admirable for reproduction purposes, and state that blocks are like it equally with P.O.P.

But also you say, as to its convenient surface for working up and facility of mounting, many others besides myself will perhaps fully endorse; but I doubt if you could get a couple of half-tone operators out of a hundred to say a good word for the average "self-toned" print. The chief defect which blocks from such prints show is exaggerated darkness of all lower tones and shadows, although P. prints occasionally (when insufficiently toned) tend to show a slight defect of muddy tones in the finished blocks, yet with the self-toning sort the defect follows almost as an inherent characteristic, for subjects showing normal vigour this kind of paper should be used when blocks are the end in view. (This very defect obviously makes S.T. paper useful when printing from flat negatives). So greatly does the use of self-toning paper increased recently that, on behalf of my firm, I have found it necessary to issue special notices advising against its use when blocks are to be made.

The failure of the half-tone block to reproduce fairly the details of brown or red inclined shadows is purely because of a want of orthographic sensitiveness in the collodion or emulsion most generally used by half-tone block makers. From the half-tone operator's point of view of processes graduated in order of desirability might be fixed as follows:—

- a. Albumen or P.O.P. as near neutral black in tone as possible.
- b. Platinotype or vigorous bromide.
- c. Self-toning paper or reddish P.O.P.
- d. (and worst). Gum-bichromate and all rough surfaces of the fuzzy variety much forward art movement type.

Any of our present day half-tone operators have a good grasp of the possibilities of modified screen distances and special stops, and some of these nothing comes amiss, from glossy P.O.P. to gum and even paper; yet, for the sake of commercial expedition, photographers would know the kind of print which will show as a block impression that sleek and smooth finished was preferred by the majority. Only by catering for this majority can the papers included in my No. 4 list above be ventured upon.—Yours faithfully,

HAROLD HOOD.

Willows, Linthorpe, Middlesbrough.
July 23rd, 1904.

Answers to Correspondents.

* * All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.

* * Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.

* * Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.

* * For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration or copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

R. Wilkinson, Newbegin, Hornsea, Yorkshire. Two Photographs of East Window of Hornsea Parish Church, Showing Altar and Rails.

J. R. Brown, 11, Bedford Circus, Exeter. Two Photographs of Dr. Robertson, Bishop of Exeter.

A. H. D'Ath, 32, Bank Street, Ashford. Photograph of the King and House Party at Eastwell.

H. B. Collis, Westgate Studio, Canterbury. Photograph of an Old Print and Photographic Prints, Representing "Pilgrimage to Canterbury."

F. G. Simpson, 17, Wharf Road, Grantham. Photograph of Belton Gardens, Grantham.

F. HIGDON.—The prints are rather poor specimens of lightning photography, as half the charm of a good photograph of this kind consists of its crisp definition. Always focus for infinity, when exposing for this subject.

OPINION WANTED.—"RETLAW" says: "I should be pleased of your opinion on the retouching of enclosed print." In reply: Our opinion is that it is bad. In fact, by the retouching a moderately fair photograph has been spoilt.

"H. E. T."—From your letter it seems that you received all you bargained for, though not waiting the time you expected, so, after all, you personally have not so very much to complain of. As you wish your name withheld we cannot publish your letter.

THE "ALMANAC."—W. A. LYNASS writes: "Please send me the B. J. 'Photographic Almanac.' I am anxious to start dealing in photo goods. Could you recommend any special book to read? I know practically nothing about photography." In reply: The "Almanac" has long since been out of print. We should advise you to get some practical knowledge of photography before commencing to deal in photographic goods. "A Treatise on Photography," by Abney, is a good book.

ALUMINIUM STAND.—G. FURSMAN asks: "Could you let me know who are the London agents for the French makers of the aluminium tripods, or is there anyone in London who could repair them? Several of the catches are broken, which renders the stand useless." In reply: Most of the large dealers supply aluminium stands. Any of those who do would probably get yours repaired for you. Better apply to those who supplied you with the stand in the first instance.

TRADE DISPUTE.—"MOUNTS" says: "Having been trading with a man for enlargements, he sent me one lot on mounts as per order, but the remainder he sent on a smaller mount, and the work was much inferior; and as I had ordered frames to fit the photos it has made them useless to me. I have returned the batch and dispute my liability. Am I right?" In reply: If the order has been wrongly executed you have acted rightly in returning the pictures, and you can refuse payment until others are supplied.

COPYRIGHT QUERY.—"HIGH GREEN" writes: "(1) My operator was ordered by me to take negatives of which it was desirable to register the copyright. If the operator has agreed that the

copyright in all his work shall belong to me, whose name must be inserted in the fifth column of Registration Form as author? (2) Would the insertion of a wrong name be a false entry and invalidate the registration?" In reply: (1) Register your name as the owner of the copyright and that of the operator as the photographer. (2) Yes, in all probability.

COPYRIGHT QUERY.—J. A. COLEMAN asks: "Is it necessary to have 'Copyright' printed on postcards which I have had made and which I am selling? I have got them entered at the Copyright Office, but I have not the word 'Copyright' on the cards or anything to show they are copyright. I am putting the cards up for sale in packets of twelve each. Will it be sufficient to have 'Copyright' printed on packets only? I will also be selling them singly as well as in packets, and wish to keep the trade to myself." In reply: It is not at all necessary that the prints be marked "Copyright."

WOODBURY TYPE.—J. H. STORR says: "I should be much obliged if you would refer to the back numbers of your journal and see if you have one giving full details of Walter B. Woodbury's 'Woodbury Type Printing Process' by bichromate of gelatine. I believe it was published early in the '70s, somewhere between 1871 and 1874, and, if so, I should be glad of a copy; or if published in any of the year-books." In reply: We have no back numbers of the Journal so long ago as the dates you mention. You will find the Woodbury type process, with working details, described in Burton's book, "Photographic and Photo-mechanical Printing Processes."

STAINED PRINT.—"T. W." says: "(1) I have a gelatine photograph to copy which has ink marks across the face. Is there anything that will remove same without injuring the photograph? (2) In the B.J. of March 27, 1903, you answered my query in reference to wrong name of photograph taken for publication. I wrote as you advised, and received a letter of apology promising to alter in next edition. The second edition is now issued, and I find the name is not altered. Can I do anything further in the matter?" In reply: (1) We fear there are no means of removing the ink without injuring the print. The best way will be to copy the picture as it is and then touch out the marks in the negative. (2) If you hold a copyright in the picture you can restrain the sale of it.

COPYRIGHT QUERIES.—"G. P." asks: "(1) Can it be that a photograph is copyrighted when 'Copyright' is not printed nor written on same? (2) Can photo in question be painted in full size by anyone without permission of photographer who is claiming copyright without infringing copyright if it really was copyrighted? (3) If any painting is added on to the enlargement of my photograph which really is copyrighted, or if the photograph is altered in any way by enlarging same, can you call this infringing copyright, and can you sell same altered, enlarged, painted, to the public? In reply: (1) Yes, certainly. It is not necessary that the picture be marked "Copyright." (2) Decidedly not. (3) No, certainly not. The copyright would be infringed, and the infringer would get himself into trouble.

BICHROMATE TROUBLE.—"SUBSCRIBER" writes: "Can you offer any advice as to the cure or alleviation of the bichromate evil in carbon printing? I have terrible trouble with my hands, itching, etc., and nothing seems to do any good at all. To develop one print sets them off, and up to my elbows is one mass of spots and blotches, which constantly bother me. I should esteem it a great favour if you could give me any advice." In reply: The best advice we can give is for you to relinquish working the process. Then the evil will cure itself. The next best thing is to do the work in indiarubber gloves so that the bichromate does not come in contact with the skin. The following lotion will greatly alleviate the irritation:—Alcohol, 5 ounces; glycerine, half an ounce; carbolic acid (pure), one dram. Should this cause a great deal of smarting dilute with a little water, but it is better as it is.

INFRINGEMENT OF COPYRIGHT.—"VELOX" says: "A few months ago I had a photograph made copyright by you, but have received no form or anything to show it is copyright. Is a form neces-

sary? Since it was made copyright a certain party produced the picture on postcards, and in booklet form, without asking permission or even printing my name on the back of it. I intend suing for damages. Would £5 5s. for the block made be too much? I should like your opinion as to what damages I ought to claim, as it is a very popular picture. In reply: As the picture has been made copyright without issue for penalties on every copy made for damages, and in junction restraining further sales and forfeiture of all negatives, etc., and all copies. You can obtain at Stationers' Hall for 5s. a certified copy of the entry in the register which will be taken as *prima facie* evidence in a court of law that copyright has been registered. You had better consult a solicitor who is well versed in copyright law. He will advise as to the amount to claim.

LANTERN QUERY.—"L. F." says: "I have a magic lantern Petzval portrait front lens (achromatic), adjustable rack and pinion for focussing, and compound condenser 4 in. diameter. I have fitted an incandescent gas mantle in the place of the ordinary three-wick burner. I have got a clear enlargement, size 10 in. by 8 in., by putting a negative in the opening which is made for the lantern. I can focus quite sharp only in the centre or thereabouts (*vice versa*) round the outside only. I have fixed everything quite parallel and perpendicular, and have moved the various distances from condenser. When I show pictures 6 ft. by 6 ft. exactly the same results occur. I shall be glad if you will tell me the cause. Which way shall I be able to get the best results—by daylight or artificial?" In reply: What you say we should think that the objective has a round field. Try another lens, say one constructed for carte-de-visites; or, if you can afford it, get a better lens altogether for enlarging, such as one of the anastigmats with flat field. You will probably find it will give you the best enlargements, using the lens with which you obtained the original negative.

STUDIO QUERY.—"STUDIO" says: "I have recently opened up a studio, and take my portraits in a room as per enclosed plan. I find in practice that there is a deal of sameness in my lighting, viz., ¾-face in shadow I use a sheet reflector. Would a more powerful reflector be advantageous? How should you place your sitters so as to get good soft lighting? It appears to me that my light is too strong near the window, and if I get far away I have to give too long exposures. Would there be any advantage gained by removing the bay-window and inserting ground glass, or will it throw too much light on head of sitters? You will notice the window is already level with ceiling. I shall be glad of any useful hints as to effects I can get by placing sitters at any part of the room by opening folding doors." In reply: You have no difficulty in getting good portraits in such a room, though it is scarcely adapted for professional work. Should advise you to place the sitters further back than in the sketch, and soften the shadows with a white card. We do not see that any advantage would accrue from removing the lead. Cannot you get some professional photographer to give you a few lessons in lighting?

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EX CATHEDRA.

Fancy Portraits.

The release of a famous convict whose death sentence fifteen years ago was changed for one of penal servitude has given occasion for the publication of many fancy portraits. We use the word "fancy" for the very good reason that these line drawings, which are published in various newspapers, have so little in common with one another that we should not know that they were intended for the same unfortunate woman unless they bore her name. But what we should like to know is the source from which the artists obtained their inspiration—that is to say, if they had any. Surely not from a photograph, for in that case we should find some correspondence in pose, if not in feature, between these various pictures. Besides, it is a fact that at the time of the Maybrick trial photographs of the accused, although much in demand, were not to be had. To be exact, there was a photograph to be purchased at the shops, which, we believe, had a large sale, but it was not a photograph of the lady herself. We have recently had an opportunity of examining this portrait, and although it might, and no doubt did, pass muster with the great non-observant mass of persons, it could not fail to arrest the attention of a critical eye by reason of its doll-like and unnatural appearance. But it is the hands which give the show away. This portrait of Mrs. Maybrick, which was sold when everyone was interested in the details of her most sensational trial, was taken from a waxwork figure. The persons who went to the expense and trouble of meeting a demand for a portrait in this way deserved their reward, and if the waxwork had been a little better done the secret might have remained undiscovered.

* * *

Tit for Tat.

Some time ago a New York lady had reason to complain of the action of a patent food company who paid her the compliment of selecting her portrait as a kind of trade-mark to lend attraction to their wares. We are not told whether the lady was exceptionally handsome, or whether she was simply "fine and large," and thus gave a silent if unwilling testimonial to the nourishing properties of the food in question. However that may have been, she objected to figure among the babies of abnormal size which usually stand as sponsors for this kind of sustenance. She brought an action against the company, which was heard before Judge Parker, who decided that the lady had no property in the photograph, which seems to have been the result of a snapshot taken without permission, and she was non-suited. But now she is radiant, for accident has brought sweet revenge. This same Judge Parker has been nominated Democratic candidate for the Presidency, and swarms of photographers have been, and now are, invading his premises with the

THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1905.

Edited by THOMAS BEDDING, F.R.P.S.

THE forty-fourth annual issue of THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC will be published in December next. This year's ALMANAC reached a total of 1,604 pages, and the entire edition of 25,000 copies was sold out before publication. Of no other photographic book ever issued in two such unique facts be recorded. The edition for 1905 will also consist of 25,000 copies.

The striking favour with which past ALMANACS have been received is the surest proof that the lines upon which the publication is produced meet the requirements of its readers and supporters. Upon such lines we propose compiling the volume for 1905. At the same time, we shall be pleased to receive and consider suggestions for increasing the value of the ALMANAC in directions which may occur to our readers as susceptible of improvement.

The ALMANAC for 1905 will appeal to photographers all the world over as a daily reference guide in practical work. The standard matter and formulæ will be revised and added to where necessary, the year's advances in theory and practice will be recorded, and wherever practicable new features of an informative nature will be added.

Secretaries of societies will oblige us by promptly forwarding lists of officers and other details for inclusion in the directory of photographic societies. We shall also be glad to receive any additions that may be made to the list of telegraphic addresses of the trade, etc.

hope of securing his likeness without the formality of asking his leave. He and his family very naturally resent this intrusion, and are doing all they can to stop it. The lady whose portrait adorns the patent food tins writes to the papers in high glee, and sententiously remarks that sauce which is good for a goose is also applicable to a gander. Of course, she could not have said this openly at the time that she lost her cause, or she would have been guilty of contempt of court, but doubtless the pleasure does not suffer by postponement. It will be gratifying to all photographers to learn that a lady who was at one time so opposed to the work of the hand camera is now such an enthusiast in its favour.

* * *

Copyright.

Not a few of our readers, we imagine, think that the subject of copyright in photographs has been dealt with *ad nauseam* in these pages during the past few months, and that every reader would be fully conversant with copyright law as it applies to photographs, particularly as the Copyright Act itself has been printed in full in the almanacs for several years past. Notwithstanding all this, we are continually having to reply to correspondents through the "Answers" column to the most trivial questions on the subject. Only last week we replied to no less than five queries relating to copyright, all of which in effect have been replied to over and over again, as well as being fully dealt with in editorial articles. Is it that people pay no attention to what they read, and when they imagine that they have suffered some wrong at once appeal to us? Two of the five queries last week relate to whether a photograph, the copyright of which has been registered, must necessarily bear the imprint "Copyright" upon it? Over and over again have we replied to this question that it is not at all necessary; yet it is being continually repeated. From one of the queries in our last issue it would seem that the writer thinks that it is possible to evade the Copyright Act because the photograph is not marked "Copyright." Further, that if an enlargement is made, and some alterations made in it, that the law can be evaded. It certainly cannot without rendering the infringer liable to all the penalties of the Act, and rightly so too. No one has a right to appropriate to himself another man's property, whether it be his copyright or his purse. It is often asked how is one to know whether the copyright in a photograph has been registered or not unless it is marked with the word "Copyright"? The only way that this can be ascertained is by searching the register at Stationers' Hall, and anyone who copies a picture without first ascertaining whether it is copyright or not does it at his own risk. As a matter of fact, copyright in a photograph exists from the time it was taken, and is the property of some one, though no action can be taken for its infringement until it has been registered at Stationers' Hall, as has frequently been said before in these pages.

* * *

Photographic Apparatus as Personal Luggage.

Last week, in "Ex Cathedra," we commented upon a case before the Holywell County Court, in which the plaintiff sued the L. and N.W. Railway Company for the loss of photographic apparatus enclosed with passenger luggage. We give the decision in this somewhat important case in another column. The Judge is reported to have made the remark that nine out of ten passengers now carried cameras among their luggage, and the remark is doubtless correct with regard to tourists. But is it wise, under any condition, to pack the apparatus with one's personal luggage when it has to be consigned to the tender mercies of the luggage-van, particularly when one sees how carefully

(?) personal luggage is handled by the railway porters. For our own part, we always take our apparatus with us in the carriage, and never trust it to the care of porters or indeed out of our sight. Plates, if we have many, we may sometimes pack in our portmanteau, but no more than we can conveniently take with us in the carriage. Then we always know that our apparatus at least is safe. Those who have travelled on the Continent have not failed to notice the way that passengers' luggage is handled by the officials on its landing, and also its transhipment on the different railways. In the old plate days, when the paraphernalia that had to be taken on a photographic tour was very different from what it is now, the careful worker always took his camera in a watertight bath, plates, and all fragile articles in the carriage with him. The only things he would entrust to the luggage van was the dark tent, which was a bulky affair, and the tripod stand. Apparatus is now of such a portable kind that even a whole-plate camera and its accessories will easily go into a moderate-size Gladstone bag, or be packed in smaller sizes into a small handbag, that we should all be able to take with us. All photographic tourists, whether at home or abroad, should take their apparatus, and such plates as they conveniently can, with them in the carriage in which they travel. They will know that they are safe when they arrive at their destination, wherever that may be.

* * *

An Unsuspected Cause of Unsharp Negatives.

During the past month we have had a very trying weather that has been very trying to photographic cameras such as those of the box and magazine form of fixed focus, or with a focus that expands when wetted and contracts when it dries. Many cameras of the cheaper kinds are made of quite unseasoned wood, and usually covered with an imitation leather. If with such a camera the owner happens to be caught in such a shower of rain as we have had lately, the apparatus will have got a pretty good wetting. The imitation leather will have become saturated and will communicate the moisture to the wood, which, of course, will expand, more or less, thus increasing the length between the lens and the plate. On the other hand, the camera may be carried a long distance on a hot day with the sun upon it, in which case the wood will shrink, and so shorten the distance between the lens and the plate, and so alter the focus of the lens. It so happens that in order to secure rigidity, cameras, as a rule, are built with the grain of the wood crosswise, and it is in this direction that the expansion and contraction is the greatest. It is in the commoner forms of hand cameras that this expansion and contraction is the greatest, though its effect is the least noticeable in the negative for the reason that the lenses usually supplied with them are single, and the largest aperture only about f11. With such the alteration of focus caused in the way alluded to is not very noticeable, but if such a camera be fitted with a high-grade lens worked with its full aperture, which we will assume to be f6, or larger, the case may be different. With such a lens at its full aperture there is little so-called "depth of focus" and a difference of, say, the twentieth of an inch, either way, will materially interfere with the microscopic sharpness of the image, and this will be made more manifest if the negative be enlarged. We have been speaking of fixed focus cameras, but it also applies to those of the magazine or box form with focussing index, as that does not alter the conditions unless allowance be made for any supposed expansion or contraction. Cameras with bellows are of course, so much affected by the expansion and contraction of the woodwork as those of the rigid type.

vandalism. Every place in this kingdom which has or had anything of historic or archaeological interest to show in the way of a building has at one time or other suffered from the ignorance or cupidity of its inhabitants. In past times an old ruin, it might be a feudal castle or an abbey, was looked upon as a quarry from which to get stones for new building operations or metal for the roads. It is on record that the grand old Castle of Rochester, one of the finest within easy reach of the Metropolis, was at one time sold to a contractor who, after stripping it of its facing stones, failed to make its further demolition a paying operation owing to its solidity. If dynamite had been then invented Rochester Castle would now have been known only by tradition. But in these more enlightened days people, however interested they may be in such destructive work, have to think twice, or more than twice, before they put theory into practice. For there are societies of various names which are doing excellent work in guarding buildings which we may regard as national heirlooms. The worthy members of these bodies act like so many amateur vigilance officers, and warn offenders off directly they see any signs of wrong-doing. We may be quite sure that photographers generally will support these efforts to preserve, as far as possible, these links with the past, for photographers have the instincts of artists, and do not like to see everything that is picturesque swept away from our far too prosaic thoroughfares. There have been two instances lately of the zeal of those who are endeavouring to protect the work of past generations. All who know the High Street at Croydon will remember the picturesque building known as Whitgift Almshouses. It seems that these houses are rather in the way of the electric trams, and the Croydon Council want to pull them down. Then arises "The Croydon Antiquities Protection Society," and a bother begins—in the columns of the "Times." A Croydon Councillor seems to think that the building is not of much account because it is built of brick! Surely he forgets, or does not know, that many most interesting buildings in this country are built of the same material—for example, Fenham Hall, Suffolk, which dates from the year 1260; the fine old ruin of Hurstmonceaux, of about the same period; and lastly, that splendid piece of Metropolitan brickwork, the gate of Lincoln's Inn, in Chancery Lane, upon which Ben Jonson is said to have worked as a labourer. It is clear, therefore, that we cannot think lightly of a building because it is formed of brickwork, and we trust that this consideration will not have any weight in the proposal to demolish the almshouses at Croydon. The other piece of vandalism, which has aroused the ire of another society, is the removal of the original cast-iron lamp standards from Waterloo Bridge and the substitution of a design not half so good, but better adapted to modern electric lighting. This last is a small matter compared with the threatened destruction of a building, for the old designs are still preserved on paper, and can be re-cast with modifications to suit modern requirements. It is comforting to think that the spirit of destruction is being kept under such rigid scrutiny.

PHOTOGRAPHERS AND WEATHER.

EXCEPTING the agriculturist there is, perhaps, no member of the community to whom a knowledge of the weather and its apparent vagaries would be more important than it is, or would be, to the photographer. Even in these days of bromide printing, he must take count of the probable atmospheric conditions before laying out plans for his day's work, while, if he project a day with his camera in the country, he is at the mercy of wind and rain; and, starting out apparently with everything in his favour, may return home without having made an exposure through a strong wind having arisen to prevent his working among foliage, or with camera and temper spoiled through an unexpected rainfall, such as that experienced at the close of the Dovedale Convention excursion. All through want of power to read the weather signs! We do not expect weather forecasting ever to be brought to the level of negative-making—to the press-the-button-and-we-do-the-rest style of thing; but we do hope for an improvement on that barometer tapping which with so many of us represents the sum of our acquaintance with meteorological forecasting. We are always pleased when, if the usual crowd have not done their own tapping before we essay our weather chances, the pointer goes up in the direction of "set fair," whatever that may really portend; but if, as is often the case, the finger remains motionless, we usually feel as "stuck" as the finger itself when we want to know what it all means. If anyone will refer to his Whitaker he will find an excellent article on "Forecasting the Weather," in which an excellent *résumé* is given of the possibilities and the limitations of the most recent methods of prophesying about the weather, and the page of matter is well worth perusing. It will be found more than a step beyond those popular beliefs about a rosy evening sky portending a fine day on the morrow, or swallows flying low foretelling rain, occasionally useful though they be. A little time given to thus studying the subject will often be well spent, and a pleasant novel study opened out; for we have often found those that have taken the matter up in the true scientific spirit to become thorough weather enthusiasts. More complete survey of what is at present known about the cause of these atmospheric changes must, of course, be sought in larger treatises, not the last excellent of which will be seen in the International Series, in the one entitled "Weather," by the Hon. Ralph Abercrombie, and its perusal is well worth the outlay. It will soon be noticed that what is relied upon nowadays is an extended series of observations, at as large a number of places as possible, and the height of the barometer, direction of wind, moisture in the air, and so on. Obviously, no private observer, even one possessed of ample means, leisure, and the needful enthusiasm, could, individually, undertake the collection of the necessary data, but the Meteorological Office forms the organisation that is needed, and the joint results of the continuous observations of its staff are focussed in the forecasts we read in our morning's paper.

In connection with these and all such weather predictions hitherto available there is one most important factor to reckon with, that is to say, special local conditions. But even of this Abercrombie writes: "If we watch the actual occurrence of any local peculiarity of weather, we shall soon find out that in every instance it is the intensity, and not the general character, that is altered," and again "It is from the observation of innumerable cases that we are enabled to lay down the general law that the primary character of all weather is given by the general distribution of the surrounding pressure; the local variation modifies, but never alters, this general character."

ACCORDING to M. Jean Becquerel the N and N1 rays consist each of three elements, of which two are influenced by the magnetic field, and similar to the "alpha" and "beta" rays of radium. The author also finds that all bodies, compressed or diluted, as well as the brain and nerve centres, are radio-active. His experiments, which were described to the Academy of Sciences, extend the field of radio-active phenomena.

As examples of this local variation, which anyone can see for himself, we may note that, "Roughly speaking, if a range of hills under about fifteen hundred feet obstructs the prevailing westerly wind, the greatest amount of rain will fall on the east side of the range. . . . If the range is over fifteen hundred feet . . . the greatest rain will fall on the west side of the hills. No rule, however, can be laid down except in very general terms, for every hill, every valley, has its own local peculiarities in the manner in which it develops rain with different winds." Another local condition is the presence of a tidal river. When the weather is threatening, but no rain falling, it will often happen that after the tide turns to rise, and the stream is running upwards, that rain will fall quite locally without extending far from the river banks. Similarly, in calm weather at a similar turn of the tide, the general direction of the wind will be much increased in force and gustiness. But as it is not our intention to make this article a treatise on how to forecast the weather we will draw attention to the possible promise of future benefits in that direction.

In 1902 a commission was appointed "to inquire and report as to the administration by the Meteorological Council of the ensuing Parliamentary grant," etc. This Report has just been issued, but so far has had little public comment. As to the Report itself, we extract portions of two paragraphs. After pointing out the necessity for further grants to assist the progress of meteorology, it says, on account of these restricted means, "it would be better to circumscribe the operations of the Council than to expect them to undertake investigations for which they have not adequate means." Further we read, "The present constitution of the Meteorological Office was never regarded by the Royal Society as a permanent one, but as a temporary measure till some other organisation should be carried out. We regard this as a favourable opportunity. . . ." Everyone interested in the subject will agree with the final paragraph of the recommendations: "The evidence before us has shown conclusively the importance of further scientific research, for which we trust that funds may be forthcoming in the near future." If the recommendations should really be carried out, the future promise of weather forecasting, especially in view of what wireless telegraphy has already accomplished, is most promising. The chief difficulty, to our mind, lies in the machinery for the financial aspect of the proposed changes. Politicians, we are afraid, would call it "gerrymandering." It is proposed to take out of one pocket and put into another. A net increase of £449 only is suggested, though the Post Office is to be mulcted in £2,000 a year, which will not be shown in the usual accounts. It is true that this is to be for increased postal and telegraphic services for the "good of the cause," but the authorities are not very apt to allow any expense to be incurred which would reduce their big surplus—a surplus which many argue ought not to exist, their views being that every penny not expended one year should be utilised to reduce the cost of such a public service in the next year. Be that as it may, our readers will join with us in the hope that the public meteorological service of the country may soon be put on such a basis as will render them of suitable value to working photographers.

PHOTOGRAPHY can scarcely be put to better educational use than in illustrating books on geography for schools. In "The British Isles," a volume of the "Regional Geography" series, Mr. J. B. Reynolds has employed it suggestively. In other respects this geography book is commendable, its elementary lessons on geology being well planned and illustrated.

ELEMENTARY THREE-COLOUR WORK.

II.

LET me at the outset apologise for some typographical errors in my notes in the last issue; they are my fault, I think rather the consequence of my living in a delightful corner spot where posts are uncertain, so that corrected proofs do not reach the printers in time for correction. The only which really calls for correction is the name of the red dye this should read "Bieberich," and not "Bisberich." There is one or two grammatical errors which are obviously due to want of proof correction.

Supposing that the student has determined on his screens and plates—and I may interpolate here that, although screens given are adjusted for the Lumière panchromatic plates they may be used for three different plates, namely, Lumière ordinary, the Lumière green sensitive, and the Lumière panchromatic, and I venture to say with equally good results. Personally, I prefer the three different plates. Theoretically the third plate of the above should be the Lumière red sensitive, but this never gave such clean results in my hands as the panchromatic. I would defend myself, if it be necessary, against any possible charge of favouritism in naming the plates. I have no interest, direct or indirect, in the same, they are simply the plates I adjusted the screens for: Ilford chromatic, the old slow kind, can replace the green sensitive, but an adjustment of the screen is necessary, green constituent being slightly increased. I regret that I am unable to say positively the exact adjustment, but I believe it is a decrease of the picric acid stock solution to 40 parts. This seems a somewhat involved procedure—namely, to reduce yellow constituent to increase the acid green, but the result is obvious on a moment's thought, because decrease of yellow allows more blue green to act, and thus is equivalent to increasing the acid green. My notes on the exact ratio unfortunately, at present, un-get-at-able.

There are two pitfalls against which the practical worker should be warned, and the most important is to avoid judgment of the correctness of results from an examination of the negative. To me there is absolutely nothing more misleading, provided and this is an important proviso, you do not know the subject and I venture to state that no operator can possibly know his subject so well as to be able to tell on sight exactly how much of each primary colour, or I will rather say how much of each printing ink, is to be laid down to reproduce his original. When a man says he can do this I know, and do not think, that he is a bumptious ass, and does not know his work. There is nothing more misleading than the appearance of the negative, and that which looks under-exposed and too bare is frequently correct. This is particularly the case with the red print negative, that made through the green screen; my experience though limited to experimental work, is that the negative through the green screen always looks under-exposed, though in fact, there is far more red—and I am talking of painting now—than one would suppose in most subjects.

When a chart, such as that issued with Hübl's book, is taken as a subject for adjustment of the screens, we know from Hübl's directions the action of the control colours, and we can adjust our screens till the desired effect is obtained, and if this is done, then, no matter how the subsequent "subject" negatives look, we know they are right.

This brings us to the second pitfall, and that is that of the printing inks. Provided the theoretically correct inks are used—that is to say, those inks which will exactly fill up the vacuities left on the three negatives—a given set of screens will act satisfactorily, but I know of no two sets of trichrome inks which are exactly alike, and this can only be determined by a system of colour analysis; nor is there, so far as I am aware, one

of inks theoretically correct and stable. All three inks may be correct when in full tones, but that does not necessarily imply that they are correct in half-tones or fine detail, nor that the mixtures by dots or mosaic, as in ordinary half-tone printing, are the same as when three complete films—that is, films unbroken by white spaces—are superimposed. This subject has been but little dealt with, and necessitates a colour analysis in various states of dilution of the inks, which no one has yet undertaken. It is obvious therefore that just any set of trichrome inks will not do, and until we get the theoretically correct inks, the filters and plate sensitiveness must be adjusted to the inks.

It has been suggested that, to test the correctness of the colour rendering in the negatives, the operator should print on chromated gelatine, develop the results, and then stain and superimpose; in fact, that the superposition of gelatine reliefs, stained with aniline dyes and viewed by transparency, can prove the correctness of the negatives. This may be so, and I have used the negatives made for photo-mechanical work for the stained film process, but if it is put forward as a test then I say that the operator who adopts this is going to strike trouble, and badly. The two results are so totally different in appearance that the one is no guide to the other, or, rather, one may be very easily misled. The theoretical difficulty, of course, is that the absorptions of the staining dyes may not correspond to the absorptions of the printing inks; in fact, the odds are against their doing so, and thus trouble may arise; and, further, whilst one may fake the stained film by reducing or intensifying the staining, and different depths of staining are obtained by variations in exposure, we cannot, as a rule, fake our printing inks to correspond.

Reverting to the topic of making the filters, it is, of course, absolutely necessary to cement them together for practical work, though for experimental work this need not be done. When a filter is made up of two colours, such as a green and a yellow, for instance, it is advisable to stain one gelatine with the green and the other with the yellow; then, if the results are wrong, it is easy to alter the staining on one or the other; whereas, if both dyes are combined in one staining solution, a fresh filter and solution must be prepared.

Cementing the filters is a nuisance, unless one goes the right way to work. I have found that the hard baked Canada balsam, as supplied for micro work by Merck, is the most satisfactory, and this is just made fluid with xylol, and used warm. The filters should be warmed up and a fairly large pool of the balsam put in the middle of one, and the other lowered gently on to it, contact being made first by one corner, thus avoiding air bells; as soon as the two are in contact press down, and allow to remain on a levelled slab till the balsam and glass has cooled down, then clip with the strongest bulldog metal clips you can get, and dry. When first cemented the filters have a happy knack of sliding apart, hence the necessity of the level slab. After cementing they should be left at least three days in a warm place, then the edges cleaned and bound up.

The glass I have always used is a special white patent plate, made by Pilkington's, about 1-16th of an inch thick, and one can from a dozen or more pieces easily select a few almost perfect squares. The gelatine should be one made for emulsion work, its hardness or softness is immaterial, and so is the quantity as long as there is enough to carry the given quantity of dye; its solution should be well filtered, and if a very thick film is used and no special drying arrangement be handy, some preservative should be added, such as thymol, phenol, or xylol, otherwise the characteristic pit of the microbe makes its appearance. Quite recently, in using a new sample of gelatine, I struck a trouble that hitherto I had not noticed, and that was a rapid fading of the colours; and on testing the gelatine very

strong, and distinct traces of sulphurous acid were found, the acid being used to bleach it in process of manufacture; since this I have tested another well-known make of emulsion gelatine, and found also sulphurous acid present; therefore a thorough washing of the gelatine by repeated soakings in water is advisable.

In developing trichromatic negatives it is important that the same should be carried to the same point, and for this reason Mr. Watkins' factorial system is not only valuable, but also because there is no need to keep on examining the negative to see whether it is sufficiently developed; there is therefore less chance of light fog. Besides this, the appearance of the three negatives is, as a rule, so different that one is easily misled as to whether they are sufficiently developed or not.

E. J. WALL, F.R.P.S.

LARGE AND SMALL STOPS, ETC.

By the AMATEUR OPTICIAN.

Few subjects are so continually interesting as those dealing with indoor architecture and the best way of photographing the same. Now imagine a room or office about 18 ft. by 20 ft., with a big bay window in one of the narrow ends, this window supplying the only illumination, and ample enough for all business purposes. The problem is to photograph the room from a corner opposite to the window, to show as much of the room and contents as possible, and the window, with the minimum of halation in the latter.

The window was fitted with blinds of some yellow material, and, naturally I think, it seemed to be the best course, having made the best possible focus, to pull these blinds down during a fairly long exposure, to then cap the lens, draw up the blinds, and expose for a few seconds more—backed plates understood. As a matter of fact, an exposure of three minutes was given with the blinds drawn and five seconds with them up; an "Imperial" backed plate was used 1-1 pl. size, the lens a 1-1 pl. W.A.R., F.28. The result was satisfactory enough from a business point of view, there being ample detail, without undue halation, but it occurred to me to try another in a different way. The camera was placed as nearly as possible as before, the picture focussed, the blinds drawn up to full extent, and four minutes' exposure given with F.45. Prints from both negatives have been sold to the parties with entire satisfaction, and as a matter of fact no one notices any difference except that which might arise in the printing. I think the method adopted of shielding the window when blinds are available, during a part, at any rate, of the exposure, would be adopted as an orthodox and rational way out of a somewhat difficult position, but results prove that the second and alternative method is worth attention. I am under the impression that in pin-hole photography, under similar circumstances, halation is absent! It is certain that with the lens very much stopped down (F.45 was scarcely small enough) the picture as viewed on the screen is much more evenly lighted, or rather the volume of light from the window is much subdued, to the betterment of the whole. There is some virtue in the small stop; several friends of mine, old stagers like myself, went in rather strongly twenty years ago for very small stops, getting them made to order, and we gave long exposures sometimes—very long to more modern ideas—but I cannot remember that we were bothered much with the halation bugbear.

PHOTOGRAPHIC Convention of the United Kingdom.—Many of our readers—more especially those who are members of the Convention—will be pleased to hear that Professor John Joly, F.R.S., to whom the presidency for next year's meeting in Dublin was offered, has accepted the position.

THE PRICE OF PHOTOGRAPHIC MATERIALS FIFTY YEARS AGO.

THE celebration of the Jubilee of THE BRITISH JOURNAL OF PHOTOGRAPHY has lately brought photographers and photographic methods of past years into prominence, and the following comparison of the relative cost of photographic chemicals fifty years ago with current prices should prove interesting.

A catalogue in the writer's possession of photographic apparatus and chemicals, dated July, 1851, gives a complete list of the prices the unfortunate photographer had to pay for his materials, etc., at that time. In 1851 Daguerreotype still held the field and collodion was only just coming into use. The wet plate negative which Scott Archer soon afterwards brought to such perfection was not then in vogue. Daguerreotype materials consequently occupy the chief part of the list. Cameras are listed at very reasonable prices considering the vast quantity of mahogany a camera contained in those days. A quarter-plate camera for Daguerreotypes cost £2 15s., including a single achromatic lens. A quarter-plate camera for taking calotype pictures is quoted at a cheaper rate, viz., £1 10s. Lenses were also supplied at a reasonable figure. A single achromatic lens of 7 in. focus could be obtained for 9s.; mounted with rack-and-pinion adjustment £1 5s. Considering the quantity of the materials and workmanship these figures compare favourably with those of the present day.

Passing over the mercury-box, thermometers, etc., etc., required for photography à la Daguerre, the list of chemicals affords very satisfactory reading for modern photographers. Hyposulphite of soda is quoted at 3s. a lb., To those photographers who purchase their hypo at 9s. per cwt., 3s. seems a staggering price to pay for one pound of the fixing agent.

Cyanide of potash, which was formerly much used as a fixing agent, cost 6d. an oz. Half a pound of this chemical is now obtainable for that price; but, as cyanide is now only used by wet-plate workers, this reduction of price does not affect the bulk of photographers.

Bromide of potash was also an expensive item in the old days and cost 4s. an oz.; but the restraining effect of bromide had not then been discovered, and this substance was only used in the preparation of plates and papers.

Chloride of gold (15 grain tube) cost 3s., so there has been no great reduction of price in this instance.

Silver nitrate is listed at 5s. an oz.; it now costs about 2s. Collodion cost 1s. an ounce, which is about three times its present value.

Another chemical, gallic acid, now rarely used in photography, cost 3s. 6d. an oz. A pound can now be obtained for the same money.

Sulphate of iron, nitric acid, ammonia, and iodine have all depreciated in value to half the amount formerly charged.

If the price has decreased, however, the number of photographic chemicals has increased in the same proportion. The total list of substances included in the 1851 catalogue only number 39, while in one of the latest catalogues the photographer has the choice of 300 chemicals. The list concludes with the remark that "the prices are subject to variation, but at all times the lowest price possible is charged." If these figures give the lowest prices, one cannot help wondering what the highest charges would be.

In addition to prices the old workers were handicapped by the necessity of using a lot of expensive apparatus in order to prepare their plates, and a dozen copper plates silvered for sensitising cost 14s. for quarter-plate, 30s. for half-plate, size. These silvered plates were of course used for Daguerreotypes. As the image was positive, a fresh plate was required for each photograph; so for amateur workers photography must have been a most expensive hobby.

Beginners who did not feel capable of selecting their own materials were supplied with a complete set of apparatus for

taking quarter-plate Daguerreotypes, including all requisites for one dozen photographs, for nine guineas. All the necessary materials for calotype photography was obtainable for a modest sum of four guineas.

The whole list of 1851 photographic materials consisted only eight pages; one of the latest catalogues issued has considerably over a thousand pages, and each page of the latter is more than twice the dimensions of the former publication. The price of materials and difficulty of preparing the plates had one advantage over the present cheap and easy methods. The photographer in those times was a careful and methodical worker, and did not object to giving time and trouble to operations. The results that were obtained by the old workers were often of the highest order and would serve as object lessons to many present-day workers. J. I. Price, F.R.P.S.

THE NEW "STEADMAN" SYSTEM OF EXPOSURE AND PLATE SPEED MARKINGS.

A CORRECT exposure is a correct latent image prepared in the emulsion. This correct latent image can be made only by giving during the actual exposure a certain length of time with a certain diaphragm. All the elements that enter into the making of exposure can but alter one or the other of these two things, i.e., the length of time or the size of the diaphragm. By taking a simple numerical statement of the light's intensity as a convenient basic exposure, and in each case obtaining that numerical length of time by actually measuring the length of time that the intensity requires to perform a certain fixed labour, the factors of intensity that have always entered into the exposure tables, even in the last one out, that of the house of C. Goerz.

This intensity numeral must not be a factor, but a simple statement of intensity or value, just as the expression 60 degrees Fahr. expresses an intensity, and 3 feet expresses linear distance. It is this simplicity that will solve the problem of photographic exposures and make simple mathematics out of what is now the real "bugbear" of photography. In order to give a practical measure or standard fixed labour for the light to perform it has been necessary to select solio paper, as it so happens that there is no other sensitive paper that can easily be obtained at the present time in every country of the globe. And standard is not a standard in truth unless it is susceptible of universal and worldwide utilisation.

The "solio time" of an illumination existing at the surface of solio paper is the number of seconds or length of time that is required to bring it to a just plainly observable tint when looked at in contrast to the original colour of the paper. The tint is to be taken through a small hole, about $\frac{1}{4}$ or $\frac{1}{2}$ in. square, so that the rest of the strip will be protected from the light while the tint is being made. This hole may be cut in the thin, opaque cover of a common note-book. The book should be held at the brightest part of the subject and turned directly facing the brightest light source in taking the "solio time." Care should be taken that a coin be over the hole in the cover at the instant that it is placed down over the solio strip so that no light will fall on the solio through the hole except during the actual time that is purposely given by the worker. The system includes the following method of counting time with practical exactness:—To count any number of seconds say: Naught—one—half—and—one; one—half—and—two; one—half—and—three, etc.

The word "naught" only serves to start the time going, and the succeeding "one—half—and—one" serves to mark the finish of each quarter-second as it occurs.

To count one second only: "Naught—one—half—and—one." For a half-second: "Naught—one—half." And for a quarter-second say at talking speed the one word "quar—ter." Every photo

aphic worker should be an adept in counting time, and the mastering of this system of counting by practising it along with the second hand of a watch, in order to cultivate the correct speed, will be a desirable accomplishment for the worker. In a certain intensity of light the standard solio tint is secured in eight seconds, it makes no difference whether that intensity is created by the hour of the day, the season of the year, or the latitude from the equator. Furthermore, it might be created by a local cloud, or by taking a position a few feet from the side of a common window or opening. If we state that the solio time of a light intensity is eight seconds, we state a physical truth in simple numerals. If the light was one-half as strong its solio time would be 16 seconds, and if it were four times as strong its solio time would be two seconds. The "solio time" of an actinic intensity, then, is a true expression of its working power.

Now in my system of exposure this solio time of a light intensity is for convenience taken as a basic exposure, and with a certain emulsion and kind of subject the diaphragm is found that will result in the correct creation of the latent image when that solio time is given as the exposure. The simple statement of this diaphragm after each particular kind of subject (made larger or smaller for emulsions of slower or faster speed) gives what for convenience had best be termed a "solio diaphragm" of that subject for that emulsion. The subject table itself accounts for the characteristics of subject, colour, contrast, etc., while the diaphragm opposite that subject in the table accounts for the different speed of emulsions. The system is fully explained by the following simple sentence: "The solio time of the light at the brightest part of the subject is the exposure with the solio diaphragm of the subject as seen in the table." Now if the plate and film manufacturers will print this simple table which follows, and place in each box of plates and each roll of films that are placed on the market, anyone may open the package and with a strip of solio paper and a note-book with a hole in the cover, find the solio time of the light which abounds at the brightest part of the subject, and could see opposite the subject that is being photographed, the exact diaphragm with which that solio time would be the correct exposure.

I have not found a child of eight years of age who did not grasp the full meaning of the solio time of the light at once and with the greatest delight. They begin to think in the solio time of the light, recognising intuitively that a weak light will work slower than a strong one. The solio time of the light on a clear day with the sun fifty or more degrees from the horizon is practically one-eighth of a second, and may be used at that time without measurement. This is practically true from that height up to the zenith. This being true, it becomes easily possible to measure the light out of doors on bright days as well as in slower lights. Another benefit of this simple system is that it helps to create a universal photographic vocabulary. If some worker in Norway states that on taking a certain view the solio time was one minute, the mind immediately and fully grasps the exact truth. The fact that the Norway condition was created by the distance from the equator, the season of the year, and the time of day is entirely irrelevant to the subject. We might as well try to express the weight of things by taking the separate factors of length, breadth, and thickness, and that of specific gravity, and combining them.

A certain length might be called one, a certain breadth one, and a certain thickness one. Then a certain specific gravity might be called one, and when all the factors for any certain body were multiplied together some kind of an idea of weight might be obtained by mentally comparing it with other bodies. But if we have at all a simple unit of gravitation, why not balance the body on the scales and get its weight in those simple units instead of going around the proverbial bush and

confusing the world with useless mystery, as has too long been done in the practice of photography? The second, in which the solio time and all time is measured, is the only unit that is uniform throughout the world, and the measure, the strip of solio paper, is the most ideal measure of all the forces.

To measure gravitation we need scales, for volume a measure, for temperature a thermometer, for linear distance a rule or tape, etc. But for the standard tint we need but a thin slip of paper, many of which may be carried between the leaves of a book and which are almost without cost to the user. As to the counting of time, the mind is aided by the natural sense of rhythm which is the basis of time in music. This rhythm suggests the optimal system of counting, as the mind can best think in beats, and half and quarter beats, etc. (Aside from the subdivision of a beat by three as in waltz time.) For this reason it is logical to divide the second into the half, quarter, eighth, sixteenth, etc., in thinking of time. This is logical also for the reason that the diaphragms of the lens also increase and decrease in rapidity in the same ratio, by doubling and halving the time necessary for them to do a certain amount of labour, or by doubling and halving their area.

It would be well if the shutter manufacturers discarded the automatic exposures of $\frac{1}{2}$ of a second and slower, and allowed these times to be given by the mind and hand alone. They could then discard the unstable valve or "plunger" system of shutter construction and give us with simple and reliable springs the speeds of $\frac{1}{2}$ of a second and faster in the following scale as far as they could go: $\frac{1}{2}$, 1-16, 1-32, 1-64, 1-128, 1-256, 1-512, 1-1024, 1-2048. The last three or four intervals could only be given by the focal plane shutters, which should also give the intermediate speeds, for reasons of motion in the class of work which they are designed to do. This plan is simply to provide for the actual exposures that each diaphragm would demand when one exposure is known with a certain diaphragm and is too evidently useful to require defending. The only wonder is that the shutter makers have not seen this simple need and supplied it ere this.

The following table is for the Eastman film which I use in my own work. In using the table simply remember that the solio time of the light is the exposure with the diaphragm mentioned after the subject that is to be photographed. By reason of the great latitude of all photographic emulsions it is useless to make the solio time of the light any other than one of the following scale of exposures: $\frac{1}{2}$ second (the solio time with the sun high in the heavens on a clear day), $\frac{1}{4}$, $\frac{1}{2}$, 1, 2, 4, 8, 16, 32; 1 minute, 2, 4, 8, etc.

THE STEADMAN SUBJECT TABLE.

SUBJECT.	f.	DIAPHRAGM.	U. S.
Portraits—			
Very fair complexion	22	.....	32
Average complexion	16	.....	16
Very dark complexion	11	.....	8
Room Interiors—			
White walls	32	.....	64
Average walls	22	.....	32
Dark walls	16	.....	16
Dark machinery	11	.....	8
Regular Exteriors—			
Bird's-eye	45	.....	128
White objects in middle distance	45	.....	128
Average objects in middle distance	32	.....	64
White objects in foreground	32	.....	64
Average objects in foreground	22	.....	32
Green trees abounding	22	.....	32
Marine and Snow Views—			
Bird's-eye	64	.....	256
Objects in middle distance	45	.....	128
Objects in foreground	32	.....	64
Buildings—			
White	45	.....	128
Average colour	32	.....	64
Very dark colour	22	.....	32

FRANK MORRIS STEADMAN.

AMERICAN NOTES AND NEWS.

An interesting exhibition of about 700 incandescent electric lamps, including the first experimental lamps made by Mr. Edison, is about to take place at the St. Louis Exposition. The collection is stated to be complete and unique, and to include a specimen of every kind of filament lamp ever made in Europe or America.

JACOB JEFFERSON FALK, youngest of the three photographers who have gained fame under their incorporated name of "Falk," died June 29 at a private hospital in this city from heart disease, complicated with other ailments. He was forty-six years old and lived in apartments adjoining his studio, in the top floor of the Waldorf-Astoria. Attacked seriously four weeks ago by the disease from which he had been a sufferer for several years, Mr. Falk was removed to a hospital and the gallery left in charge of his assistants. Funeral services were held July 1st in the Waldorf-Astoria.

In Chicago, on June 27, was held a meeting of professional photographers in sympathy with a movement to advance the financial interests of the profession. To attain this end it was agreed to organise the Photographers' Association of North America, whose work it would be to grant diplomas of efficiency to photographers in business, and certificates of ability to employees. A plan was also agreed upon for the establishment of an apprenticeship system, so as to insure a sufficient supply of really good workmen, and to discourage individuals from entering photography who did not possess the natural aptitude for the calling. The president is Mr. George G. Holloway, Terre Haute, Indiana, and the secretary is Mr. Dundas Todd, 908, Security Building, Chicago.

THE Bausch and Lomb Optical Company, Rochester, New York, has just placed on the market the new Zeiss lens—Tessar F.6.3. According to the business arrangements between this large American company and the firm of Carl Zeiss of Jena, the Rochester factory is now turning out this new objective in large quantities after the original formula of the inventor, Dr. P. Rudolph, and employing the new Jena glass recently discovered and now manufactured especially for the Tessar series. Bausch and Lomb, having completed the arrangements necessary for the production of this new lens, have announced their ability to give immediate attention to all orders. Literature descriptive of Tessar may be had from photo dealers throughout the country or upon request from the company's office at Rochester, or the various branch offices.

CERIC SULPHATE AS A REDUCER.—It will sometimes happen, despite all precautions, that the high-lights will become too dense before the shadows are developed in the negative. Carry the development as far as it will go is the method of Malcolm Dean Miller, of the Harvard Camera Club. Then to rectify it has the advantage over per-sulphate of ammonia of not needing a secondary treatment with sodium sulphite solution to stop the reduction, and, like per-sulphate, attacks only the denser deposits unless the action is greatly prolonged. It can be used on the dry negative, which then requires only ten minutes' washing. Ceric sulphate (Merck), 1 ounce dissolved in distilled water, 20 ounces. A precipitate will form after the solution is complete. Add concentrated sulphuric acid $\frac{1}{2}$ ounce which reduces the excessive contrasts nothing is so good as ceric sulphate. It dissolves the precipitate. This reducer can be used until exhausted, which will occur only when it loses all its yellow colour.

THE Americans are speculating on the possibility of imitating the Germans in producing wood-spirit for industrial purposes.

An immense amount of wood is cut down every year in the States for conversion into charcoal for the iron foundries. But of late years, beside nearly every charcoal plant there has been raised a chemical plant, to rescue the wood-alcohol from New York and Pennsylvania eighty wood-alcohol and acetic acid plants exist, which supply the iron foundries with charcoal for the spirit and acetic acid as by-products—the alcoholic output amounting to a million and a half gallons a year. In Germany alcohol is so cheap that several foreign alcoholic motor are working. Whether this result will follow in America remains to be proved; but there is assuredly a future for wood-spirit, which only the other day was all lost in smoke. It is computed that now from 75 to 80 per cent of the tree, branches and all, is utilised for the up-to-date charcoal maker.

A PLATE BACKING.—One of my friends has been experimenting with the various mixtures recommended for the backing of plates, remarks Fayette J. Clute in "Camera Craft." He has spoiled a goodly number of holders and wasted a few dollars not to mention much time. He has finally settled on a mixture of lamp-black and gum-arabic. He measures it out with an old spoon; two of the lamp-black to one of the gum-arabic. He goes to the stationery store, and then adds enough water to make the desired consistency to work up nicely with an old knife-blade used as a spatula. When it is thoroughly mixed it is put into an old tin box-lid and allowed to harden in the cake. A wet rag is used to apply it to the plates, and the results I have seen it is certainly a most effective preventive of halation. It is the easiest thing in the world to rub in just before developing, and only the thinnest coating is required. Beware of any backing containing glycerin, as it will draw enough moisture from a damp atmosphere to ruin silver-containing plates so backed.

AMATEUR PHOTOGRAPHY AT ST. LOUIS.—The American dealers are now all getting rolls of films from their customers who are at St. Louis taking advantage of the free use of their cameras on the grounds of the Louisiana Purchase Exposition. All exposures are overtimed, in some cases so much so that it is impossible to secure good negatives from them. Our readers who contemplate using their cameras at the Fair should remember that white buildings require about one-fourth the exposure of ordinary street scenes. Another thing that should be remembered is the fact that a street scene hedged in by tall and closely arranged buildings of a more or less drab colour is an entirely different proposition from such street scenes as are at their disposal at the Exposition. Even time that one is accustomed to give to fairly open landscapes will be found too long, for the simple reason that green foliage is rather non-actinic and does not reflect light on neighbouring objects, while white buildings act much as does the white reflector the photographer draws up near his sitter in order to lighten up the shadow side of the face. Cut your exposures down at least one-half and you will be doing better work and have the thanks of the man who develops your films.

FITNESS FOR PUBLICATION.—At the present time East London publishers and photo-engravers are deep in argument and discussion over what makes a picture unfit for publication, says "Camera Craft." It seems that several photo-engraving houses that do designing have had cuts returned to them with a refusal to pay because some publisher had said they were "unfit for publication." The engravers were up in arms and said the cuts were no "worse" than those appearing constantly in the "home" journals. Now they are calling out loudly for some one to define the line between fitness and unfitness for publications. But such a line cannot be drawn. The photo-

graver must simply use his own judgment. It all depends where the picture is to be printed. A certain class of anatomical pictures are not indecent when printed in a medical journal. Photographs of corsets and underwear on a living model are all right in certain household publications (if they were not it would be a sad thing for the advertising business), but they are very objectionable in a daily newspaper. Artists' juries have only two tests that they follow when selecting pictures for exhibition. First they consider the "sense" of the picture. Is the idea it conveys fit for a decent mind? Then they make a fine distinction between nudity and nakedness. And, after all, what can a living can do more?

SEA-WATER.—A Kodak enthusiast who was crossing the ocean a few months ago found trouble in getting enough fresh water for use in operating his developing machine. To him a voyage without the pleasures of photography seemed tedious, and so he decided to take a chance on one roll with sea-water. Water direct from the briny deep was used for developer, for fixer, and for washing, with just a short final rinse in fresh water to remove the salt, and his negatives were perfect. He developed his remaining rolls in a similar manner with equal success, and told us with enthusiasm of his results. Further tests on the part of Kodak Limited have proved that the scheme is perfectly practical that sea-water may be safely used for all the processes provided only that the final rinsing is in clean fresh water. Mezzo-Tone was not on the market at the time the enthusiast experimented with sea-water in his developing machine. If it had been he would probably have discovered that it answers admirably for toning that paper. Very little fresh water need be used. The process is this: Print; place prints for ten minutes in sea-water, during which time they will clear and tone; fix in: Sea-water, 10 oz.; hyposulphite soda, 1 oz.; Solio hardener, 10 drops. Fix 15 minutes. Wash 14 changes of sea-water and then for five minutes each in three changes of fresh water.

The "Saturday Evening Post" relates an interesting story how the late President McKinley was photographed when once on a trip to New York: Mr. Shackleton, the author, was assigned to a newspaper to "get a story." He had with him his assistants, among others a photographer, and when the Presidential party took their way up the harbour the newspaper party followed in their chartered tug. The President shared the dislike many public men to the indiscreet snapshot, and quickly detected the photographer the minute he took his position; not, without experience of the ways of cameras, he smiled and held his ground when he realised that he stood with his face in a sharp shadow and his body in the bright open-air sunlight. The face would show a blank, he well knew. And so it did. The negative was perfect but for the face, and that was completely lost. But they are resourceful in newspaper offices. Such a lost picture was not to be lost. The photographer hunted up a black portrait of ten years back, made a transfer of the old features to the new shoulders, and when the paper was printed, there stood the President to the life! Nobody was more astonished than the President himself when he saw it. It is only fair to add that he was more than half pleased at the likeness. Mr. McKinley was frankly so. The tactful Mr. Cortelyou, then secretary to the President, was careful to let Mr. Shackleton know as much when he called. "She said," he repeated, "it was the best portrait the President has had in years. Why, he looked ten years younger!"

BLACK BACKGROUNDS.—The field of chiaroscuro has been so thoroughly covered in the photographic journals that there

seems little left to say. But a few words on the very black background occasionally used in portraiture will not be amiss. The most frequent criticism of that kind of background is that it is too dark and lacks gradation. But why should a part of a picture not lack gradation and not be dark, even black as night? It is certainly frequent enough in nature. Walk through the streets on a summer afternoon and study any open window in which perchance is sitting a girl dressed in white. If the illumination is at all right, the draperies and flesh will be brilliant and the interior of the room intensely black, and the combination of the two most beautiful. Why is it that so many photographers, when they try to imitate this effect, fail completely? It was one of the favourite schemes of the Florentines and Reynolds. How did they do it? Leonardo gives the hint. He tells you to pose your model within the doorway of a darkened room hung with dark draperies, and to illuminate the figure with sufficient light from the room in which you are painting. If you are not possessed of the proper accommodations, construct them for yourself with screens, etc. Now wherein will this effect differ from the one in which a piece of dark cloth is placed directly behind the head? That is easy to explain. Your sitter, being a little inside of the dark room, is receiving no reflected side light, and the parts of the head and figure as they round become rapidly darker until at their edges they are almost black and sink softly into the background. Whereas a head ordinarily placed against black will merely silhouette, and further, the negative should be developed and printed to obtain as black a black as is possible, for coal black possesses a quality of intensity and vigour which the mind associates with no grey.—J. C. ABEL, in "The Photographer."

THE USE AND CARE OF PHOTOGRAPHIC LENSES.*

Of all the special phases with which we come in contact in dealing with the subject of Photographic Lenses, their use and care are the most simple, and, at the same time probably the most interesting and important. We will first consider the Use of the Lens. My motto is: "First—the lens. Next—the man behind the lens." If I should ask you to give a definition of the word "lens" I wonder how many could reply. I will not ask for a definition because I myself may be unable to tell you what constitutes a lens. I will, however, give you a definition which I trust will convey to you what constitutes a lens as I understand it. A lens is an instrument with at least one curved face and maybe composed of any substance through which light may be transmitted. You will easily see by this definition that the number of different kinds of lenses may be infinite. They may be composed of glass, liquid gases or any transparent substance. But we are to consider only the photographic lens, and I think best to consider only those in most common use. They are the portrait lens, the rapid rectilinear, the wide angle rectilinear, the single combination landscape, and the condensing lens. To simplify our deliberations we will consider just the point in optics.

First Light always travels in straight lines, unless acted upon by some substance through which it passes, or against which it strikes, and is neither refracted (bent out of its course) or is reflected in a different direction from its original course and after refraction or reflection it again travels on in a straight line for ever, or until it is absorbed by some substance against it again strikes or through which it passes.

Second:—Points reflect light in all directions.

Third:—Objects are composed of an infinite number of points and each point reflects its own light and the image of an object is formed on the focussing screen or the sensitive plate by the light from each point passing through the lens separately and individually and not the object as a whole. Hence, a point, say at the top of a building, reflects some of its rays downward which pass through the lens to the top of the plate, and hence the image always appears upside down on the screen. This is true of light passing through

* A lecture delivered before the Photographic Association of Wales in 1902.

a pin-hole made in a piece of opaque paper used as the front board of your camera. The primary object of the use of a lens in making photographs is to admit the passage of a very large pencil of light and bring all the rays reflected from any one point to a focus (or a point) on the plate. By this we can readily understand that the larger the aperture of a lens of any given focal length the more light will be admitted and, therefore, the faster the working of the lens.

The essential difference between a portrait lens and a rapid rectilinear is in the amount of light that each will admit, or their angular aperture. A portrait lens having a very large opening, or more properly speaking, a greater angular aperture, admits a greater angle of the divergent rays of light from any point and therefore easily produces that much sought for roundness of image not possible to be obtained with a rapid rectilinear lens or one of small angular aperture. Hence, the wise photographer will always select a good lens, having a very large aperture in proportion to its focal length. But we shall see, that as we increase the angular aperture, the corresponding depth of focus (that is, the satisfactory production of images of objects at varying distances from the lens) decreases. For this reason it is best to select a lens of smaller aperture for, say, landscape work and which, also by reason of its smaller diameter is generally constructed along lines which admit of greater depth of focus. These principles, I think, make it very plain why a portrait lens is not good for landscape work and vice versa, why a rapid rectilinear or landscape lens is not so good for portrait work.

It is conceded by all strictly landscape photographers that a single combination landscape lens produces the most brilliant image. This is due to the fact that all the lenses being cemented together, there are fewer reflecting surfaces to diffuse the light falling upon the sensitive plate. But while this form of lens has its advantages, it also has its disadvantages. When one of these lenses is used for photographing architectural subjects it will be seen that the straight lines of a building especially when the lens is required to include a medium wide angle, will be somewhat curved. This is due to the fact that the diaphragm being placed at a certain distance away from the lens, the pencils of light meeting the lens at an angle from its optical axis, cross one another passing through the lens near its edge. The spherical aberration found in all lenses causing a straight line in the object, to be slightly curved in the image produced.

A wide angle rectilinear lens is very similar to a rapid rectilinear. The essential difference being the lenses are mounted relatively close together. It will be easily seen that if two lenses be made each one inch in diameter and one system be mounted one inch apart the other mounted two inches apart, the system one inch apart will admit of a much wider angle of light than the one mounted two inches apart. Of course, when a very wide angle is to be included it is necessary to construct the lens with a very different system of curvatures. This is necessary from the fact that when the front and back combinations of a lens are brought closer together the curvature of the field is increased, and this accounts for the fact also that it is always necessary to use a smaller stop in a wide angle lens than in a rectilinear one.

Many photographers ask why it is necessary to employ the use of a condensing lens in order to make copies, enlargements, etc., from negatives. The reason is this: when an artificial light is placed back of a negative its rays pass in a direct line through the negative, then through the lens at its optical axis to the plate. It is only reasonable to conclude that rays which do not pass direct, and at best can only be reflected through the lens, will not be as strong as the direct ones and hence a greater illumination in the centre even when a ground glass be used between for diffusion. A condensing lens gathers all the rays at whatever angle it may be constructed for and bends them, bringing them to a focus at some point within the projecting lens used for producing an image of the plate to be copied, and hence each ray of light passing through it, is, as direct from the source of illumination, and the result—an evenly illuminated screen or image.

Now I will call attention to this new invention in photographic lenses—perhaps I should apologise at this point for mentioning this invention at this place, because I happen to be the inventor of this new lens.

When the image of some suitable object, say the flat front of a building or a standing figure in your operating room be projected on to the ground glass screen by means of the best portrait lens, in fact, the best rapid rectilinear lens at full aperture, the marginal parts of the image, as you know, appear indistinct, out of focus when the centre is sharply focussed, and the image is sharply focussed, the centre will be blurred and indistinct. This shows that the plane of the image is curved. This difficulty is due to the fact that the lens has been corrected for smaller diaphragm, and when a sharp image from the centre the edges of the plate is desired it is necessary to stop the lens down to produce it. We have observed, as in the case of the wide angle lens, if the tube carrying the lenses be lengthened, the field becomes flatter and flatter as we do until a point is reached where the field of the image is perfectly flat and clearly defined all over the plate and hence the face, hands, and feet of a standing figure will all be sharp and likewise the flat front of a building, a copy of a photograph, maps, drawings, etc. We will find, however, that if it be necessary to stop the lens down for depth of focus the image will not be so good with the lengthened tube as if it be shorter. I have therefore provided my lenses with a double sliding tube which is operated by a ring and a knob similar to an iris diaphragm, by means of which the tube can be instantly lengthened or shortened at the will of the operator to suit his particular need. It is a very simple matter to learn to use the device, and you will be surprised how much you can accomplish by its use that will be impossible without it. I will only just a few more of the many points of advantage. When it is desired to photograph a figure in a sitting position, as you well know the hands and knees are closer to the camera than the face. It is always necessary to draw the focussing screen farther away from the lens to obtain a focus of a near object than for one of a great distance. Hence, when the knees and hands are in focus the face is out and vice versa. For this reason you resort to the swing back swinging that part of the screen receiving the image of the hands and knees farther away from the lens in order to obtain a sharp focus. Now the image of the hands and knees, which are already too large, are made larger still because of the greater distance of the screen, and the result is a very distorted image. With the adjusting device it is only necessary to turn the ring a short distance, shortening the lens tube, making the field more round, and the hands and knees come to a focus on the screen without the necessity of swinging it away from the lens and the resultant image is not distorted. One more point and I will quit bothering you with the use of the lens.

It is admitted by all lens makers that a lens must be correctly to one certain diaphragm. This being the case, the lens is certainly working at a slight disadvantage. With the adjusting device the tube may be lengthened or shortened as you use a larger or smaller diaphragm and the best possible correction be maintained at your own will throughout the entire system of diaphragms. The adjustment is supplied with a graduated scale with the usual normal setting of the lens marked, and should you be in too great a rush with your work to stop to adjust it for some subjects, it can remain and your lens used same as any lens in rigid mounting. The device applies equally well with lenses for any work, and a rapid rectilinear lens may be transformed into a wide angle lens for large plates and a regular wide angle rectilinear can be used as an extreme wide angle, by simply turning the ring bringing the lenses closer together.

Yet another very important point comes to my mind and I will name it. The so-called chemical effect of your plate you will find to be very much improved when the proper adjustment is used for the diaphragm you employ. I will give you my rule for the use of diaphragms or stops as they are commonly called.

Rule: Always use the largest diaphragm you can that will produce the character of image you want. Never stop a lens down until the image appears satisfactory and then say, "Well, I must have a sharp picture, so I'll just use one size smaller stop and be sure it." Too small a stop destroys roundness of image and consequently stereoscopic effect.

A few words only is necessary as to the care of a lens. In the first place your lens should always be covered when not in use, as to prevent, as far as possible, any dust from falling on to the glasses. Your lens should be kept in a room where it will not be

subject to any great and sudden changes of temperature and where the atmosphere is fairly dry. It should be carefully cleaned, especially if new, at least once a week. Most of us would feel very sorry if we should accidentally make a small scratch on our lens. I want to say that a large amount of dust on a lens does infinitely more injury to the picture than a scratch, even if of considerable size, but we do not want either and the best thing to do is to keep the lens clean and be careful in cleaning it. Hold your lens up so as to be able to lightly dust it from the under side with a camel's hair brush or a soft chamois skin used only for this purpose. Then wipe the surface gently, if necessary, with another chamois that has been washed free from oil and used only for the purpose of wiping your lens. A piece of silk tissue paper, or a piece of soft cambric or a clean handkerchief that has been washed a few times are also good. In this climate the lens should be taken apart and all the inner surfaces wiped as they collect a scum which destroys the brilliancy of the image and renders the action of the lens much slower. In fact, the every precaution to make the required work of your lens easy and effective. You will not then have occasion to expatiate away the many difficulties which meet most of our brother photographers—the picture is too flat or too harsh a contrast, shadows too black, hands too large, feet out of focus, "My nose does not look like that," "My mouth isn't straight like that," etc., etc. Every observing operator will tell you that there is always two sides to every one's character—the good and the bad side. Always observe to photograph your subject when he or she is in a pleasing condition of mind, being careful to adjust your lens, your camera and your focussing screen so as not to distort the lines showing the character, and you will have very few complaints from your patrons.

L. F. DEARDOFF.

RESULT OF THE KODAK £1,000 AMATEUR PHOTOGRAPHIC COMPETITION.

N. C. FILM COMPETITION.—CLASS "A."

First prize, Mrs. R. Dunlop; 2nd prize, W. Scott Elliot, jun.; 3rd prize, Miss Laura Adams Armer; 4th, Hedwig Ledermann; 5th, Miss G. F. Nash; 6th, James Dunlop; 7th, Mrs. Helen W. Corke; 8th, John S. Neary; 9th, H. A. Briscoe Harrison; 10th, D. J. Cartwright; 11th, William Deeley; 12th, Geo. Adamson; 13th, C. White; 14th, Thos. A. Morgan; 15th, Frank Salisbury; 16th, G. W. Blyth; 17th, Miss M. Holmes; 18th, A. Vigar; 19th, Mrs. Cleasby; 20th, Geo. F. Fisher; 21st, J. Burns; 22nd, Albert H. Joberg; 23rd, Miss Nellie Coutant; 24th, William C. Motteram; 25th, Barter Johns; 26th, C. Azuhner; 27th, Gaston Lecouvey; 28th, Luigi Chessi; 29th, E. Hoppe; 30th, Miss M. Masters; 31st, C. R. Ritchie; 32nd, Miss H. B. Cole; 33rd, Robt. G. Klotz; 34th, John Regan; 35th, M. Leduc; 36th, Patrick Bataille; 37th, Eldred M. Leays; 38th, Victor Stouffs; 39th, Mlle. Emilie Tremblay; 40th, Miss Agnes L. Brown; 41st, Louis J. Christie; 42nd, Henry S. Whitney; 43rd, Madame Albert Huguet; 44th, Miss M. E. Brockbank; 45th, H. A. Rothrock; 46th, Julius Stadler; 47th, Ferry Croner; 48th, Miss Dorothy M. Platt; 49th, W. Frahm; 50th, H. B. Conyers; 51st, Dr. A. R. Benedick; 52nd, Miss C. Joan Bacon; 53rd, E. Makaroff; 54th, Mlle. Ethyl Amelye Weisel; 55th, Chas. Siegler; 56th, W. Mair Bishop; 57th, U. K. Brocklehurst; 58th, A. A. Johnstone; 59th, Frau Hofr Jettel; 60th, Hon. Edith St. Jeager; 61st, Miss Mary L. A. Davie; 62nd, Miss E. M. Craig; and 63rd, Miss Borrowman.

N. C. FILM COMPETITION.—CLASS "B."

First prize, John Dolman; 2nd prize, Emile Frechon; 3rd prize, W. A. Casson; 4th, Walter Zimmerman; 5th, Miss Kate Smith; 6th, Miss Elsie Ross; 7th, M. M. Lailler; 8th, Rev. A. M. Walters; 9th, Mrs. Nancy Ford Cones; 10th, E. Alix; 11th, F. W. Beken; 12th, H. M. Tapp; 13th, Edgar J. Parker; 14th, L. Komarnicki; 15th, Patrick Bataille; 16th, Henry Neistle; 17th, Mlle. Lamire; 18th, Miss M. Tavernor; 19th, Mrs. Turnbull; 20th, G. F. Jackman; 21st, E. W. Enfield; 22nd, H. Mortimer Lamb; 23rd, Thos. A. Morgan; 24th, Geo. L. Beam; 25th, Laurence Osgood Macomber; 26th, Miss Florence Howland; 27th, William Leon Graves; 28th, Edgar R. Bull; 29th, E. J. Appleby; 30th, Josephine E. Corby; 31st, J. F. Revilloid; 32nd, M. Schneider; 33rd, A. H. Robinson; 34th, G. Banchart; 35th, H. C. Card, jun.; 36th, Chas. M. Carter;

37th, C. F. Allsup, R.N.; 38th, Leonard Marshall; 39th, Mrs. Pollock; 40th, W. Maclean; 41st, Lieut. F. M. Bailey; 42nd, Mrs. Cleasby; 43rd, H. B. Conyers; 44th, Harry Bruce Sutton; 45th, Dr. H. Bachmann; 46th, Frank Salisbury; 47th, Alex. N. Wishaw; 48th, T. Taylor; 49th, Mrs. S. C. Comstock; 50th, Miss Grace E. Mounts; 51st, Miss Mackay; 52nd, Miss Battiscombe; 53rd, Joseph K. Bridgeman; 54th, John Hayward; 55th, Mrs. Helen W. Cooke; 56th, W. Scott Elliot, jun.; 57th, Stanley J. Milner; 58th, Miss Mary C. Eames; 59th, John S. Neary; 60th, Iskandar Makarius; 61st, G. Thurin; 62nd, E. Lepeinteur; and 63rd, Eugene Lorimey.

N. C. FILM COMPETITION.—CLASS "C."

First prize, P. S. Greig and E. B. Vignoles; 2nd prize, A. S. Howard; 3rd prize, Miss C. Joan Bacon; 4th, Frank E. Beresford; 5th, Mrs. Godfrey; 6th, Laurence Ridges; 7th, Miss Laura Adams Armer; 8th, Miss Swinton Browne; 9th, Mrs. L. R. Graham; 10th, Miss Nellie Coutant; 11th, H. W. Raisin; 12th, Miss Grizel M. Turnbull; 13th, Thomas A. Morgan; 14th, Rev. A. M. Walters; 15th, Miss Emmie Cochrane; 16th, John Dunlop; 17th, L. Lloyd; 18th, Mrs. Bertram Goddard; 19th, Gustave Moeller; 20th, Miss Esme Cunningham; 21st, John Schuler; 22nd, H. B. Conyers; 23rd, Geo. Hartley; 24th, Ernest G. Elbourne; 25th, Hannes Pyska; 26th, Miss Helen Pollock; 27th, Miss Lucy Guitard; 28th, Miss Dorothy A. Dobree; 29th, Chas. H. Loeber; 30th, J. G. Dickinson; 31st, Thos. Norton; 32nd, Miss Elizabeth Hill; 33rd, Miss C. Stewart; 34th, David C. Pendrigh; 35th, Miss Edith M. Laurence; 36th, Miss F. Baggs; 37th, L. Carter; 38th, Miss Laura Brocklebank; 39th, Edgar Steinmetz; 40th, Mrs. A. J. West; 41st, Miss Cooke; 42nd, Miss Kathleen Hayes; and 43rd, Miss E. Halsey.

KODOID PLATE.—CLASS "A."

First prize, Mrs. G. A. Barton; 2nd prize, W. Fisher Ward; 3rd prize, Miss Laura Adams Armer; 4th, Thos. F. Brogden; 5th, Archd. Richmond; 6th, E. Calland; 7th, Emil Frechon; 8th, Thomas A. Morgan; 9th, Miss Agnes Tomlinson; 10th, H. Mortimer-Lamb; 11th, P. S. Greig and E. B. Vignoles; 12th, Frank W. Gregg; 13th, W. Fotheringham; 14th, A. Morrison; 15th, Walter Zimmerman; 16th, S. R. Carter; 17th, Will A. Cadby; 18th, Horace E. Hopkins; 19th, James D. Ross; 20th, M. Mamitsch; 21st, Wm. M'Lean; 22nd, P. R. Denham; 23rd, Arthur Langridge; 24th, R. Burrow; 25th, A. Bedding; 26th, F. Schneider; 27th, Mrs. R. Dunlop; 28th, Chas. E. Wallace; 29th, J. R. Batey; 30th, Miss J. L. Griffiths; 31st, J. Peat Millar, jun.; 32nd, Harry C. Rubincam; 33rd, Rev. Henry W. Dick; 34th, Chas. J. Reade; 35th, Eugen Boveraux; 36th, Mrs. M. P. Durn; 37th, A. H. Avery; 38th, Miss Elsie Ross; 39th, Dr. O'Connell; 40th, W. Clifford Warner; 41st, F. Napier Sutton; 42nd, P. Coles; 43rd, J. C. Warburg; 44th, Chas. S. Price; 45th, W. H. Edgar; 46th, R. Romans; 47th, Gerhard Steylen; 48th, Mrs. E. D. Girdlestone; 49th, Dr. Albert R. Benedick; 50th, Fred. T. Sheret; 51st, A. W. Cooper; 52nd, H. A. Briscoe-Harrison; 53rd, Robt. Burnie; 54th, W. H. Haler; 55th, F. E. Huson; 56th, Harold A. Ray; 57th, G. A. S. Orlebar; 58th, Miss Chichester; 59th, E. W. Burch; 60th, H. Wild; 61st, O. Thornycroft; 62nd, Frank Wilkey; 63rd, T. Bletcher; 64th, Rev. E. S. Palmer; 65th, J. C. Richards; 66th, R. T. Christopher; 67th, W. S. Crocket; 68th, A. Cohen; 69th, W. Cunningham; 70th, F. A. Joyner; 71st, T. P. Rogers; 72nd, F. Chapman; 73rd, Will E. Gladwish; 74th, Sumner W. Matteson; and 75th, Mrs. L. R. Graham.

KODOID PLATES.—CLASS "B."

First prize, Andre Callier; 2nd prize, D. J. Cartwright; 3rd prize, H. Light; 4th, Fredk. H. Evans; 11th, F. Napier Sutton; 12th, John W. Martin; 13th, F. G. Mudge; 20th, H. Bazin; 21st, Louis R. Murray; 22nd, J. Hesford; and 24th, Rev. Henry W. Dick. In this class the judges withheld some of the prizes and awarded in other sections.

N. C. COMPETITION (ENLARGEMENTS).—CLASS "D."

First prize, Alfred Miller; 2nd prize, Miss Laura Adams Armer; 3rd prize, Rev. A. M. Walters; 4th, A. Gibory; 5th, Mrs. G. A. Barton; 6th, Walter J. Clutterback; 7th, H. A. Briscoe-Harrison; 8th, Wm. C. Motteram; 9th, A. H. Robinson; 10th, Will A. Cadby; 11th, C. D. Paton; 12th, Miss Kate Smith; 13th, Walter Zimmerman; 14th, Annie W. Brigman; 15th, Henry Neistle; 16th, Herbert Bairstow; 17th, H. B. Conyers; 18th, P. Vandenput; 19th, C. J. Reade; 20th, George L. Beam; 21st, Thomas A. Morgan;

22nd, Hon. Constance Kerr; 23rd, W. A. J. Hensler; 24th, Miss M. T. Adams; 25th, Mrs. Henry; 26th, F. N. Sutton; 27th, Laurence Osgood McComber; 28th, J. R. Redfearn; 29th, Madame Albert Regad; 30th, M. Urosa; 31st, E. A. Price; 32nd, G. B. Griffiths; 33rd, R. L. Whitworth; 34th, William Meilroy; 35th, Mrs. Myra A. Wiggins; 36th, Miss A. B. Cole; 37th, T. Ernest Waltham; 38th, Harold Hood; 39th, Frank Pinder; and 40th, A. Tundley.

DEVELOPING MACHINE.—CLASS "A."

First prize, H. Oswald Isaac; 2nd prize, Miss Nellie Coutant; 3rd prize, Leonard Marshall; 4th, F. Napier Sutton; 5th, Madame Henri Fourme; 6th, Madame C. Poisson; 7th, E. V. Duckworth; 8th, E. Jepson; 9th, Maurice C. Vgoyan; 10th, J. C. B. Appel; 11th, L. H. Harrop.

DEVELOPING MACHINE.—CLASS "B."

First prize, Miss Stone; 2nd prize, Miss N. Coutant; 3rd prize, Mlle. Severine Gabelle; 4th, Paul Massia; 5th, Miss A. Mitchell; 6th, H. E. Wrotterley; 7th, Mrs. Sutherland; 8th, Harry R. Cate; 9th, Jas. Walker; 10th, Mrs. S. C. Comstock; 11th, Mrs. L. R. Graham; 12th, E. J. Duncombe; 13th, Miss L. M. Shortt; 14th, E. B. Owen; 15th, Miss Constance de Striger; 16th, Mrs. E. Bromley; 17th, T. Ernest Waltham; 18th, Ernest Abrahams; 19th, Miss Comley; 20th, J. A. Young; and 21st, Madame Henri Fourme. In both sections of this competition the judges withheld prizes and awarded in other classes.

SPECIAL PRIZES.

Will Cadby, Mrs. Cadby, T. G. Cochrane, Herbert J. Hughes, Madame Albert Huguet, Miss Lilian S. Owen, Miss Louise V. Hitchcock, G. Carpentier, H. Jackson, S. C. Comstock, Mrs. S. C. Comstock, W. Robertson, Josef Brunner, A. E. Littler, Giovanni Aita, Henry Troth, William C. Motteram, Josef Edler von Douhauser, Herbert C. Hughes, Brian A. Reeves, Laurence G. Reid, Ernest H. Hooper, Miss Stocks, Ernst Budina, H. Bazin, L'Abbe Larivet, Miss Edith K. Brown, G. A. Fowkes, Amtsrichter Raykowski, C. Blanchet, A. Waterall, Miss Bruere, Frank H. Stevens, John Hayward, T. S. Boudoin, C. S. Sargisson, Miss Margaret Smith, Fred W. Levett, Geo. Heys-Jones, Lady Helen Lacey, M. M. Hodgson, L. C. Burchardt, H. C. Rubincam, Miss M. Nelson, F. Cowley, Valentine Lora, A. Haton, M. Schablin, Miss H. B. Cole, G. F. Fisher, Eugene Francois, and Miss Jean L. Clemens.

THE INFLUENCE OF DILUTION OF THE DEVELOPER UPON THE CHARACTER OF THE PICTURE.

To become acquainted with the advantages of diluted developer and the nature of its action, tests should first be made with the development of three uniformly exposed sensitometer plates, one with normal developer, and the other two with developers of different dilution. The different character that can be observed on these pictures, sharpens the judgment about the proper way to obtain a good negative.

To make such a test, expose three small plates, cut from a highly sensitive dry plate, under a scale sensitometer from one to sixteen tissue-paper layers, at equal time with the normal light quantity of 120 meter-candles seconds. Have three developing trays in readiness. The first contains normal developer, 1:30; the second, 1:50; and the third, 1:300. In the first, the developer is, therefore, of a normal composition; the second is diluted five times, and the third has a ten-times' dilution. Place now the exposed plates into the trays, and observe the time at which the picture appears. In No. 1 the picture comes in 40 seconds, and is fully developed in four minutes; that is, the weakest light impressions, 13 to 16, are just visible. Picture No. 2 appears in 4 minutes, and the plate has to be left in the bath for 24 minutes, to be able to read the figures 13 to 16. Upon plate No. 3 the picture appears in 12 minutes, and requires 84 minutes for the development of the figures 13 to 16. The time of development is, therefore, not proportional to the dilution, as a five-times' dilution does not require five times but six times the time, and the ten-times' dilution not ten times but twenty-one times the time. If the plates are observed from the glass side, it will be seen that No. 1 has a thorough development at the strongest exposed

parts, while No. 2 is weaker, and No. 3 has no thorough development. This explains easily that after fixing the gradation and therewith the character of the pictures is entirely different. No. 1 shows the 1 to 4 well covered and sharply contrasting towards 13 to 16. No. 2 the covering from 1 to 4 is weaker, and with it the contrast towards 13 to 16. No. 3 shows a still weaker covering in the 1 to 4, and still less contrast towards 13 to 16. Expressed in plain language, the negatives become softer with increasing dilution, the result proves the excellence of a diluted developer for undeveloped plates, which, in concentrated developers, would give hard negatives. In such cases very delicate negatives of moderate covering are obtained by diluted development, but they contain tones in correct proportion, and can be changed by intensification into harmonic, well-printing negatives. Further advantages of a diluted developer are, a greater clearness of the picture and a reduction of the light halos, which are only strong when the plate has sufficient thorough development. Each plate of doubtful exposure should be put first in a ten-times' diluted developer, and the time should be observed at which the picture appears. Under the conditions of the above case, a normal exposure would be made when the picture commences to become visible in 12 minutes. If observation were to show a time of only 6 minutes, it would look like an over-exposure, and to save the negative the plate would have to be finished with a very strong developer, with a good addition of bromide of potassium. If the picture would not appear before 12 minutes in the diluted developer, under exposure would be the case, and the plate should be left in the diluted developer until the most delicate details were visible, and the negative can then be intensified.—JOHN GAEDT. Translated by Henry Dietrich.

LIGHTING.

For the past forty or more years various ideas have been advanced by various workers for the lighting of the face as we see it under the light, and personally I have not the slightest doubt but that all claims made have been "founded on fact," so to speak. In other words, every worker is a "law unto himself," and manipulates the light to suit himself. But there can be no question that there must be a right and a wrong way of lighting. Now the next question for consideration would naturally be: What is the right and what is the wrong way? The answers to these two questions are so obscure and hard to arrive at that the average worker almost hesitates to go any further in his investigations. One great, and perhaps the greatest reason for his hesitation lies in the fact that we, as photographers, cannot, with any degree of positiveness, point to a particular name or person as being a recognised authority. We perhaps the reason may be found in the fact that we are young men, years as a profession, many of our earliest followers yet living, and it is a historical fact that the benefit of one's knowledge and efforts are seldom reaped until after one has passed over the "great divide." With the artist, or the follower of Rembrandt, Rubens, Turner, Murillo, Michael Angelo, and perhaps scores of others, it is different. For ages past their ideas, and in many instances their advice and their instructions, have been handed down to their successors until it has almost become a sacred matter to those receiving them. Yet as photographers, dealers in "light and shade," have and are now "worshippers afar off," trying with our meagre possibilities to give a little instruction from these selected few. It is an old and tiresome saying that we are hampered by not having "colour" to aid us in our endeavours. This saying, like most old sayings, is true, and we must sooner or later realise it. As soon as we have reached this station in our professional career the next consideration is, how am I to make work that will be classed as artistic? To this question there can be but one answer, and that is, by so controlling your lights as to secure artistic effects in black and white, the only means at our disposal for producing pictures up to the present time.

In my personal experience under the light, which has extended over twenty-one years, and in handling all classes of subjects have found that there is one main consideration to be taken into account in producing artistic work, and that is the direction from which the light falls on the subject. There are other considerations of a minor importance which will doubtless enter into the light

of the face, but they are in no wise to be compared to this one of direction."

It has been my privilege within the past few years to attend a large majority of the State and national conventions, where I have heard the various claims made, and seen the demonstrators work the light in their own way, and I have found that in all cases their first thought was for the direction of the light as it fell on the subject.

One man would claim that he used as large a source of light as he could possibly get; in other words, he used no curtains of any description on his light. But I noticed when he demonstrated his method of work he would have his subject posed at least as far from the side light as his top light would measure upward from where it joined with the side light. For example: If we are using a light, the top light of which measures twelve feet from the side light up to its highest point, and we pose the subject twelve feet into the room, measuring from the lower end of the side light, all that will then be necessary is to lower the curtain (if curtains are used) on the side light just enough (no more) to secure a catch light in the eye (or speck, as the public calls it); this light is thus obtained, provided, of course, that the head has not been turned so far away from the light that no light at all strikes the shadow side of the face. In this connection I would say, that as soon as there appears soft light on the shadow cheek, which will be due to the face being turned far enough to the light to catch it, if the light from the side is low enough the catch light will appear. If no curtains are used on the light there will be no question on this point, as the catch light will show itself just at the instant the face is turned far enough to the light to show the soft light on the shadow cheek. Now, someone (or more, perhaps) will think, "Yes, this may be good under a double slant light, but I have no single slant; what all I do?" Do just as that brother did who was using the double light. Have a certain portion of your light top light, and the other portion will be side light, and for all practical purposes it will be and to work the same. If, for example, the upper half of your light is ten feet, the subject should be faced ten feet into the room from the light.

At this stage of the game we run up against another point of lighting that has often been mistaken for a principle of lighting, and that is, the question of the strength of the light as it rests on the subject. That is, whether it be strong, bordering on contrast, or soft or delicate. This, to my mind, is not a principle, but merely personal preference, and is to be determined by each operator for himself. Over and over we see pictures by men of national reputation, one making strong, bold lighting, the other soft, delicate, and full of detail, but upon a close examination we find the light falling on the subject from the same direction, *viz.*, half way from the highest point in the opening of the light and its lowest point, or, in other words, it is known to the average worker, an angle of forty-five degrees. As to the size of the opening, that has, in my opinion, nothing to do with the resulting negative other than the consideration of whether the light shall be a negative strong in contrast or one of soft, delicate quality—the smaller the source of light, the more concentrated it will be at certain parts of the face—forming high lights, and accentuating those parts, while the half-tones and shadows are held down to their proper weight. The larger the source of light the softer the effect, and the less we notice any one or more parts of the composition being of greater importance as compared to other parts.

Now we come to the operator who uses curtains or screens on his light, and I find by close observation that he differs but little from his brother who uses no curtains. In working his lightings he is governed by that most important of all considerations, the "direction" of his light, and after he has completed his lighting, and we examine it closely, we find that he has made but one difference, *viz.*, in the size of his light, he having curtailed it down until it is much smaller, but at the same time he has moved the subject farther to it, making, perhaps, a stronger or more bold effect, which is merely his own taste, judgment, preference, interpretation, or the requirements of the subject, call it what you may.

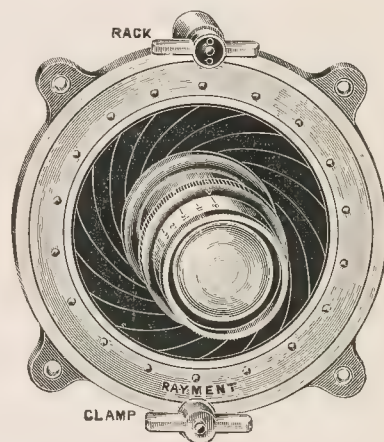
So we can arrive at but one conclusion, and that is, we must work the principle of the light and not for the method of obtaining it. 'Tis but folly for any one man to claim he has the "only way" of lighting the face." There is no such thing as "a way," but

"the thing" is to know the principle of it, and what matters "the way." It is just here so many of us have misunderstood our artist friends in their lectures at the conventions. They have undertaken to tell us the principles, and we cried out for "a way." The way must rest with each individual, and as soon as that individual has found the way he establishes his own individuality, and that individuality belongs to him and no other, but it must be founded upon the principles governing his work. What are the principles? That is too long a story. Perhaps at some future time I may try and tell of them as I understand them. But, as stated before, the "direction" of the light as it falls toward the subject is the first.—FELIX RAYMER, in "Wilson's Photographic Magazine."

New Apparatus, &c.

Raymer's Universal Lens Flange. Supplied by A. Raymer, 125, Eurlham Grove, London, E.

This flange or adapter forms a perfect connection between camera front and any one of a number of lenses, though they differ in diameter. It enables an operator to attach one lens in lieu of another with rapidity and security, avoiding the troublesome process of unscrewing the one and screwing on the second, or using the old and cumbersome mediation of extra lens boards. The system employed is an advance on those previously known, and may be briefly described as follows:—In a ring, having a rack cut on its circumference, a strong Iris diaphragm is enclosed. The size or diameter of the opening of the Iris is regulated by a pinion revolved in contact with a rack on the encompassing ring. So that the rear portion



of a lens tube (up to the shoulder) being introduced into the aperture of the Iris, the pinion is revolved and the strong leaves of the Iris firmly grip the lens tube. To make this grip doubly secure, a clamping arrangement is provided, which renders any relaxation of the hold on the lens an impossibility. The working portions of the mechanism are of suitable metal, but the external frame is of aluminium, so reducing the weight to a minimum. It is made in several sizes, the smallest taking lenses of 2 in. and less in diameter, and the largest will receive lenses of $4\frac{1}{2}$ in. and less diameter. We understand that Houghton, Limited, of High Holborn, and Messrs. Marion, of Soho Square, have taken up the agency for this piece of apparatus.

At the meeting of the Common Council last week the Southwark Borough Council applied for permission to remove the Obelisk in St. George's Circus in order that an ornamental clock tower presented to the borough might be erected in its place. This old landmark will be much missed by all South Londoners, and although the utilitarian aspect of the proposed substitute will have its advantages, the sentimental associations surrounding the Obelisk will be a strong factor in any opposition that may arise as to its removal.

Exhibitions.

R.P.S. HOUSE EXHIBITION.

THE exhibition of photographs by members of the affiliated societies selected from prints sent in to the 1904 competition was opened at the Royal Photographic Society's House, 66, Russell Square, on Tuesday, and, including as it does so representative and varied a collection of excellent examples of photography by some of the leading workers of the newer school, it ought to attract the attention it merits. By the newer school we do not mean the school of advanced, so-called art, photography, including largely the indefinite in aspect and motif, but rather the best class of "straight" photography as worked by the younger and virile exponents of camera craft, workers of whom we shall hear more anon. The exhibition consists of 52 photographs, carefully chosen from the great number originally submitted. These include fourteen landscapes, eleven portrait and figure studies, six architectural studies, seven seascapes, four natural history or flower studies, seven genre, and three street scenes. The varied character of the exhibits may well be judged from this analysis. The lack of frames, however, makes the show appear rather poor. We understand that the prints are to be suitably framed before being sent the round of the affiliated societies, and wonder why this could not have been done before they were shown at Russell Square. Curiously enough, the lack of frames did not appear to detract from the previous house exhibition, that of M. Demachys' gum prints, but rather to add to their effect. The explanation of this is probably because the whole of M. Demachys' prints were much of a size and very similar in tone and mounting. In the present instance they are of every variety of size, colour, mounting, and treatment, and, although admirably arranged on the walls, the tout ensemble is rather scrappy. Among so many good pictures—which include, we note, several that have been awarded the R.P.S. medal, although they do not score in this competition—it is somewhat difficult to pick out examples for special comment. The six photographs that were adjudged the best in the competition, and which were awarded the specially designed plaque, are: No. 47, "A Wind Sea," by F.J. Mortimer; No. 48, "In Arcady," E. T. Holding; No. 49, "The Foreman," T. Fitzgibbon Forde; No. 50, "At the Smithy," Edgar G. Lee; No. 51, "A Village Belle," Mrs. G. A. Barton; No. 52, "Evening," G. H. Capper.

To deal with these six first, "A Wind Sea" is probably as good a rendering of moving water as is likely to be secured by the camera, but for general forcefulness and abandon "In the Height of the Storm" (No. 46), by the same worker, is a better picture. "In Arcady" is a charming little half-length portrait of a small boy intently blowing a whistle pipe. The "action" and pose are excellent, the photography is exceptionally good, but the small boy is only blowing the pipe, he is not playing it. "The Foreman" is an admirable portrait study, full of vigour and character, but the lighting is rather one-sided, which makes the shadow side of the face rather heavy. "At the Smithy" is a fine rendering of sunlight. Two men and a horse at the smithy door, bathed in the light of the sinking sun. The more one gazes into this picture the more brilliant and real the sunlight appears. The shadows are full of detail and rich in colour, and the figures are well placed and posed. "A Village Belle" is in Mrs. Barton's well-known "large" style, which compels admiration. Mrs. Barton has mastered the secret of concentration of both light and subject, and the result has a certain breadth that is quite "painty" in effect. This picture, for simple, direct treatment, is as fine an example of portraiture as anything this clever worker has given us. "Evening" is rather a hackneyed subject extremely well done. The evening light shines through the drifting clouds of the darkening sky, and is reflected in the low-lying, marshy middle distance and glimmering river foreground. At first there appears to be a certain woolly, out-of-focus appearance about this picture that is somewhat displeasing at close range, but when viewed at a distance of a few feet the admirable lighting and delicate treatment remove this, and the picture stands as an admirable example of quiet landscape work. A review of the other pictures in the collection will be given next week.

ANDOVER.

THE fourth annual photographic exhibition held in connection with the Andover and District Horticultural Society was opened on

August 1. Probably the very worst time of the year was chosen getting together a provincial photographic exhibition—the time of when the majority of photographers are away on holidays, obtaining new pictures for the winter shows, and but little disposed to exhibit last season's work, and equally indisposed to exhibit their labours so early in the present season.

These facts, doubtless, will account for the rather small number of entries. The committee, however, has worked hard, and the efforts of Mr. W. I. Gradidge, the energetic Hon. Secretary, and willing co-workers ought to have a richer reward in the shape of a larger exhibition should they decide to hold another show in the season. The fact, too, that at present there is no photographic society at Andover may also have a little to do with the lack of pictorial support extended to the exhibition by local photographers.

The present collection of pictures mounted on screens in an arm of the main exhibition may, however, do something to foster the idea of forming a society in this neighbourhood. The judges, Messrs J. Mortimer and S. G. Kimber, made the following wards:—

Open classes.—A portrait or figure studies—Gold medal, "A Portrait," Miss Bessie Stanford. Silver medal, "A Veteran," J. Smith. Bronze medal, "The trivial round—the common task," Rev. E. G. Watts.

Class B.—Landscape and seascape—Silver medal, "Weeds and Rushes," A. MacDonald. Bronze medal, "Moreton Old Hall," W. Foxall. Certificate, "Morning Mist," A. Burley Moss.

Class C.—Architecture—Silver medal, "An Old Street, York," A. W. Wallburn. Bronze medal, "The Eastern Crypt, Winchester," W. A. Clark. Certificate, "Salisbury Cathedral, West Entrance," Rev. E. J. Watts.

Classes D, E, and F, open to amateurs only residing within a radius of twenty miles of Andover:—

Class D.—Landscape and seascape—First prize, "A Dairy Pasture," G. Vialls. Second, "Hoar Frost," Rev. E. G. Watts. Third, "Highland Loch," Miss M. Best.

Class E.—Architecture—First prize, "St. Pierre Church, Chichester," Rev. E. G. Watts. Second, "Pulpit, St. Lô Church, Normandy," Rev. E. G. Watts (debarred). Third, "A Fane in which I Pray."

Class F.—Figure studies, etc.—First prize, "Taking Soundings," Rev. E. G. Watts. Second, "Snowdrops," Rev. E. G. Watts (debarred). Third, "Group of Highland Cattle," Miss M. Best.

FORTHCOMING EXHIBITIONS.

August 16-20.—Royal Cornwall Polytechnic Society Photographic Section. Secretary, Edward Kitto, The Observatory, Falmouth.

September 16 to November 5.—Photographic Salon. Dudley Galleries, Egyptian Hall, Piccadilly. Hon. Secretary, Reginald Craigie, Photographic Salon, 1904, Dudley Gallery, Piccadilly, London, W.

September 20-28.—Newbury Photographic Society. Hon. Secretary, E. J. Forster, Guildhall Club, Newbury.

September 22 to October 29.—Royal Photographic Society's Fortieth Exhibition, New Gallery, Regent Street, London. Secretary, A. W. W. Bartlett, 66, Russell Square, London, W.C.

October 1-30.—Berlin International Photographic Exposition. Franz Goercke, Berlin W. 62, Maassen-Strasse 32, Germany.

October 19-22.—Rotherham Photographic Society. Hon. sec., H. Hemmingway, Tooker Road, Rotherham.

October 18, 19, 20.—Kettering Church Institute Photographic Exhibition. Hon. Secretary, E. Claypole, 112, Hawthorn Road, Kettering.

November, 1904.—Ilford and District Photographic Society. Hon. sec., W. N. Beal, 155, Thorold Road, Ilford.

November 2, 3, 4, 5.—Newark Photographic Exhibition. Secretary, L. C. B. Appleby, Barnbygate House, Newark.

November 3.—Frome M.I. Photographic Society. Hon. Secretary, B. J. Mitchell, 5, Willow Vale, Frome.

November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Sec., James Dunlop, Myrtlebank, Motherwell.

November 9.—Hackney Photographic Society. Hon. Secretary, Walter Selfe, 70, Paragon Road, Hackney, London, N.E.

November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.

November 22-23.—Ipswich Camera Club. Hon. Secretary, R. L. Sutton, 37, Henley Road, Ipswich.

November 23-26.—Hove Camera Club. Hon. Secretary, A. Sargeant, 55, The Drive, Hove.

November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., G. W. Simmers, Aberdeen House, Ramsgate.

ember 2-8.—Southsea Photographic Society. Hon. Secretary, Lawton, 20, Clarence Square, Gosport.
 umber 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104, 101st Street, New York.
 umber 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.
 umber 13-20.—Southampton Camera Club. Hon. Secretary, S. G. Per, Oakdene, Highfield, Southampton.
 umber 28-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 138, Glasgow Road, Wishaw.
 umber 14-23, 1905.—The Scottish National Salon. Hon. Secretary, A. Frame, 28, Bank Street, Hillhead, Glasgow.
 umber 20-21, 1905.—South Essex Camera Club. Hon. Secretary, Nichell, 180, Browning Road, Manor Park, E.
 umber 28-February 12, 1905.—Photographic Society of Marseilles. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.
 umber 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.
 umber 1905.—Northern Photographic Exhibition. Secretary, F. G. T. 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

ember 30.—"Photographic News." Quarterly Competition. Photographic News," 9, Cecil Court, Charing Cross Road, London.
 umber 1.—Thornton-Pickard. £100 cash prizes for pictures taken Thornton-Pickard cameras and shutters. Thornton-Pickard Manufacturing Co., Altrincham.
 umber 10.—Luna paper. £240 cash prizes for prints on Luna paper. Luna Allegre and Co., 59a, New Oxford Street, London, W.C.
 umber 15.—Belgian Association Lantern Slide Stereogram Competition. Secretary, M. Vanderkindere, 97, Avenue Brugmann, Brussels.
 umber 31.—Coxin. 68 prizes for users of Coxin. Judging twelve prizes. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.
 umber 1.—The "Graphic." £50 in cash prizes. Manager, Competition, the "Graphic," Tallis Street, Whitefriars, London, E.C.
 umber 31.—Barnet. Nineteen classes. Prizes valued at £500 lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.
 umber 15, 1905.—Ilford. £750 in prizes for negatives on Ilford paper. Ilford, Ltd., Ilford, E.

Commercial & Legal Intelligence

ROLITE, LTD., of 66, Berners Street, London, W., inform us they have taken over the Notkin Light and Power Co., of Edinburgh.

ICAL Business to be Relinquished.—Messrs. Eames and Comp., opticians and photographic dealers, announce their intention shortly relinquishing the business at 28, Rushey Green, Catford, the lease being for disposal.

RECEIVING order has been made in the case of Johnson Holmes, of 26, Clarendon Street, Wolverhampton. The debtor puts his gross liabilities at £1,372, of which £218 3s. 4d. is extended to rank as dividend for thirty-six unsecured creditors. One order is fully secured to the extent of £1,150. The assets he rates at £11 2s., leaving a deficiency of £207 1s. 4d. The causes of insolvency he attributes to "depreciation of property and bad management."

SUMMONS under the Pharmacy Act, Ireland, has been dismissed by the Collooney magistrates on the technical ground that the register of pharmaceutical chemists, chemists and druggists, etc., produced in court was not certified under the hand of the Registrar and countersigned by the president and two members of the Council. The defendant was an unregistered person, against whom it was found that he had kept open shop for the sale of poison. It is understood that a case for the High Court will be stated immediately.

RYEN COMPANY, LTD.—Registered July 22, by L. F. Hedger, of Camera House, 82-5, Fleet Street, E.C., with a capital of £1,000 in shares. Objects: To carry on the business of chemists, druggists,

opticians, manufacturers of and dealers in all kinds of salts, acids, alkalis, drugs, medicines, medicaments, herbs, pharmaceutical, chemical and surgical instruments and appliances, toilet requisites, photographic materials, scientific, surgical, and optical instruments, etc. No initial public issue. Registered without articles of association. Registered office, Byron House, 82-5, Fleet Street, E.C.

A GREAT Temptation.—At the Liscard Police-court on Monday last, before Messrs. H. Pooley and G. H. Peers, Mary Ann Curran (21) and Margaret Dunn (47), both Liverpool hawkers, were charged with stealing a package of photographic material, value 2s. the property of Mr. R. W. F. Robinson, chemist, Seacombe. It appeared that the parcel had been left by a messenger in the smoking saloon of the Wallasey ferry steamer "Lilly" on Saturday afternoon, instead of being handed to the stagemen for conveyance across the river. It was picked up by a little girl named Frances Ann Robinson, 38, Demesne Street, Seacombe, who intended to take it to the pay-gate at Seacombe Ferry. The two prisoners came up, however, and took it from her, telling her that they would give it to the man at the gate. They did not do so, and were afterwards arrested by Police-constable White, who found them tying up the parcel in Mersey Street, Seacombe. Mr. Pooley said it was a very improper thing on the part of the ferry authorities to allow parcels to be conveyed in such a loose manner, as it caused great temptation to unprincipled persons. Prisoners were each fined 5s., with the option of three days' imprisonment.

CAMERAS as Luggage.—His Honour Sir Horatio Lloyd has forwarded to the Registrar of the Holywell County Court his judgment in an action which he heard last week, in which Mr. Foster Smith, an assistant master at the Holywell County School, sued the L. and N.-W. Railway Company for £25 16s., damages for luggage lost in transit. The action raised an important point affecting amateur photographers and all who avail themselves of the "luggage-in-advance" arrangement. The plaintiff forwarded to Nelson a portmanteau containing, amongst other things, two cameras and other photographic apparatus of the value of £17. The portmanteau was not seen again. For the defendant company it was argued that they were not common carriers of cameras, and that an extra rate should have been paid. In giving judgment, his Honour pointed out that nothing was said on the consignment note signed by the plaintiff as to the exception of cameras. In these days it was by no means an unusual thing for passengers to carry such articles as cameras for their use and pleasure on the journey, and it seemed to him that the judgment of Chief Justice Cockburn in the case of *Macrow v. the Great Western Railway Company* would necessarily cover such an article as the one in question. His Honour therefore directed judgment to be entered for plaintiff for the amount claimed, with costs.

Patent News.

The following applications for patents were made between July 18 and July 23, 1904:—

Washing Apparatus.—No. 16,077. "An improved appliance for developing and washing photographic plates, films, and prints." Henry Woodhouse Fairbrother.

Films.—No. 16,177. "Improvements in photographic films." Austin Edwards.

Shutters.—No. 16,289. "Improvements in and relating to shutters for photographic lenses and other scientific instruments." Alexander Eugen Conrady and Frederick William Watson Baker.

Camera Carrier.—No. 16,322. "A new or improved camera carrier or support." Complete specification. Henry James Thomas.

SHORTLY before ten o'clock last Saturday evening a call was received at the Manchester Chief Fire Station, Jackson's Row, to an outbreak which had occurred in the premises occupied by a photographer at 15, Market Street. A detachment of the brigade was despatched, and after a few minutes' work succeeded in subduing the fire. Considerable damage, however, was caused to the property in the dark-room, but, fortunately, the adjoining portions of the premises were untouched. The cause of the outbreak is unknown.

News and Notes.

THE Weymouth Photographic Society's monthly outing took place on Wednesday last, when about twenty-eight members and friends availed themselves of a pleasant trip to Corfe Castle.

A PHOTOGRAPHIC society has been formed at Slough with Mr. E. Oetzmann as President and Mr. G. Young as Secretary. It will be known as the Slough Photographic Society, and will meet at the Leopold Institute.

THE Derby Convention Group of 1886.—We omitted, when reproducing this interesting photograph from the Convention Handbook a few weeks ago, to credit our old friend, Mr. Thomas A. Scotton, of Derby, with the production of the negative.

WATFORD Camera Club.—The second annual open exhibition of the Club will be held in the Corn Exchange on October 26, 27, and 28. Particulars may be obtained from the Secretary, Mr. H. G. Trayfoot, 3, The Parade, High Street, Watford. The final date for entries will be October 5.

No. 11 of the "Practical Photographer" Library Series has been sent us. This number deals with landscape photography. The pictorial work of Mr. Reginald Craigie comes in for review at the hands of the Editor, and many able articles are contributed by well-known writers.

AN Exhibition of Photographic Work is announced by the Kettering Church Institute to be held on October 18, 19, and 20. There are five open classes, and the awards are silver and bronze medals. Mr. W. R. Bland will be the judge, and Mr. E. Claypole, 112 Hawthorn Road, Kettering, is the Hon. Sec.

THE "Perfected" Enlargement Tables is the title of a price list of enlargements in Bromide, Platinotype, Carbon, etc., specially compiled for the professional worker by H. Holden, of 68, Oxford Terrace, Hyde Park, London, W. All who require enlargements made at a low figure should apply for a copy of this table.

MESSRS. SANDS, HUNTER, and Co., 20, Cranbourne Street, Leicester Square, London, W.C., have issued a new edition of their useful and popular second-hand list of photographic apparatus. This list should be secured by all photographers anxious to pick up cheap cameras, lenses, photo sundries, or other bargains. It will be sent post free for the asking.

MESSRS. SANDERS and CROWHURST, 71, Shaftesbury Avenue, London, W., have sent us their illustrated catalogue of photographic apparatus. It contains a very complete selection of everything needed for the ordinary photographer, as well as several excellent lines more particularly designed for the specialist. A postcard to the above address will bring a copy.

ENTRY forms for the Ilford and District Photographic Society's Exhibition are to hand. The exhibition will be held at the Reading Room, High Road, Ilford, on November 25 and 26, and one gold, two silver, and two bronze medals are offered in the open class. Messrs. J. T. Ashby and Furley Lewis are the judges. The prospectus can be obtained from the Exhibition Secretary, Mr. H. Cole, 160, Thorold Road, Ilford.

PICTURE post cards have taken a permanent place in our daily life, and infinite skill and ingenuity are concentrated on their production. No corner of the globe has escaped the man with the camera in his tireless search for views for postcards. Hartmann Post Cards, produced and sold by F. Hartmann, of 45 Farringdon Street, London, E.C., are excellent productions, and the latest publications from this firm show the wide field covered by the series.

THE South Essex Camera Club is holding its Third Annual Exhibition in the Town Hall, East Ham, on January 20 and 21, 1906. Silver and bronze medals are offered in the open classes, and special prizes in the members' classes. The judges will be Messrs. A. Horsley Hinton, H. Snowden Ward, and Rev. F. C. Lambert. All communications should be addressed to the Hon. Sec., T. Mitchell, 180, Browning Road, Manor Park, E.

WE have received an excellent little price list of Dr. Schleussner's plates and photographic goods. The book is admirably printed, sets forth clearly the merits of the plates, films, developers, manufactured by Dr. C. Schleussner at his dry plate factory Fort-on-Main. Messrs. Thos. Christy and Co., 4, Old Swan Upper Thames Street, London, E.C., are the sole agents for the United Kingdom. A copy of the list can be had on application.

THE Hon. Secretary of the London and Provincial Photographic Association is now preparing the programme of fixtures for the winter session, and will be glad to hear from members, interested members, or friends of members, who may have subjects of interest for discussion at the evening meetings, papers on photographic or lantern slides for display. The Hon. Secretary's name and address are Mr. R. J. Kindon, Burnside, Church Road, Shortlands, Kent.

A SENSITISING Bath for Carbon Tissue.—M. Vaucamps, writing the "Moniteur de la Photographie," gives the following as conferring a high degree of sensitiveness to carbon tissue:—Bichromate of potassium, 80 grams; hot distilled water, 1,000 c.c.; bicarbonate of soda, 2 grams; bromide of potassium, 1.5 grams. Mix in the order stated, taking care that the bichromate of potassium is completely dissolved before the other ingredients are added. Care must be taken not to use the solution until it is quite cold.

IN the "Journal" of the Royal Microscopical Society for July, Dr. A. E. Wright discusses the following four methods of measuring the magnification of a microscope and its elements:—(1) use of a focussing lens placed above the ocular for bringing the emergent rays to a focus in the plane of a suitable measuring scale; (2) separate measurements of the magnifying powers of objective and ocular; (3) measurements depending on Helmholtz's formula; and (4) measurements involving the production of a fiduciary phenomenon by means of a diffraction grating.

RECOGNITION of Camaraderie.—During the recent visit of the Queen and Queen of Great Britain to Ireland, and while on their way to Trappist Monastery on Mount Melleray, several amateur photographers were noticed taking snapshots at her Majesty, who, in spite of trying to foil them as some of lesser note are inclined to do, finally turned her camera on them. The daughter of the American President takes a different course. As guest of honour at a reception at the Women's building at the St. Louis Fair recently, it is reported that she noticed an amateur photographer aiming to take a snapshot at her, and on her complaint to the chief of the hostesses she had turned out of the grounds.—"American Amateur Photographer."

YARMOUTH in London.—Some idea of the excellent effort which the Corporation is making to induce more visitors to come to Yarmouth by appealing to the eye of the stranger, through the medium of pictures, is prominently placed in the Holiday Court at the Crystal Palace, where, gathered from a visit to the Town Hall, Yarmouth, where are on view for a few days a collection of fine photographs executed on a large scale. There are nineteen in all, finely framed, and embrace all the features that have made Yarmouth so popular. They are the work of Mr. Yallop, of Regent Road, Yarmouth, and are hung on either side of an artistic panel, on which the opportunity is taken to offer a few recommendations in Yarmouth's favour.

MODERN Stage Effects.—Herr Eugen von Jemmendy, the manager of the Opera House in Buda-Pesth, is about to introduce a series of scenic innovations in Wagner's Nibelungen, which will greatly add to the realism of the performances. According to the correspondent of the "Standard," Herr von Jemmendy has invented a process whereby the movement of the Rhine waves in the Rheingarden is exactly reproduced. For the "Walkürenritt" the artist has taken instantaneous photographs of eight female circus riders dressed in Valkyrie costumes, and rode in front of a backdrop of a boarding six hundred yards in length. These are to be cinematographically thrown on the stage. The effect produced is the riders bursting out of the clouds and riding in the air. The Morgana scene in the last act of the Queen of Sheba has also been made very realistic by the aid of the cinematograph, a circus of riding the horses, camels, elephants, and Arabs, seen in the distance as a caravan crossing the desert.

THE death of Mr. F. Goodall, R.A., last week leaves a blank in the rapidly thinning ranks of the old school of workers, that newer elements to academic honours do not quite seem to fill in the public eye. It is unnecessary to speak of his pictures and their characteristics, since every visitor to the Academy at any time during the past twenty years remembers them well—works showing much trained ability, but no kind of inspiration. Mr. Goodall, however, did not confine himself to Egyptian scenes. He had always shown a readiness to turn his hand to a variety of subjects, and, just as he had changed from British rustic pictures to the Nile and the Pyramids, so he passed from those to Biblical scenes and to English landscape.

THIS year's meeting of the British Association for the Advancement of Science, to be held at Cambridge from August 17 to 24, promises to be one of exceptional interest. Copies of the programme of proceedings are now ready, and may be obtained on application to the local secretaries at Cambridge. Mr. Balfour will deliver the inaugural address in the Corn Exchange, at 8.30 p.m., on Wednesday, the 17th. The University town is a peculiarly appropriate place of assembly at a time when molecular and mathematical physics hold so prominent a place in the field of science, especially in connection with the theories of electricity and radio-activity, in the elucidation of which Cambridge professors have done some of the finest work.

THE thirteenth annual session of the National Union of the Photographic Societies of France, the twelfth session of the International Union of Photography, and the congress of the Lorraine Society of Photography took place this year at Nancy from July 18 to 25. The delegates—a hundred strong—were received at the Hôtel de Ville by Beauchet, Mayor of the town; M. Janssen, director and founder of the Mont Blanc Observatory; M. Pector, Secretary of the Photographic Union; and M. Bucquet, President of the Photo Club de Paris. The excursionists visited the principal industrial establishments of Nancy, and a grand soirée was held in their honour. Various excursions, including visits to Toul, St. Nicholas, the Vosges, and Rembouurg, filled the week's programme.

GLoucestershire Photographic Society.—A field day in conjunction with the Gloucester and Stroud Photographic Societies was held on Thursday, July 28, to Gloucester, Deerhurst, and Tewkesbury. The party embarked on the s.s. Berkeley Castle and steamed up the river. The first stopping-place was Deerhurst. This interesting ancient church and Saxon chapel was visited and a number of plates exposed. The party then returned to the boat and proceeded to the Lower Lode Hotel, where lunch was served, after which the ferry was crossed, and a short walk brought the party to Tewkesbury, where the Abbey, old houses, etc., received careful attention from the cameras. Over two hundred plates were exposed, and great credit is due to the Gloucester Society for the excellent arrangements made.

MINIATURE PAINTING.—The news that the Princess of Wales has been ordered to a young lady miniaturist to paint a portrait of the Prince George reminds one how popular this form of portraiture is becoming. Already the other four children of the Prince of Wales have had their miniatures painted—the King having them specially done to present to the Prince and Princess upon their return from their Colonial tour. A departure from the same idea are the miniature panel portraits, done in pencil, the heads alone being coloured, the drawing of the figure being left in pencil, making a charming effect. Miniatures are being used now for fitting into the links of watches. Carved ivory portraits also claim the attention of Society beauties who have grown tired of artistic photography and life-size portraits.

STREET STUDIES.—Amateurs living in great cities often bemoan their lot in having nothing to photograph as compared with those who are the possessor of the camera who live amid rural surroundings. As a matter of fact, says the "Weekly Budget," the dweller in big cities has around a plethora of material from which to build up some of the most striking photographic pictures. It is hidden from his eyes because it is so often seen; the common soon becomes the commonplace. But, given an artistic eye, there is no street in a great city which does not teem with pictorial subjects. For example, it has been shown of late what a wealth of unique pictorial material the busy eye can observe in the doings of the men who tar our roads or

asphalt our pavements. By waiting near the copper in which their evil-smelling decoction is boiled it will often happen that the ascending smoke will provide a most artistic effect.

ART as a National Asset.—The "Burlington Magazine" for August urges the necessity of better artistic training from a commercial point of view. It says:—"Have we all realised, for instance, how much France and Italy have profited in hard cash by the taste, consistency, and liberality of their patronage of art, compared with a country like the United States, where not one man in a thousand takes even a superficial interest in it? Their cities are visited by hosts of travellers and students from all parts of the world, whose board, lodgings, and railway fares alone would amount to an enormous sum annually. To this must be added the huge sales of works of art which their national reputation enables them to effect." But it is not enough, we are told, to train artists and designers. The public also must be educated to appreciate good art and to dislike bad art; and that may be done, the "Burlington" thinks, by a thorough reorganisation of our picture galleries and art museums, where good and bad work is now too often indiscriminately mingled.

BOTH at home and abroad, but more especially in their travels in foreign lands, amateurs are often anxious to secure a photograph of memorial stones let into the floors of churches or of floors themselves which are remarkable for the beauty of their mosaic work. There are right and wrong ways of taking such photographs, says a writer in the "Westminster Gazette," and perhaps a hint as to the right way will save some of my readers the disappointment of useless negatives. He says: The hint was given me by a verger of Winchester Cathedral, who was watching my efforts to take a photograph of the slab of dark stone which marks the resting-place of Jane Austen. The task seemed nearly impossible of execution, inasmuch as the surface of the stone caught the light in such a way as to make the inscription almost invisible. But the verger soon overcame the difficulty by directing me to a corner of the cathedral where stood a bucket of water and an old cloth, and instructing me to wipe the stone over with water. In a moment the inscription stood out with startling clearness, and the negative was wholly satisfactory.

MODERN Artists out of Fashion.—The gates of Burlington House closed on Monday night on this year's Royal Academy exhibition of paintings. For most of the artists, so far as the sale of their exhibited works is concerned, the results are described as "wretched," only 130 pictures among some 1,200 having found purchasers. The depression is not confined to the Royal Academy; other picture galleries tell even a worse story. A well-known Academician was questioned on the subject by an "Express" representative. "I believe," he said, "that wealthy people are limiting their picture buying to old masters. They will not look at modern pictures, simply because modern pictures are not the fashion. I often wonder how many artists can be now making the smallest kind of living. They are all driven to painting portraits, and the result is a very distressing competition, in which the weak go to the wall—and the strong go to the 'line.'" Mr. H. Riviere, the rising young portrait painter, who was also seen by an "Express" representative, threw further light on the question. "Many people buy pictures as an investment," he said, "and with the example of recent sales of modern pictures at Christie's and elsewhere before them, they are afraid of investing in modern works. Many modern pictures bought at £1,000 have changed hands recently for £50. I attribute the undoubted rage for old masters to-day to be a mere whim of fashion. Fashions come in cycles, and I have no doubt it will be the turn of modern pictures again before very long."

SOME More Over-the-Counter Stories.—Several of our customers have been good enough to send us accounts of peculiar inquiries that they had, and we are retailing them for the benefit of our readers. Says "Houghton's Monthly," One dealer tells of a customer who had always been in the habit of using matt surface gaslight paper, and had never used anything else, until one day he decided to try and make a few prints on ordinary P.O.P. Having purchased a packet, he went home to make his first experiments with a daylight printing paper. The next day he went into the dealers for some more gaslight paper, and incidentally remarked that he was going to give up P.O.P. work, as it was too slow, to say nothing of the poor weak image that resulted from a whole day's printing. The dealer thought

something must be wrong, and asked to see the prints. Then the mystery was explained; the paper had been put in back to front, the customer explaining with an air of resignation that he thought that the "glossy stuff on the back was some new sort of adhesive coating to fix the prints on the mounts." Even P.O.P. printing is a sealed book to some people. The story of the lady who expected to get a visible image when she printed gaslight paper is evidently a more common experience. For instance, we are told of one who complained that there must be something wrong, because she had exposed the paper for as many seconds as instructions stated, and then looked at it, and finding no image she tried it with a ten-minute exposure, only to get the same result. Finally, in desperation, the frame was left up close to the gas for over two hours, and, as no image appeared after all that time, the poor dealer was applied to, and asked to change the paper for a more reliable variety.

POTATOES AND PHOTOGRAPHY.—A Chinese vegetable dealer in Sydney is displaying a taste for photography. His name is Ah Sin, and one of the leading photographic dealers in the city has explained how the bland-featured Celestial came one day into his shop and invested in a hand camera, with all the other requisites necessary for picture-making. How he came to be fired with a desire to go in for photography could not be ascertained. This much, however, was certain—that although only a vegetable hawker he got to know as much about cameras as cabbages; and, mastering the chemical manipulation involved in the business, eventually became remarkably proficient in the art. Asked one day who had shown him how to take photographs, he smiled expansively, and simply said, "Oh, a fliend." Whoever the "fliend" was he certainly must have found Ah Sin a very apt pupil. On his morning rounds now, we are told, John is never without his camera. There, on top of the pumpkins and cabbages and potatoes lies the little kodak, fully loaded, and ready for the first thing that comes along in the picture-making line. But there is a purpose in John's photography, for while he takes his customers' photos he takes their money too. Potatoes and photography! A queer combination, truly, but Ah Sin troubles little about the incongruity of the thing so long as he continues to make nearly as much—as he does—out of one as the other. None of Ah Sin's fellow-countrymen, however, have yet shown any signs of becoming afflicted with the camera craze, and if cabinet-making and the grocery and greengrocery business are avenues of industry in which the Celestial is successfully competing with his European brethren in Sydney, the photographic profession need not have any fear of a Chinese invasion.

PHOTOGRAPHIC CLASSES.—The Acton and Chiswick Polytechnic, Bath Road, Bedford Park, London (Turnham Green Station), will shortly again conduct an interesting series of evening lectures and practical classes in photographic subjects. The session commences on September 26, but application must be made for entry forms at once. The instruction is in three divisions. On Monday, September 26, and subsequent Mondays until April, a course of lectures (with demonstrations and practice) will be given in pure photography, including portraiture. On Tuesday, September 27, and subsequent Tuesdays, a practical course on retouching, accompanied by illustrated lectures. On Thursday, September 29, and subsequent Thursdays, the process work will be continued, and photo engraving (the production of blocks in line and in tone) will be demonstrated in practice, but this session will be accompanied by illustrated lectures or short chats on the theory of the production of the correct line and dot; negative making by wet and dry collodion and with gelatine emulsion; various methods of etching, and an outline in the practice in making and finishing the block and proving. The classes, especially the retouching and photo-engraving classes, are limited by the space at their disposal (a tender consideration for the students, which we recommend to other Polytechnics), and immediate application should be made to the Secretary for entry forms. The first class nights named above will be free to all intending students. The classes will be open to students from any part of the county of Middlesex. This Polytechnic is governed by a Committee, which is directly responsible to the Middlesex County Council. Examinations in connection with the City and Guilds of London Institute will be held in May in the subjects of pure photography and process, and any students who desire it will be prepared for the same.

PHOTOGRAPHY OF METEORS.—Perhaps at the present time, when we are approaching, under very favourable conditions, the annual play of Perseids, which lends itself to amateur observation to great advantage than any other shower, a few hints may be acceptable to those who have had no previous experience of this class of photography. The following suggestions by T. H. Astbury in the number of the "English Mechanic" are likely to be helpful:—The darkness sets in it would be well to arrange a table or other support for the camera, which should be directed to the sky at an elevation of 50 deg. or 60 deg., and preferably towards central land. To assist identification it would be well to expose upon a constellation including some fairly bright stars. The camera should be focussed in daylight upon the most distant object available, clamped just *within* that focus. The sun would serve, but it is recommended to those who value their eyesight for telescopic work. Rapid plates should be used, and the greater the aperture the better. At about ten o'clock the plate should be exposed, and the time noted to the nearest minute. *Constant* watch must be kept upon the region selected, and, if a brighter meteor is seen cross that portion of the sky, the observer should note, as exact as possible, the points among the stars where the meteor flight appears to begin and to end, and the time of apparition. The camera should be closed after about thirty or forty minutes' exposure and the closure noted. Another plate may then be exposed, bearing in mind the absolute necessity of a *constant* watch and of exact notes. Development should be slow, and prolonged until the plate begins to darken over. Success will be indicated by a *straight* black line indicating the meteor trail, while the stars will be represented by lines more or less curved. Though the chances of success are greater on August 10 or thereabout, observations secured on the evenings of the week preceding and following would be of still greater value.

Mr. E. LANDOR, one of the cleverest animal photographers, recently disclosed the secret of his successful cat studies to the readers of "Cassell's Penny Magazine." After dispelling all the notions that the taxidermist and hypnotist are responsible for some of the poses, he proceeds to show that as much depends upon the temperament of the cat as on the fitness of the operator and his apparatus. The cat's nature, whims, and fancies must be studied and patience, and persuasion, not force, will do the rest. The selection of the cat is a most important matter, the nocturnal serenader posing few qualities that make him suitable for a study. Kitten is the best sitters, but they also require patience. Mr. Landor says that owing to their restlessness there is nothing to do but to wait, in fact, until the table on which they are placed is the only unexplored place in the room. Of course, that is to be examined, but by this time there is a dawning hope that something may be done. Here comes in the use of a confederate. It would be utterly impossible for one person to attend to both kitten and camera. If the former were open to reason, and could be persuaded to understand what was required of them, things would go smoothly, but they are such flighty morsels. Just as their attention appears to be fixed on the object before them, a sudden thought strikes them that a particular spot in the room has been overlooked, a bolt is made for it. Then comes a regular stampede, and the confederate has hard work to prevent a total evacuation of the table, and all the process of arrangement has to begin again. Patience, therefore, is not only a virtue, but a necessity. A means for holding the kittens' attention must be found, and to this end an assortment of objects is necessary, for what will attract one may not appeal to the other. They must be led to believe that the photographer is their best friend and not an evil-disposed person. The background must be of a general character, in order that it may with any slight alteration in the pose of the subject allow of similar alteration in the title of the study. The shutter must at all times be within reach of the operator, as a single second may make all the difference between success and failure. Among the most attractive objects Mr. Landor suggests a bunch of Pampas grass. If such articles as a metronome or a pendulum are used to attract attention, the vibration must be comparatively slow as the kittens are bound to nod their heads and eyes in following the object backwards and forwards. It is needless to say that stereotyped instructions can never be carried out to the letter, and that much of the success in this fascinating branch will depend upon the operator's skill and resources.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Society.	Name of Society.	Subject.
Bowes Pk. and District Ph. Soc.	Outing.	Potters Bar, Mimms, and Shenley.
Southampton Camera Club	Print Competition.	
Nelson Photographic Society	Time Development.	Mr. Woods.
North Middlesex Photo. Soc.	Informal Meeting.	"Portraiture" and
Watford Camera Club	Competition — "Figure Studies."	

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

MEETING held July 28. Mr. P. R. Salmon (Author of a Photographic Trip to Greece and the Holy Land) in the chair.—Mr. Teape exhibited three plates exposed under Chapman Jones Plate Tester, No. 1 Westendorp backed, No. 2 Seed Ortho, No. 3 Imperial. No. 1 showed considerable halation, showing that the burnt sienna backing is not efficient, the sensitiveness to red and yellow is very great. No. 2 showed sensitiveness to green and yellow, but not much to red. The curious part is that the colour sensitised plates have exactly the same sensitiveness to blue that the ordinary plate No. 3 has. Mr. A. Bedding had also found that blue sensitiveness was the same for ordinary and colour sensitive plates. Mr. A. L. Henderson gave an interesting exhibition of slides illustrating Athens, its monuments and ruins. The Chairman said that the slides shown were probably the best shown in that room, an opinion that Mr. Freshwater shared. The Hon. Secretary announced that the winter programme was in course of compilation, and suggested that members undertake to open discussions instead of reading papers, and hoped that intending speakers would send in their applications at once.

The Paris Academy of Science has awarded the Lecomte prize of 10,000 francs for the most interesting work in physical science. Professor Blondlot for his researches on the N-rays.

Alcohol for Industrial Purposes.—The Chancellor of the Exchequer has been asked by Colonel Denny whether any facilities are given for the manufacture of alcohol for industrial purposes under special regulations, so as to make the duty as small as possible. He has also been asked by the same hon. member what is the minimum duty charged upon alcohol after denaturation, and how this duty compares with that exacted in Germany, France, Belgium, Holland, and Italy upon spirit used for industrial purposes, including alcohol for the manufacture of dynamite. From the lengthy reply made by Mr. A. Chamberlain it appears that there are no special facilities given for the manufacture of alcohol used for industrial purposes. There is no duty charged upon spirit of British manufacture used for methylation, or for purposes sanctioned under Section 8 of the Finance Act, 1902, but upon foreign spirits so used a differential duty of 5d. per proof gallon is charged. About three years ago the Board of Inland Revenue obtained through the Foreign Office information as regards the terms on which alcohol may be used for industrial purposes in the principal countries of the Continent and in the United States of America; and, so far as they can judge from the returns then made, duty is charged upon alcohol so used in any of the countries named. However, says Mr. Chamberlain, difficult to say whether this would be true in all cases, as in some countries the tax on alcohol is a single tax, but a combination of several duties chargeable at different stages of manufacture or of sale, and it is not certain that any of these are remitted in all cases of use of alcohol for industrial purposes. The Chancellor of the Exchequer, in the course of his speech in a lengthy debate in the House of Commons on Monday last, said the fairest and wisest course would be to appoint a committee to go into the whole question of duty-free alcohol. This matter will be watched with considerable attention by the photographic fraternity, alcohol being of such considerable use and importance in various photographic manufactures and manipulations.

Correspondence.

- * * Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.
- * * We do not undertake responsibility for the opinions expressed by our correspondents.

ORTHO PLATES.

To the Editors.

Gentlemen,—Your article in "Ex Cathedra" last week re "Ortho Plates" recalls the fact that many years ago, when I was first in the throes of emulsion experimenting, I was the means of introducing in the market a perfect form of separator made in this country. On referring to my notes I find the following formula (it may interest experimenters) given to the members of the L.P.P.A. in 1887.

"Isochromatic plates:—To each ounce of finished emulsion, add 31 of ammon carb. solution (5 grains to the oz., which is saturated with washed carb. of silver, and 30 minims of ethrosenes, 31 to oz. This may be made in gelatine, and the supernatant liquid, etc., removed by the separator. This gives good results without a screen."

—Yours truly,

A. L. HENDERSON;

Brighton, August 2, 1904.

DEVELOPERS WITH ACETONE.

To the Editors.

Gentlemen,—With reference to the article on page 668 of your last issue under the above title, allow me to point out that Mr. T. Thorne Baker, F.C.S., is quite wrong in stating: "According to Eders-Jahrbuch for 1903, C. W. Czapke experimented previously to Lumière with acetone"; what is said is, "C. W. Czapke versuchte das vor längerer Zeit von Lumière und Seyewetz empfohlene acetone, etc." which is more correctly translated by, "C. W. Czapke tried acetone, recommended a long time ago by Lumière and Seyewetz," which puts a totally different complexion on the affair.

I should also like to state that I fail to see how the diagram reproduced on p. 669 illustrates "the difference between the character of gradation obtained with two H. and D. strips," considering that one was developed for eight minutes and the other for only three; surely, to have true comparison, the times of development should be the same. As the diagram now appears, A strip had only an exposure of six, while B had 32. If this was so, then the conditions of experiment were not fair; if the exposures were the same, then the times of development should have been the same, otherwise the conditions are not fair, and the result tells us nothing.—Yours faithfully,

LEONARD SMITH, F.C.S.

Norwood Junction.

TRADE LISTS WANTED.

To the Editors.

Gentlemen,—I venture to ask if you will favour this Society to the extent of mentioning in your journal that we are desirous of bringing our register of price lists, circulars, and booklets from firms in the United Kingdom who manufacture and supply photographic material, lens, outfits, etc., thoroughly up to date, and that we shall be glad to receive new issues of lists from time to time. All such will form part of our reference library.

Thanking you in anticipation,—I am, dear sirs, yours faithfully,

T. R. PRATT, Hon. Secretary.

Photographic Society of India,
40, Chowringhee, Calcutta,
July 12, 1904.

A CHILD'S Freak.—On Saturday evening the two-year-old daughter of Mr. Howells, photographer, of Windsor Road, Neath, in her childish ignorance, swallowed the contents of a bottle containing corrosive sublimate. Happily the act was observed, and a cyclist messenger was despatched for Dr. Lewis, who jumped on his own cycle, and within a few moments was administering an antidote. The child is likely to recover.

Answers to Correspondents.

- All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.**
- Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.**
- Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.**
- For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.**

PHOTOGRAPHS REGISTERED:—

- F. Higdon, 129, High Street, Street, Somerset. *Photograph of Lightning.*
- G. W. Morgan, Cairnquhuen, Aberdeen. *Photograph (Combination) Containing Officials and Stationmasters of the G.N. of Scotland Ry.*
- J. W. Garratt, 9, Station Road, Ashley Down, Bristol. *Photograph (Combination) containing Muller's Orphanages, and Two Groups of Children and Attendants, Ashley Down, Bristol.*
- T. Wallace, Eskbank Road, Dalkeith. *Photograph of Exterior of Newbattle Church, Midlothian. Photograph of Interior with Communion Plate.*

A. SOPER.—MESSRS. Kelly, Holborn, London, publish such a list.

ADDRESS WANTED.—CHESHIRE asks: "Will you kindly give address of Mr. A. Pumphery, photographic publisher, late of Stanhope Street, Birmingham, to which address we wrote a week ago, but had letter returned, marked 'Gone.'" In reply: The above is the only address we know.

ADDRESS WANTED.—Can you tell me the address of Mr. H. P. Robinson, and of the publishers of his book, 'The Studio and what to do in it'?" In reply: Mr. Robinson has been dead some few years. His books may be had through any bookseller, or through any of the photographic dealers.

INDIAN JOURNAL.—SENIOR AND Co. ask: "Will you kindly give us the name and address of the 'Indian Photographic Journal'?" In reply: There are two Indian Photographic Journals. They are, "The Journal of the Photographic Society of India," 40, Chowringhee, Calcutta, and "St. Veronica," 2, Marquis Street, Calcutta.

COPYRIGHT QUERY.—HOLDER OF COPYRIGHT asks: "Will you please answer me the following question, viz., That a photographer having issued a series of picture post-cards of which he holds the copyrights, can another person take the same views and also issue post-cards and sell in opposition provided the second person takes the negatives himself and reproduces from his own work?" In reply: Yes, certainly he can. There is no copyright in the scenes.

DEALERS' TERMS.—CAMERA asks: "Will you kindly inform me how to procure dealers' terms, as I wish to open a shop to supply photographic materials?" In reply: We advise you to write to one of the large wholesale houses, such as Houghton's, Marion's, Fallowfield's, or Butcher's, whose addresses will be found in our advertising pages, stating your intentions and requirements. They will be pleased to open an account with you and send you trade terms on receipt of satisfactory references.

LENS QUERY.—E. NEGUS says: "I have a half-plate stand camera, which is a very good one, and when photographing a big group I fail to get them all in focus. When I've got the front sitters in focus the back ones are out of focus. Would you be good enough to state the reason? The lens I use is marked 'F.6 Focus 7-25 in.' Would you kindly tell me when taking a snap-shot of a procession with same camera how I am to focus to get it all clear?" In reply: The only way by which you can get objects situated in different planes in focus on the plate is by stopping the lens down. The one you are using

is short in focus for the half-plate size and will require a stop to get all parts sharp.

COLLOTYPE.—G. M. AMBROSE says: "I have been trying to work ColloTYPE process for post-cards, as per instructions given in 'B.J.' a few weeks ago. I have carried them out to needle's point. The results are all alike (mottled). I say what you think is the cause and how to remedy. I used six different plates of all the enclosed cards; they are all mottled. I have used glass of all grades and the results are all alike." In reply: Unless we saw you working we could say where you have gone wrong. You must bear in mind that the ColloTYPE process is not one to be learnt by a brief article and experimenting with half-a-dozen or so, though it is a simple process when once learnt. We should advise you to get a work devoted to the subject such as "Practical ColloTYPE," by A. W. Fithian.

COLOR PHOTOGRAPHY.—ELERHAS writes: "Reference page 'B.J.' of January 1, 1904, article by Mr. J. Rheinboldt 'Photography in Colours,' would you kindly inform me Where can such a screen of 300 lines to the inch with 0.001 inch interspaces be obtained? (2) What would be the price for a screen, say, 2½ inches square? (3) Would a Thorp Cell Diffraction Grating be suitable, or must the screen be made of glass? (4) What is meant by a 'decentred lens'?" (5) Would be the total length of apparatus if A had a focal length of 5 inches and B of 6 inches?" In reply (1 and 2) Messrs. Peacock and Co., Farringdon Road, would probably supply such a screen and quote you price. (3) We should think it would be better to use a screen of glass. (4) We should suggest that you employ the lens and prism as the writer seems to give that system the preference. (5) This will depend upon the size the picture is made, whether enlarged or reduced.

COPYRIGHT QUERY.—J. T. B. writes: "I should be obliged if you can advise me on the following. Two months ago I registered four photographs, which were views of this town. Since then these photos have been copied and reproduced as collotype views, without my consent, by a stationer in the town. I told him I should take proceedings against him for stealing them, but he told me I could not prevent him, and he would continue to sell them. I consulted a local solicitor, who informed me that I could not get an injunction to prevent the stationer from selling them for less than about £60. I would like you to inform me if that is so? For I am loth to believe that after seeking the protection of the Copyright Act, I should be compelled to pay such a sum of money to defend myself from such piracy." In reply: If you hold a legal copyright in the pictures you can certainly prevent the sale of the pictures, also recover penalties, damages, etc. We should advise you to consult a solicitor who is well up in the law of copyright. You should bear in mind that it is the loss of the suit who has to pay the costs.

With this number of the JOURNAL is presented a key list of group of members of the Nineteenth Annual Photographic Convention of the United Kingdom assembled at Derby the week July 11th to 16th.

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The British Journal of Photography

The Oldest Photographic Journal in the World.

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THE BRITISH JOURNAL OF PHOTOGRAPHY.

No. 2310. VOL. LI.

FRIDAY, AUGUST 12, 1904.

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THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1905.

Edited by THOMAS BEDDING, F.R.P.S.

The forty-fourth annual issue of THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC will be published on December 1. This year's ALMANAC reached a total of 1,604 pages, and the entire edition of 25,000 copies was sold out before publication. Of no other photographic book ever issued a two such unique facts be recorded. The edition for 1905 will also consist of 25,000 copies.

The striking favour with which past ALMANACS have been received is the surest proof that the lines upon which the publication is produced meet the requirements of its readers and supporters. Upon such lines we propose continuing the volume for 1905. At the same time, we shall be pleased to receive and consider suggestions for increasing the value of the ALMANAC in directions which may occur to our readers as susceptible of improvement.

The ALMANAC for 1905 will appeal to photographers all the world over as a daily reference guide in practical work. The standard matter and formulæ will be revised and added to where necessary, the year's advances in theory and practice will be recorded, and wherever practicable new features of an informative nature will be added.

*** IMPORTANT NOTICE.**—The attention of advertisers is specially directed to the announcement that this year's entire edition of the ALMANAC (25,000 copies) will be placed in the hands of dealers and the trade on December 1 next—a fortnight earlier than usual, so as to be well in advance of the Christmas publication season.

EX CATHEDRA.

The British Association Meeting at Cambridge.

Of late years the papers read at these meetings have not contained much to interest the photographer; but at this forthcoming meeting there is quite a plethora of subjects allied to photography or interesting to photographers. Thus there will be a discussion on "The Radio-Activity of Ordinary Matter," one on "Standard Wave-Lengths of Light"; one on the "Units of Meteorological Measurements," in view of recent promised developments in this direction, will not be without interest. Professor Larmor is to make a communication on the laws of radiation in the solar system, and Professor Rubens on the optical qualities of metals. Professor Wood is to contribute papers on anomalous dispersion and colour photography. A popular afternoon address on radiation in the solar system is promised from Professor Poynting.

* * *

Discovery of an Alleged Old Master.

Pictures by the Old Masters are from time to time being found in most unexpected places. But it does not always turn out that all that are alleged to be by them are genuine. The latest discovery, according to a paragraph that has been going the round, is that an oil painting of "Christ Appearing to Mary after the Resurrection," believed to be the work of Vandyck, has been discovered at Grimsby. Upon the canvas the signature, "Vandyck, 1617," was found painted, in Old English characters, on the fabric beneath the corner of the wooden stretcher. This, of course, may be a genuine Vandyck, and if so we congratulate its owner. There is no question that there are many old and very valuable pictures in existence, often in humble dwellings, upon which their owners set no value, simply because they are unaware of it. For example, one may have been handed down from generation to generation, and simply looked upon as something to fill wall space. Then, perhaps, some one comes along, sees it, and purchases it "for a song," and afterwards sells it for a very substantial sum. But such cases are rare nowadays; still, they occasionally occur.

* * *

The Camera in the Auction Room.

"The worth of anything is just as much as it will bring," wrote Butler some hundreds of years ago, inspired by the muse of Ludlow Castle, well remembered by the Shrewsbury Conventioners, and if we are to apply the proposition to a recent incident it would show a marvellous depreciation in the photographer's stock-in-trade. It is not generally known that the railway companies hold periodical sales of the various articles left in their carriages by careless owners, and remaining unclaimed for twelve months; and

it is astonishing what bargains are occasionally to be picked up, if a bargain-hunter cares to wait till something "turns up" that meets his fancy. There has recently been held one of these auctions, one particular lot in which recalled to our mind the couplet from *Hudibras* just quoted. After a number of "lots" had fallen to the hammer, from a sackful of odd gloves to a brace of umbrellas, there was one of mixed character, the descriptive list of which included a number of useful articles of everyday life, and ended with a "valuable photographic camera." The whole lot changed hands for 23s.1 However, perhaps the "valuable" was merely the auctioneer's playful mode of describing the instrument.

Photographers A natural sequence of ideas leads the mind from the question of depreciation and Income Tax.

to thoughts of the man whom few care to see—the income-tax collector, though as regards this we may say we once knew a gentleman who said he enjoyed paying income-tax! There have been exhibitions at the Aquarium—now shorn of all its ancient glories—who, amongst other feats, appeared to enjoy a meal of broken bottles and window panes. *Chacun à son gout*, and the taste of few of our readers, we opine, will lie either in welcoming the income-tax man or ingesting spoonfuls of glass. The thought that the course of our remarks suggested to us was that, however much a photographer's stock-in-trade became depreciated—those who deal in photographic materials know the extent of this—he could make no claim for reduction of his tax in consequence, that being a question of capital, not of income, and, similarly, in the highly improbable event of the said stock increasing in value, his assessment could not be increased therefor. But this particular aspect of the subject is the least important of those presented to the professional photographer, especially in times such as those we are passing through. There has undoubtedly, to use the commercial jargon of the day, been a slump in photography for some time past, and one which at present does not seem likely to end. Many businesses which, to our knowledge, have for some time been carried on very profitably, showed in last year's balance-sheet an actual loss instead of the accustomed credit balance. Yet the unfortunate photographer has had to pay, for, as ought to be generally known (but which is not), the assessment for income-tax is founded on the average of the preceding three years' profit. Hence, though a man may find when he makes his accounts up that he has worked at a loss, his tax still is called for, and has to be paid, unless, indeed, he is so forward with his bookkeeping as to discover this in time to present his case to the surveyor before the tax is paid. But, even though the loss might not be great enough to cause the three years' average to bring him within a claim for entire exemption, or even partial exemption, the law has provided an important relief. Anyone suffering such loss in the working of his business for the last year may throw over the principle of average and elect to present the accounts of the year of loss only; then if he can prove to the Commissioner's satisfaction that this loss did occur, he is entitled, upon claiming return in due form, to have the whole of his tax returned. We have been reminded of this by a professional man with whom we have been recently associated. His profession is a most novel one, and there are very few who have taken it up—it is that of an "Income Tax expert," his business being to aid people in obtaining a return of tax paid, but for which they are not really liable, and we have been surprised by his account of the many ways in which his services have been required, and of the difficulties placed by the officials in the way of applicants for such return. *Verbum sap.*

Mirage; or Fata Morgana.

The "Standard's" Berlin correspondent telegraphing one day last week, says several cases of mirage, or fata morgana, have been seen in different parts of Germany. He states that at Friedrichstadt the inhabitants were astonished to see, during evening a day or two before, the reflection of a sea, studded with numerous islands, in the sky, and that the spect was very vivid, and lasted for twenty minutes. Also in Warnemünde, shortly after sunset, a whole town, with houses, towers, etc., was observed just above the horizon. The outlines of the different buildings were very sharply defined for about an hour, when the vision gradually disappeared. Since then, letters from correspondents have appeared in the same paper, saying that similar phenomena have appeared at different times here, at Hastings, Guernsey, for example. Now mirages are by no means uncommon in the Alpine districts and other places, it seems a pity that, as a mirage when it appears lasts for a considerable time, it has never been photographed; there should be no difficulty in the matter. Yet we have never seen a photograph of the fata morgana. It would, of course, be very easy to produce a "fake" photograph of a mirage by printing in from a second negative an image on the sky of a print from the first. Indeed, very fair imitations of mirages are sometimes accidentally obtained when two exposures are made on the same plate. However, it would be exceedingly interesting to see a genuine photograph of a mirage, and it should be easily obtained when one is seen, for it usually lasts long enough for an apparatus to be procured, if one does not happen to be on hand just at the moment.

National Art Competition.

There is no question that art and art teaching are spreading in the United Kingdom thanks in great measure to the Board of Education. This is now on exhibition at the Victoria and Albert Hall prize-winning works sent up by schools of art and classes all over the Kingdom. The gallery, it may be mentioned, in which they are shown is an upstairs room of the Indian Section in the Imperial Institute Road. The works sent in for competition this year were about a third less than last year; but, notwithstanding that betwixt forty and forty-one thousand had to be weeded out, and it was found that a larger number were found worthy to compete than was the case last year. It is noteworthy that this year there were nine works that were up to the medal standard, whereas only four reached that standard last summer, and five in the previous competition. In this year's competition modelling from the antique and from Nature met with much approval on the whole, two medals were awarded to modelling of design. It is a little strange to see from the report of the judges that for eleven years no drawing of a full-length figure has come up to gold medal standard. Mere studies surpass even last year's good show, but not even silver medal has been arrived at in paintings of heads from life, and a few of the flower and still-life paintings were found worthy of prizes. It may as well be mentioned that the chief purposes of the schools of this competition is to further the study of crafts, and, naturally, attention is directed to the design of designs for textiles and the like, and in some direct there were marked improvements—in others not. Students at the Royal College of Art ceased to enter national competitions, there has been no means of judging their attainments. These, however, are found, now their work is collected in the iron buildings behind the Natural History Museum, to be of a high order, embracing almost every kind of design, from large mural lunette to the daintiest laces. As might well be expected, there is a more general feeling of certainty and more maturity

work of the students of the college than in those of schools. Anyhow, those of our readers who can spare time to visit the two shows at South Kensington will well to avail themselves of the opportunity, for they assuredly come away with the satisfaction that they have learnt something to their advantage. Art amongst photographers is none too prominent.

* * *

During the Exposure. In a lecture delivered before the Photographic Association of Wisconsin on the "Use and Care of Photographic Lenses," which was reprinted in our last issue, Mr. L. F. Deardoff describes what he terms a "new" invention of his in photographic lenses. The new (?) invention consists in means of altering the focus of the lense during the exposure of the picture so as to obtain a certain amount "diffusion of focus" in the image. This the lecturer explains about by altering the distance between the components of the combination, causing them to advance or recede from one another, and thereby lengthening or shortening its focus while the picture is being exposed. Now his idea of obtaining the so-called diffusion of focus is not quite so new as Mr. Deardoff seems to imagine. As a matter of fact, it is nearly as old as photography itself. Our older readers will remember that in the year 1866, at the annual meeting of the British Association, and a little later on at the London Photographic Society (now the Royal), the late Mr. Antoine Claudet, then in business in Regent Street, described a means of getting a diffused focus of the image in precisely the same way as by the new (?) method of Mr. Deardoff. But the idea was not new then as Mr. Claudet surmised because it had been applied by the late Rev. J. B. Reade in 1851. At the time Mr. Claudet brought the subject forward there was considerable discussion on its merits—pro and con—as will be seen by reference to our volume for 1866. Claudet's method was brought forward specially with reference to portraiture, but it did not meet with much favour in practice, for in the September of that year the late Mr. J. H. Dallmeyer patented, and shortly after issued, his patent portrait lens by which any amount of spherical aberration could be introduced at will by separating, more or less, the components of the back combination of the instrument. This lens is at the time the one most in general use amongst the highest class portraitist. At the present time it is a little difficult to see how Claudet's arrangement or Mr. Deardoff's which is the same—could be applied in practice. At the time it was introduced the wet collodion process was in vogue, and the exposures in the studio ranged from anything between ten or fifteen seconds to a minute or more; then there was ample time for the alteration of the focus of the lens. Now with the brief exposures required with gelatine plates the conditions are quite different, and one can hardly conceive how the Claudet arrangement could be efficiently applied in practice.

* * *

Weather forecast. Many a photographer must have mentally exclaimed, as he hesitated about starting from home with his camera on account of the doubtful look of the sky, "Oh, if those newspaper forecasts could only be trusted, how valuable they would be!" He knows that they are right sometimes; as a matter of fact, they are right nearly nine times out of ten. But that is not enough. If you have a servant who is generally trustworthy, but indulges in a mendacious statement every tenth time he opens his mouth, you naturally hesitate to give credence to anything he

says. So it is with these forecasts; they may be right, but at the same time on one particular occasion the temptation to lie will be too strong for it, and the forecast leads you astray. It has long been known that the weather bureau of New York is much more trustworthy than ours; but this is not due to any greater virtue on the part of the officials, but is merely the accident of geographical position. For some reason best known to Dame Nature, the various changes in the meteorological conditions which we call "weather," travel over the surface of the earth, from west to east. New York has to its westward an enormous continent, and the wires bring from very distant places warnings of what is coming along in the neighbourhood of the clouds. And the message travels so much faster than the storm king that news of his majesty's approach reaches New York many hours before the rustle of his presence becomes evident. But our little country is flanked by a big ocean, upon the surface of which it would be quite futile to attempt to erect telegraph posts. Hence our meteorologists have been handicapped by no fault of their own, and we can only wonder that their forecasts have been as accurate as they are. But now a new day is dawning for the weather prophet, for the wireless telegraphic system makes it possible to receive details concerning the weather from the very middle of the Atlantic. Some time since a committee of scientific experts endeavoured to prevail upon the British Government to test "the efficacy of wireless telegraphy in giving advance information of the condition of the weather over the Atlantic." Of course, the Government took no notice; they are far too busy over party squabbles to bother about such a trivial thing. It was left to the Press to take the matter up, and the "Daily Telegraph" has had the enterprise to become the pioneer of the new system. By arrangement with the Marconi Company and with the Atlantic Steamship Companies, messages are to be sent daily to Fleet Street from ships a thousand miles away. Meteorologists will, by this means, learn the state of the barometer, the thermometer, the description of weather, the state of the sea, and other oceanic particulars likely to affect the weather which is on its way to our shores. With this new and potent addition to their present resources, the Meteorological Office ought to be able to give us most reliable information as to coming events, and not among the least grateful to the "Daily Telegraph" for its public spirited action will be our photographic friends, whose work is so much affected in various ways by climatic conditions.

* * *

On the Cheap.

The men who have the merit of bringing the halftone block to its present forward position have it on their conscience that they have been the means of foisting upon public attention a huge amount of mediocre illustrated literary matter. For a long time these blocks could not be printed so as to make a presentable appearance, except at huge expenditure on account of superfine paper and ink. But now these difficulties have been overcome, and the blocks are thrown at us from every direction. As a case in point we cite a certain small journal with a big title which has been sent to us from the Midlands, a perusal of which has occasioned us both amusement and instruction; we have gained the first from a study of the pictures, and the second from reading a notification on the front page which ingenuously shows how cheaply a publication of this sort can be run. The matter is of interest to photographers, because a weekly photographic competition forms part of the scheme, and those who are in the habit of sending pictures broadcast to publishers should be warned that care is necessary in fully understanding the conditions upon which those prints are

received. The notice referred to we will take the liberty of reproducing in condensed form, but for obvious reasons we do not give any names. The proprietors offer a prize of half a guinea for the best photograph sent in, and it must be the work of an amateur. Possibly the proprietors are aware that professionals would not care to compete, especially when they note the concluding paragraph of the advertisement, to which we shall presently come. A similar prize is offered for the best drawing; another half guinea for the best report of a sermon (500 words); and still another for the best original article, short story, or essay not exceeding 1,000 words! It is said that the most important part of a lady's letter is often to be found in the postscript, and this is certainly the case in the present instance, if we regard the concluding paragraph of the notice as such. We give it in its entirety:—"All photographs, drawings, and literary contributions sent in become the property of the proprietors, who reserve the right to reproduce the same." That means in plain words that, quite irrespective of any prize or other remuneration, the proprietors claim as their own any photograph or literary matter sent to them. We do not think that they will get many persons to contribute on these "heads I win, tails you lose terms," and from a general survey of the publication—which has been in existence for more than three years—we gather that most of the pictures are veiled advertisements, which, of course, are paid for in another way. Another point we note is that, in the allocation of these so-called prizes, the insignificant half-guinea is generally split so as to be divided between two competitors. Now let us see how this scheme works out for the proprietors of the publication. For an expenditure of only two guineas they get two original photographs, two original drawings, two reports of sermons (filling a column of space) and two stories, or articles, filling two columns. Those may be regarded as their legitimate toll on the credulity of their patrons. But beyond this two guineas' worth of literary and pictorial matter, they have all the stuff that is sent in which does not gain a prize. Possibly most of it is only fit for the waste paper basket, but this does for "padding," and this is quite evidently its fate in the case before us.

Newspaper Science.

The mistakes made by the journalistic scribe when he endeavours to soar beyond the limits of "the daily round, the common task," are not quite so absurd as they used to be before the amateur photographic boom. For the camera has brought with it a little chemical, optical, and other smatterings of knowledge, and has done good service in teaching people how to think out many a little problem. But even now, when there is so little mystery about the camera and its belongings, we find the most ignorant statements made in print by those who should know better. A writer in "Household Words" lately tried to impress his readers by stating that every time they took a photograph, or had their portrait taken, they were brought into intimate association with the explosive called "gun-cotton," because the apparently harmless dry plate had a coating of collodion, which was simply gun-cotton in solution! Next, please. An article recently appeared in "Answers" with the heading, "Taking Microbes' Photographs," and for utter imbecility we think it would take first prize. This is how it is done:—"The living germs to be pictured are put in a lantern slide (sic) in blood, or water, or other suitable medium, and projected on a screen, just as they might be by a physician giving a lecture, and showing to the class the actual living germ and its habits." We are next informed that while this sanguinary exhibition is going on a cinematographic film is taken of it, "the resulting total magnification being six millicm. Magnified to the

extent named, the germs of all diseases . . . are seen born, moving about, growing, giving birth to other germs, and dying, just as they do in real life." The idea of a dying just as it does in real life is an Irish bull of the best breed, and is only equalled by the supposition that blood is a suitable medium for the lodging of microbes, whilst their images are projected on a screen to be photographed at cinematograph speed. Some of the "photographic notes" contributed to provincial journals will raise many a hearty laugh if they were only published in the columns of one of the so-called "comic" papers. We are told in one of these gems of scientific accuracy that hypo is so cheap now that it pays to make up a quantity of solution, but that the mixture should be heated with hot water. It is a mistake to use cold water, for the temperature of the solution falls to such an extent that it is very slow and unsatisfactory." The writer seems to be under the impression that the fall of temperature accompanies dissolution of hypo crystals persists, and that a solution made with cold water will for ever hover about the freezing point. What an extremely useful salt it would be this hot weather if such were the case. One example of newspaper science is afforded by an evening paper, which lately gravely told its readers that dealers in spurious "antique" furniture were breeding worms in the order that the chairs and tables might receive the mark of age. But he did not stop here. He went on thusly:—"If the worms were allowed to eat too freely of the table leg, it would become unable to bear the weight imposed upon it." So the enterprising dealer employs X-rays to kill them in their holes. We are glad to hear about this, for hitherto we have not regarded the dealer as a man at his true value. Next time we traverse Tottenham Court Road we shall raise our hat at every man we pass, for we shall remember that the seller of tables and chairs is also a man of scientific attainments.

THE OPTICAL CONSTRUCTION OF MODERN CAMERAS.

PHOTOGRAPHIC lenses have reached a high state of perfection, but it is a curious fact that the construction of cameras, optically considered, cannot, as a rule, be equally satisfactory. A good deal of attention has been devoted to the provision of mechanical devices for keeping the plate vertical, by means of the swing-back, plumb-line, spirit-level, but it appears to have been largely overlooked that the position of the lens is at least equally important. It is an indispensable condition, if equality of definition and a truthful representation of the object photographed are desired, that the axis of the lens should be perpendicular to the plane of the image. In the majority of modern stand cameras this requirement is very far from being met. To take a few typical examples, there is a type of camera in which the front slides loosely on brass guides, in the baseboard or extension frame, and is clamped tightly in position by milled screws at the top, or in some cases the sides. It is evident at glance that the squareness of the front in relation to the plate depends greatly on the judgment of the operator, and that the chances of its not being straight are numerous. It must be remembered, too, that quite a slight deviation in the position of the front will throw the lens seriously out of centre. In some of the more recent patterns of cameras, the front is hinged to the extension frame, which at any rate disposes of lateral movement. The swing front, however, which usually accompanies this arrangement, makes it a matter of great uncertainty whether the lens is axially perpendicular, unless spirit levels are used on both the front and back.

There are many photographers who seem to hold the notion that so long as the back of the camera is carefully levelled, the position of the lens does not much matter. This is quite a delusion, and, as a little reflection will show, self-contradictory. It is true that, in architectural photography, it is often necessary and permissible to tilt the camera, and therefore the lens, in order to include elevated portions of the picture. This is, however, an exceptional means of meeting a special difficulty, rather than a plan to be deliberately pursued. Uniform definition has generally to be secured by stopping down, and the lens axis is commonly at right angles to the plane of the object, although not perpendicular.

The demand for portability and lightness has had a great deal to do with the present unscientific methods of camera construction. The old box-form apparatus of the prototype, with its sliding body serving to keep the lens perfectly square and parallel to the front, comes infinitely nearer to satisfying the demands of the optician than most of the elaborate contrivances now designed. It would seem to be preferable, on constructional grounds, that the front of the camera should be rigid and fixed, and simply the usual slide for the rising and falling movement. All other adjustments should then be arranged at the back, including focussing. The ordinary form of movable back, which slides along the baseboard, is often difficult to get level; a rackwork arrangement for securing any degree of extension would certainly be more desirable. The hand-camera worker who uses a fixed-focus apparatus has an advantage in this respect, for the lens is mostly mounted with great nicety. Even in many of the focussing cameras the optical arrangements leave little to be desired, although it must be admitted that in some of the cheaper varieties there is room for improvement. As much as can hardly be said of certain makes of folding hand-cameras, which are so designed that if the lens is ever slightly square to the plate it is more by a happy accident than otherwise. It may be said, as a rule, that the more intricate and delicate the apparatus, the greater possibility there is that the optical arrangements are questionable. This is not always an inherent defect in the instrument itself, being frequently developed by strain, acting on one part more than the rest. And this introduces another important question. A camera, no matter how perfect or strong it may have been originally, tends, like everything else terrestrial, to deteriorate with time and use. If this is not only a consideration of a little less polish, or a few more scratches and dents here and there, it would be of small consequence, but, unfortunately, it sometimes takes the form of warping or twisting. Still more unluckily, this objectionable trait often chooses to manifest itself in just the very arts where it is least desired, namely, in one or other of the camera movements. This is a frequent source of imperfect optical adjustment, in many cases entirely overlooked, until the erratic performance of the lens, in connection with some important work, possibly draws attention to it.

While dealing with this subject, there is another point which requires notice; it concerns the lens flange. In some cases, where the worker screws this on himself, it is not at all uncommon to see it attached in a most slovenly fashion, with screws of different sizes, or even, be it whispered sadly, with tacks. Now, it will not be attempted to deny that, however inartistic or slipshod such methods of workmanship may be, they serve their destined purpose if the flange is properly fastened. As might be expected, however, one deed of carelessness leads to another, and will perhaps happen that a rough edge left from hacking out the circular hole in the front with a blunt pen-knife, a small lump of grit on the surface, or some similar cause, will result in the flange not lying flat. As a conse-

quence, the lens is doomed to a permanent crookedness, which, however slight it may be, is still undesirable. It is occasionally noticed that the screw threads of the lens and flange are not axial to the mount, so that the objectives does not screw on straight. This, however, is a matter of rare occurrence, and should certainly involve the return of the lens. Nothing has been said as to the necessity of exact register between the focussing screen and the plate. This is a commonplace which is universally taken for granted. Whether it is always secured in practice is another thing, not undeserving of inquiry. These may seem matters of little moment to the easy-going photographer, but it is on the aggregate of such trifles that good work really depends. It is, at all events, only reasonable that the worker who is willing to pay for an expensive, highly-finished lens, the product of consummate optical skill and calculation, should see that he does not negate half the benefits of his purchase through faulty and inaccurate adjustment. The time spent in making a few simple tests and experiments, which will perhaps enable the mischief to be remedied or proper precautions to be taken against its occurrence, cannot possibly be wasted, and may be amply repaid.

ON THINGS IN GENERAL.

ANOTHER Convention meeting has come and gone, and I expect every conventioner is looking forward to the next on account of its venue, as the lawyers phrase it. It would be invidious to draw distinctions, especially after the highly successful Derby visit, where every one on the spot did his very best to make the meeting the success it was. The arrangements for excursions were excellent, and the exertions of the local committee and helpers must have been exhausting, so early and late and indefatigably did they work; and the more praiseworthy such efforts are, seeing that it was a case of "virtue being its own reward," unless, indeed, the hearty and sincere thanks of every visitor can be counted as such. Even the weather arrangements were perfect, the wetting which a small section of the Tuesday excursionists to Dovedale experienced being partially their own fault, the beauties of the neighbourhood chaining them to the spot for too long a time. There was, perhaps, one "fly in the pot of honey," several of those who went to Haddon Hall and Chatsworth declaring that the order of going should have been reversed, and made as just written. But I shrewdly suspect this was done on purpose. We read of Alcibiades cutting off the tail of his favourite dog, and replying, when he was asked the reason for such a deed, that the citizens were sure to invent something worse to tax him with unless he gave them what we moderns would term concrete cause. So the Derbyites, knowing how they had engineered success, decided to give occasion for a mild grumble lest a more serious fault were invented! And now, "Le Roi est mort, vive le Roi." Will there not be a crowd at Dublin if the survivors alone of the last visit—with recollections of its splendid hospitality, its glorious weather, and the beauty spots so easy of access around it—decide to repeat their experience?

Of course, so much of success with these gatherings depends upon the weather conditions that obtain. We can scarcely hope that the changes in the Meteorological Office foreshadowed in a recent issue of this journal will be carried out within a year's time, far less that we shall then have reliable vaticinations to inform us whether it is needful to take our umbrellas and overcoats on each journey or leave them at home. We shall still continue to bring them home (I rightly use this word, for the Dublinites did make us feel at home) without using them, and leave them behind when we should cherish them as a best friend. That is the natural way of things which Fate will not permit

to be tampered with. I recollect a case where a vain mortal did attempt such toying. We were eighty in number, and on such a day as the Dovedale day, we climbed a stiff hill and left everything portable at the hotel in our rear, all except this solitary victim. A thunderstorm came on; all but he took refuge like Agag, he meanwhile perambulating in front of our sheltering cave protected by his best gingham and a long waterproof coat, and expatiating the while to us poor-prisoners on the beauty of the storm and the glorious surroundings. He was so proud of this that he would not take his waterproof off when the downpour ceased, and he kept it on for the rest of the evening as proof of his superior insight. Then Fate stepped in and had a long innings. Of course, he caught a chill, and he was in bed with lung trouble for two months after. There is a moral somewhere here; perhaps it will be discerned before the Dublin meeting arrives.

Speaking of the weather, is there any one who can explain the reason why the public still hold fast to the faith that a "bright sunshiny day" is an essential for successful portrait taking? Of course, we all know that in the pre-collodion days, the very beginning of portrait-taking by light, the sitter had to sit for about twenty minutes in the broiling sun, and was supposed not to blink. But though all that is changed and become ancient history to the initiated, the tradition still remains. So many people will insist upon waiting for a day with plenty of sun to have their photographs taken, the photographer's assertion to the contrary being brushed aside as mere banter, amusing, but a figment. The incident recently quoted of the sitter who in the middle of one of these ancient exposures suddenly called out to the photographer to stop, as he had spoiled the picture by winking, may be looked upon as an exaggeration. But an experience of my own many years ago would bear out its probable accuracy. A lady wished to be taken late on a very, very dull day. I asked her to defer the sitting; but she preferred not, and could "stand any length of time." I told her she would have to sit for two minutes. She preferred to stand. She did not say "she could do it on her head," but was equally positive. I used a head-rest, and took off the lens-cap. Ninety seconds had gone, when a doleful cry of "Oh, I've winked!" was uttered. I capped the lens immediately and told her that would do; and it did. The negative is in existence to this day, though the incident happened close on forty years ago.

The newspaper correspondent and the cinematographer are famous, not to say notorious, for enterprise. Nothing whatsoever is sacred to them. Yet there is a line that public feeling will not permit them to over step. Who can forget the terrible disaster of a few years ago on the Thames, where a cinematograph happened to be working when a sudden wave, through the launching of a vessel, caused the immersion of hundreds of unfortunate onlookers, whose drowning struggles were depicted by the lens on a thousand feet of film? The terrible pictures were exhibited—at the Alhambra, I believe—but withdrawn in deference to the public sense of horror. But such a ruthless attempt to make money pales into insignificance before the promise of a ghastly exhibition actually arranged for in China. In the "Notes and News" for July 22 will be seen a paragraph stating, on the authority of a Hong Kong newspaper, that executions are being delayed in Canton till the arrival from America of a cinematographer and his apparatus, who will proceed to make records of the horrible sight for exhibiting at the St. Louis Exhibition. Surely the whole American nation will protest against such an outrage! True, the report comes from Hong Kong, which probably King David had in his mind when he said "all men are liars." I shall be reminded that he said it in his "haste," but he might have taken his time when Hong Kong newsmongers were in question, and the innate probability of the story will be granted

when I say that, by a singular coincidence, a friend sent me the same morning I read the paragraph in a newspaper series of photographs of an execution of Boxers in China, showing from the procession of the criminal wretches, through securing of the men in position, the descent of the lethal gas, the road strewn with headless corpses, down to the carrying of the basket of heads to the accompaniment of the sardonic of an official as from the overlaid basket there accidentally dropped one single head on to the ground. The set was a masterpiece in itself. What this threatened cinematograph show would be surpasses in fearful horror anything conceivable. Human rebels at the idea; it will never be exhibited, even if taken.

The article in these pages, "The Present State of the Photographic Labour Market," in combination with that entitled "Photography as a Profession in the United States," and quoted data from German sources of the rates of pay to photographers in that country, depict a truly woeful state of affairs. And the worst of it is that there appears to be no probability of a change for the better. Even among principals, it is doubtful whether any but a few of those who do the highest and dearest work—cabinets four guineas a dozen, and those catering for the multitude at a shilling a dozen—making a "living wage," or even that. But can it be won at? The introduction of the dry plate sounded the death-knell of the average professional, for any one with a month or more of practice can now take a decent photograph, while even a layman would have to serve a long apprenticeship before becoming expert enough to earn a wage. Certainly his wage would not pass that of a photographer's assistant; but that is a different matter. The only consolation to be offered is that there are assistants and assistants, and no pity can be felt for a man who enters a calling requiring no more experience than a rag-picker and whines when he gets rag-pickers' wages. For there are master rag-pickers who make big fortunes—at least, when they are called chiffonniers.

Bravo! your Honour Judge Sir Horatio Lloyd, for assisting the camera-carrier, be he amateur or professional, to take his photographic impedimenta as personal luggage. Every hand is usually raised against the railway company, because it has neither a soul to be damned nor a body to be kicked, but simply because, in its anxiety for dividends, it loses an opportunity of "taking it out" of any traveller. Decisions of many judges of the land have been their claws to be cut; yet they still can scratch very hard on occasion, and they do scratch. What is the result? The honest dictates of honesty are set aside when railway companies are in question. There are few people who do not say they have been "done" by them at one time or another, and consequently, feel justified in doing what with an individual would be characterised as a mean, if not dishonest, act. Perhaps the lines are not wholly to blame, for it is undoubted that they are so continually subject to fudged claims and false applications for damages and loss that they get into a way of considering every one to be a rogue till he is proved to be honest.

FREE LANCET.

MR. CLEMENT B. VANCE, of the Burnaby Pharmacy, Greystock, Wicklow, Ireland, writes:—"This being holiday time, those of your readers who intend visiting 'The Garden of Ireland' may be interested to know that a well-equipped dark room is now available at above address, opposite the railway station; and that plates, papers, etc., can also be had."

MR. ERNEST F. BAUM, of Keble College, Oxford, whose name appears in class 1 of the award of honours issued by the examination in the Final Classical School, is a son of Mr. Franz Baum, photographer, of Manchester. He was born at Bowdon in 1881, and has a distinguished career at Manchester Grammar School, where he was twice Shakespeare scholar.

THE COMPOSITE PRINT IN THREE-COLOUR PHOTOGRAPHY.

HOWEVER great precautions be taken in the adjusting of colour filters to plates, and of both to physical theoretical requirements, the chances of error are still very large in staining the films, which by superimposition are to give the rendering of the original in natural colours.

If commercial three-colour photographers knew to what extent the work of their re-etchers could be minimised by accurate adjustment of colour filters to plates, they would not use one make of filters with another make of screens, nor try a new set of plates and declare them inappropriate without first testing them with filters specially adapted to that particular emulsion.

The use of panchromatic plates instead of ordinary, yellow-green, and red-sensitive plates has one very decided advantage—that if each batch of plates vary, only one has to be tested for colour-sensitiveness instead of two—the yellow-green and red-sensitive plates.

Commercial plates should, of course, never vary enough to occasion an alteration in the filters, and it is therefore pretty safe to employ dry filters. But the point to which we would draw special attention is this. The three-colour work the printer is often, and generally, far nearer to nature than that of the amateur, i.e., the man who makes transparencies by superimposing films. Now, why is this?

The answer is not far to seek. The printer has retouchers and re-etchers who supply to the printing blocks such modification as their deficiencies may necessitate. But the amateur who prints his films and stains them, is more or less at the mercy of the scientific working of his screens, dyes, and plates. Etching is for him a difficult matter, and unless his films are dyed to the correct depth and with the right dyes, some error is fairly certain to creep in which will render the composite print or transparency more or less disappointing.

It is the duty of the plate-maker to supply a fairly perfect panchromatic plate, and to recommend or supply to the users the suitable screens or the materials for making the same. Beyond this, however, the photographer has to look to himself, and hence some work has yet to be done to clear up all doubts as to the adjustment of staining-dyes to colour filters.

The dyes in common use for staining are, it is needless to say, bluish-green, pink, and yellow in colour, respectively. But such circumstances as the alteration of the blue dye when, for example, a red filter lighter than usual is used owing to deficiency in red-sensitiveness of the plates, must necessarily influence the preparation of the staining solutions.

It is interesting, as well as confusing, to refer to the textbooks on colour photography, and observe their advice with regard to staining. Thus Hübl, in the 1902 edition of his *Dreifarbentypographie*, suggests on one page the use of neutral erythrosin solution, acid naphthol yellow solution, and acid fast bluish-green solution for the pink, yellow, and blue prints respectively. Two pages further on he gives in full the dyes recommended by Lumière, as being erythrosin, diamine blue, erysphenin. Two different results will obviously be given with the above combination. In our own practice we have found that a mixture of methyl blue and naphthol green, erythrosin, and auracin G give very satisfactory results, and although we would not for a moment suggest the substitution of dyes in possibly more common use, yet some remarks respecting these colouring matters may be of service to those who are not obtaining the most satisfactory results with those they are at present using.

Assuming the colour filters to be correct, the yellow "printer" will have recorded the violets, blues, and blue-greens, the former and latter in half-tone, i.e., not so deeply as the blues; the pink printer will have recorded the blues, bluish-greens, greens, and yellows, and a little of the orange; the blue printer will have

recorded the yellowish-greens, yellows, and reds. These negatives being printed from, the resulting positives must be stained in colours approximately complementary to the colours of the filters respectively. Thus, if we represent the total colour in the spectrum by x , and the light passed by the blue filter as a , the transmitted colour of the yellow film must be $x-a$; in other words, the colours of the films should (approximately) be the same as the absorptions of the respective filters.

A great difficulty exists in putting the staining process on a scientific basis. Theoretically, the films should never vary in thickness, the dyes never in concentration nor temperature, and the methods of staining up should be scientifically uniform. That this is impossible is obvious to the merest tyro in colour photography; and hence the non-conformity to scientific rules leads to incorrect results, the incorrectness of which is put down to personal equation.

When a panchromatic plate is used of such even colour-sensitiveness that theoretically correct colour filters are available, then the combination of any colour filter with its corresponding stained film should not permit the passage of any rays when spectroscopically examined. This is rarely the case in practice, and the following example will clearly indicate the reason why. A certain brand of plate is deficient in green and red sensitiveness; that is to say, its sensitiveness to blue is greater proportionally than it should be. Hence, not such a dark blue filter as usual is necessary to cut off the action of the yellows and reds in the blue exposure; this filter is therefore "adapted" to the plate so as to save time in exposure. But being lighter than theory requires, it emits the passage of "foreign" rays, and therefore is not strictly complementary in colour to its yellow-stained fellow.

The following are the dyeing solutions to which we have already referred:—The yellow staining bath is made up by digesting auracin G with one hundred times its quantity of water at 200 deg. Fahr. for half an hour, then cooling and filtering it. The pink bath is made with erythrosin, one part, in one hundred parts of spirit. The blue bath is prepared by mixing two parts of methyl blue, one-third part of naphthol green, and one hundred parts of water. These are stock solutions only, and must be mixed further with water for use.

It is difficult to get the gradation very well rendered when using bichromated film, but it will be found that the more dilute the staining bath, the better the gradation. Thus two or three hours may be given with advantage for staining, and we certainly believe in letting the films dry after development, and putting them dry into the staining solutions.

If the blue staining bath be found to produce streaks, add a little thin fish glue to it, and stir it up well. Methyl blue does not make a good keeping solution, and it is therefore best made up soon before use.

The auracin will be found to give a slightly more orange yellow than naphthol yellow or crysphenin, the colour imparted being distinctly primrose, and similar to that of $\lambda=5896$.

The question of fluorescence is one which deserves consideration, and owing to the peculiar behaviour of fluorescent bodies and their variation in properties with different colours, it is perhaps not advisable to employ such dyes as erythrosin and auracin for staining purposes. There is, however, no definite data to go upon in this direction, as the subject of fluorescence itself is not a very familiar one to scientists at the present day.

T. THORNE BAKER, F.C.S.

At the Newbury Photographic Exhibition, to be held next month, an interesting series of balloon pictures, the work of the Rev. J. M. Bacon, the famous aeronaut, will be on view. Miss Bacon is also exhibiting and is lecturing during the exhibition. Those who have not yet received schedules would do well to apply to the Hon. Secretary, E. J. Forster, Guildhall Club, Newbury, as entries close on September 1st.

THE APPLICATION OF ALLOTROPIC SILVER FOR THE PREPARATION OF CONDUCTING FIBRES.

[From the "Physical Review."]

A NUMBER of articles discussing allotropic modifications of silver have appeared in the various journals since 1889. These articles treat rather of the methods of preparation and physical condition of the different allotropic modifications, than of any application of them. A complete list of references is given by Barus and Schneider.¹ Three forms of allotropic silver are described, all of which have certain properties common to themselves and which distinguish them from ordinary silver. When a suspension or emulsion of any of these forms of allotropic silver is spread over paper and dried, the particles are left in optical contact and thus form an apparently continuous film. Treatment with halogens produces brilliant interference colour effects. All the forms are very readily changed to an impalpable powder. Treatment with acids instantly changes all forms to ordinary silver, with apparently no chemical action. No gas is evolved. It is the purpose of this article to give a simple and efficient means for the preparation of conducting fibres; whether they be used for suspension, as in the quadrant electrometer, or otherwise; and whether the fibre material be quartz or any other suitable substance. The allotropic silver used was prepared according to the process described by Carey Lea.²

A mixture of 200 c.c. of a 30 per cent. solution of ferrous sulphate and 280 c.c. of a 40 per cent. solution of sodium citrate was treated with a 10 per cent. solution of sodium hydroxide, just till no permanent precipitate formed. This was then mixed with 200 c.c. of a 10 per cent. silver nitrate solution stirred thoroughly, allowed to settle and the liquid decanted. The precipitated allotropic silver was treated with about 200 c.c. of distilled water, which dissolved a part of it, and was again precipitated by treatment with a saturated solution of ammonium nitrate. This process was repeated three times, and the final precipitate filtered with suction and washed with 95 per cent. alcohol. The product was transferred, in the form of a brown mud, to a bottle and kept covered with alcohol. The allotropic silver was used for the experiments as an emulsion in alcohol, alcohol being used rather than water as it dries more quickly, and thus the dry film of allotropic silver can be obtained in a very few minutes after spreading the emulsion. This emulsion spread on any surface and dried gave a copper-coloured film. When dried on a glass plate and viewed through the glass, it gave a good mirror, but of a dark colour. When these films were treated with gaseous hydrochloric acid they were immediately changed to ordinary silver and presented a dull silvery appearance. The films are changed to a bright silver surface by slight friction. It was the action of the gaseous hydrochloric acid, which suggested the investigation.

Glass plates were painted with the emulsion and dried. The conductivity of the films in this condition was found to be very poor. It was tested by placing the terminals of an ordinary dry battery upon the films with an ammeter in circuit. The electro-motive force of the battery was about two volts, and the terminals were placed eight or ten centimetres apart. The films were then treated with gaseous hydrochloric acid by blowing through an arrangement like a reversed wash-bottle, the bottle containing a little strong hydrochloric acid. By this means a stream of gaseous hydrochloric acid was very readily directed upon the allotropic silver films, thus changing them to sheets of ordinary silver. These films were then tried with a battery as before, and found to be excellent conductors. The use of the silver was then tried on the quartz film of a quadrant electrometer as follows:—The quartz fibre, suspending the aluminium needle between the hollow quadrants, was hung from a hook which was thoroughly insulated with hard rubber. The whole

was enclosed in a copper case to prevent disturbance by currents, and a beam of light reflected through a glass window in the copper case, from a mirror fixed on the needle, served as a pointer on a transparent scale arranged at the proper distance. The instrument having been adjusted, experiments were tried to see how quickly the needle responded on being charged. It was found to respond instantaneously. Various tests on the electrometer with the fibre prepared are above stated were perfectly satisfactory.

CONCLUSIONS.

The dried films of allotropic silver although poor conductors become very good conductors on treatment with gaseous hydrochloric acid. The emulsion can be used admirably for the preparation of conducting fibres; and can be applied to the most delicate apparatus in a very few minutes, without danger of injury. The above work was done in the physics laboratory of Brown University. In closing, the writer wishes to express thanks to Professor Carl Barus, for his valuable instruction and friendly aid.

N. A. DUBOIS

SUPPLEMENTARY SENSITISERS.

[Translated from the "Zeitschrift für Wissenschaftliche Photographie."]

H. W. VOGEL at an early date discovered by experience that unfavourable properties of cyanine for the preparation of sensitive plates could be corrected, if a suitable quantity of quinolin-red be added to it. His azaline is such a mixture.

If we make a spectroscopic examination of plates prepared with an ammoniacal solution of cyanine (1 part cyanine, 6 parts water, 4,000 parts alcohol, 10 parts ammonia), and compare them with plates dipped in azaline (1 part cyanine, 10 parts quinolin-red, 10,000 parts water + alcohol, 10 parts ammonia), we find in the latter, besides the action of the cyanine sensitive band in the green due to the quinolin-red sensitiser, a considerable increment of speed, and less disposition to spoil than when cyanine alone is used. Eosine in presence of cyanine acts similarly.

Subsequently I showed that the powerful screening action of the large addition of quinolin-red might be reduced by using less highly coloured sensitiser obtained by precipitating a large part of the original quantity of quinolin-red with glycine-r ("Atelier des Photographen," 1901, No. 1.) The plates thus prepared are much clearer than azaline plates, and possess keeping quality, probably because of the reduced quantity of dye-stuff left after the good washing they receive. Similar results cannot be obtained by reducing the quantity of quinolin-red.

More recent observations have shown that the eosines and quinolin-red, as well as a few other dye-stuffs, which of themselves are not sensitisers, also have perceptible and great practical value with the isocyanines, as auxiliaries for colour sensitisation. For example, the action of quinolin-red with methyl-red nitrate (nitrate of the isocyanine from quinolin-methyl iodide and quinaldin-methyl iodide) is very remarkable. If a plate be stained with methyl-red nitrate (1 in 50,000), although it be dried quickly, a slight to medium amount of fog will appear. But if the bath be prepared with an addition of quinolin-red, or less effectively with erythrosine (1 part methyl-red nitrate, 4 parts quinolin-red, 400 parts alcohol, 50,000 parts water), after washing there will be no fog, and the plates will be of excellent colour, sensitiveness and keeping quality, even if dried slowly. The curve of sensitiveness will not have altered much, according to the absolute height of the maxima, but will appear to be more even, and the separate maxima will be less prominent. By substituting erythrosine for quinolin-red the same counteraction of fog is apparent, but the spectral band is less continuous.

Also with ethyl-red nitrate (nitrate of the isocyanine from quinoliniodethylate and quinaldiniodethylate) an exceptionally favourable action is observable, as the plates are free from fog

¹ Wied. Ann., XLVIII., p. 327, 1893.

² Ann. Jour. Sci., XXXVII., p. 476, 1892.

when slowly and unevenly dried. Quinolin-red works really well with orthochrom and König's pinachrom. These sensitisers, which otherwise show considerable tendency to fog most plates, are free from the fault if used with a corresponding amount of quinolin-red (1 to 5, or 1 to 6). The use of some other cyanines and isocyanines with very extensive sensitiveness for red, is rendered possible by addition of quinolin-red. For instance, the nitrate of ethylcyanine (quinolin-sepidin-ethylcyanine) has good red sensitiveness as far as 670, but a wide gap at 535 and the plates are very foggy and spotty, and striped. When used with quinolin-red exceptionally good panchromatic action, with perfect freedom from fog and good general sensitiveness, results. The following is a good formula:—

Ethylcyanine nitrate (1 to 1,000 water + alcohol)	10 c.c.
Quinolin-red (1 to 1,000 + alcohol)	50 c.c.
Water	500 c.c.

570 $\mu\mu$
Ammonia 3 c.c.
The colour sensitiveness is almost perfectly equal, and extends All the sensitisers of the class of the cyanines and isocyanines appear to be favourably affected by the action of quinolin-red, and thus we have the possibility of bringing into use other sensitisers from this class.

DR. A. MÛETHE,
Photochemical Laboratory of the Technical High School,
Berlin.
May 18, 1904.

THE OPTICAL PROPERTIES OF DEVELOPED LIPPMANN EMULSIONS¹.

[Translated from the "Photographisches Wochenblatt."]

HERR KIRCHNER² gives an account concerning the occurrence of various different colours in developed Lippmann plates, in the exposure of which the formation of stationary waves was excluded.

Unfortunately Herr Kirchner only used pyrogallol, amidol, and metol for development. With less energetically acting hydroquinone (mixed with soda, sulphite, and bromide of potassium) a large number of pronounced colours are obtainable. Moreover, these colours are better, if grainless chloride, instead of bromide of silver be used. The production of definite colours can be reckoned upon so easily in advance that it is possible to use the process in practical photography.

If an exposed gelatine-chloride plate be placed in a very dilute hydroquinone developer, a pale yellow image appears first. By continuing the development, the colour successively changes to orange, brown, olive, and green. Long immersion in a specially dilute developer produces a vigorous, pure red. Pure black and blue-black are obtainable with amidol and metol. Pyrogallol occupies an exceptional position amongst developers, because under certain conditions an oxidation product of the same is obtained and deposited upon the reduced silver haloid, by which means the image may be stained brown.³ (As this oxidation product has a strong tanning action upon the gelatine, there are differences of expansion in the film at the exposed and unexposed parts.)

The following experiment⁴ should support the hypothesis that the various colours are dependent upon the size of the complex molecules of silver. If a small quantity of hydroquinone developer be added to a mixture of nitrate of silver and gelatine solution, there is no immediate perception of colour. The solution then turns yellow, brown-red, and finally quite opaque. If at each stage a small quantity be spread upon glass and allowed to set, these specimens remain unchanged. The first will be

perfectly transparent, the next yellow, the following brown-red, and finally we shall arrive at deep black by reflected light, and blue-black by transmitted light.⁵

I think it is probable that the chemical reaction is not actually slowed by the gelatine,⁶ but that the latter hinders the formation of the larger complex nascent silver molecules.⁷

In judging Kirchner's observations⁸, the circumstance is not unimportant, that silver haloid is not quite motionless in the sensitive film: that the sulphite added to the developer, the bromide of potassium, and especially the ammonia used by Kirchner, are solvents of bromide and chloride of silver. Moreover, the nascent metal liberated from the silver haloid may deposit itself, grain upon grain, and form larger aggregates. On the other hand, development of the unexposed parts of the film may thus be brought about. The pseudo-solarisation observed by Kirchner may be traced back to this.

DR. RAPHAEL E. LIESEGANG.

PRINTS FROM LEAVES.

[Reproduced by courtesy of the Editor of the "Pharmaceutical Journal."]

ONE of the earliest recorded photographic processes consisted in transferring to a prepared surface the outline and veins of a leaf. It was, of course, a primitive process, and the results could only have been striking to those as yet unfamiliar with the wonders of a new art, and because an improvement over anything of the kind yet produced.



Spirea Bumalda.

In 1839, at the exact time when an account of the Daguerrotype process was first published in France, an Englishman named Talbot read a paper on "Photogenic Drawings" before the Royal Society. A description of his method of procedure, with reproductions of a fern-leaf, will be found in Abney's well-known work on photography. An almost identical process, of which the illustrations are examples, is in fairly common use at the present day. No knowledge of photography is required beyond that of a process of toning necessary in order to render the prints

¹ I therefore assume that the same quantity of metallic silver can be at one time perfectly transparent and at another almost opaque.

² R. E. Liesegang, "Ueber die scheinbare Reaktionsverzögerung durch Gelatine." *Photogr. Almanach*, p. 109, 1901.

³ R. E. Liesegang "Entwicklung der Auskopirpapiere."

⁴ F. Kirchner, l.c. p. 241. See also R. E. Liesegang, *Photo. Arch.* iv, p. 300, 1895.

⁵ *Annalen der Physik*, 14 04, p. 630.

⁶ F. Kirchner, *Annalen der Physik*, 13, p. 239, 1904.

⁷ R. E. Liesegang, *Photographisches Archiv*, p. 117, 1895.

⁸ R. E. Liesegang, *Camera Obscura*, p. 841.

permanent, and a few general directions may be of interest as much to the photographic reader as to the student of botany. It is of the first importance that the leaf should be suitable, but there should be no difficulty in selecting such throughout the summer season. The leaves should be as flat as possible, of medium density, and with veins conspicuous as white lines by transmitted light. Simple leaves, or those not much divided, are usually best. Good results are easily obtained from those of lilac, lily-of-the-valley, sycamore, horse-chestnut, and certain species of *Populus*, *Polygonum*, *Cratægus*, *Spiræa*, *Liriodendron*, *Aristolochia*, *Hydrangea*, *Adiantum*, etc.

The process is one of simple contact printing, and to carry it out the leaf is placed in an ordinary photographic printing-frame, supported on a clean glass plate. The material must be made use of while quite fresh, and it is often an advantage to press between sheets of blotting-paper, so as to flatten out and remove superfluous moisture. After preparing it, if necessary, in this way, the leaf is to be used as a negative, and printed



Populus Balsamifera.

from a few times in the usual way. The sensitive paper—ordinary gelatino-chloride printing-out paper answers well—is laid upon the smooth upper surface of the leaf, and the frame exposed to strong sunlight. When sufficiently exposed—that is, when all available detail has been obtained—the print is toned and mounted in the usual way.

A collection of such photographs may be utilised for teaching purposes, in order to illustrate the complexity of venation, the variety of general outline, the differences in margin and apex, and other features of the leaf. For example, leaves of, say, *Populus*, *Convallaria*, and *Adiantum* might be shown side by side, to impress upon the student the arrangement of veins characteristic of three different classes of plants. Examples of further applications will suggest themselves to those interested. Lantern-slides can be prepared in the same way, printing, of course, by artificial light. Lastly, a variation—perhaps an improvement—is gained by a double printing, either on plates or paper, so as to reverse the densities of the original print.

It is unfortunate that the application of this process is limited. Many leaves, such as the evergreen, are inconspicuously veined and of substantial texture, so that with these it is impossible to get good results; while, on the other hand, leaves are often too uniformly transparent, and thus present difficulties from lack of contrast.

BERTRAM COCKBURN, Ph.C.

THE LATE CAPTAIN NOBLE ("F.R.A.S.").

THERE was more than one member of the Royal Astronomical Society whom this name and style applied (writes "H. P. H." in "The Observatory"), but it was sufficiently distinctive to most of the Fellows who attend the meetings. They called to mind but one personality—a long, lean figure which met one with a warm handshake and followed up the greeting with a whisper of his latest good story or the exact humorous quotation applicable to the occasion. This Captain William Noble, F.R.A.S., whose loss many astronomical amateurs and professionals, now have reason to deplore.

He was not the Senior Fellow of the Society, but he was among the first ten, and had probably attended more meetings than any other. He was elected in June, 1855, and very shortly after began to take part in the proceedings of the society, for an account of an occultation of Mars communicated by him will be found in the "Monthly Notices" for 1857, and there are few volumes among those for many years afterwards which do not contain some contribution from his pen. He was an excellent observer of such small phenomena, inasmuch as he set down what he saw, and exactly what he saw, however apparently improbable and trivial it might seem at the time. There will be found, for instance, in the "Monthly Notices" a note by him to the effect that while observing the sun one day in a hazy sky, the focal length of the objective glass apparently shortened by 0.11 in., but when the haze cleared, the focus returned to its normal position—a remark which may not have had any immediate bearing, but was simply the expression of a well-observed fact, which may find an explanation hereafter. It is not quite certain when he began to interject in the discussions at the meetings those remarks which were so characteristic of him, for in the early years of his fellowship verbatim reports of the proceedings were made; but at the meeting on April 8, 1864, there was a discussion about the willow-leaf markings on the solar surface (a not unusual object of those days), and the account relates that Captain Noble said that or he thought he saw them, and "if I had been Archimedes or a patent shirt maker I should have cried 'Eureka'!"—which is just the kind of remark that he continued to make until the end of his life. No discussion was so serious but that Captain Noble could get up and make some little speech, possibly wholly irrelevant, but always amusing, and for this, if for no other reason, he will be missed at Burlington House.

But his remarks were not always irrelevant. Captain Noble was fearlessly outspoken on matters that he thought called for remedy, even to the verge of prejudice. Delayed publication of the "Monthly Notices" frequently induced him to make pertinent inquiry of the President. The supposed shortcomings of the "Nautical Almanac" under a former regime often led to his sarcastic comment; but his *l'œuvre* was the Solar Physics Committee and its work. One wonders why he was so bitter on the subject, for he was a man of discernment and could appreciate good work, even though it was not strictly *ultramarine*; but the fact seems to have been that about the year 1870 when the proposal was brought forward for the establishment of an observatory at South Kensington at the public expense, some popular opposition arose, and Captain Noble was the secretary of the Society for Opposing the Endowment of Research. The observatory was established, as everyone knows, and no doubt the society was disbanded; but its secretary, being a consistent man, continued his opposition. Each fortnight, for many years past, a long letter appeared in the "English Mechanic," over the signature "A Fellow of the Royal Astronomical Society," which it is an open secret was pseudonym for Captain Noble, often containing criticisms on the work of the Kensington Science Department, almost libellous; but those who knew the writer were aware that his "bark was worse than his bite."

Besides observations of the kind indicated above, occultations of stars

planets of sun spots, and other occasional phenomena which he communicated to the society, he made, but has not published, an excellent series of drawings of the surface of Jupiter, and his fortnightly letter the paper above mentioned showed how completely he kept himself informed of all that was going on in the science. In this letter he played the part of mentor to the many amateurs who are correspondents of the journal, and no doubt this, combined with his genial personality, caused him to be selected as the first President of the British Astronomical Association. He contributed sometimes to these pages, and the early days of "Knowledge" wrote for that magazine a series of papers called "Nights with a 3in. Telescope," which were afterwards published as a book. But astronomy was not his chief occupation. He lived the life of a country gentleman at Uckfield, in Sussex, where he was one of the best known and best liked men in the neighbourhood, and filled many of the parochial and public offices justly and ably. For forty-six years he sat as a magistrate at Uckfield Petty Sessions, and was Chairman of the Bench at the time of his death. For thirty-four years he presided over the meetings of the Uckfield Board of Guardians, and was elected chairman for the thirty-fifth time shortly before his death. He had a special distaste for tramps, against whom he waged bitter war; and if one were brought before him he would, if possible, a sentence involving stone breaking, for, said he, "It spoils the delicacy of their hands for picking pockets, which is their normal occupation"—a sensible point of view which was quite characteristic.

As to actual details of his life, Captain Noble was the eldest son of the late Mr. William Noble, of Berwick, and was born in London, 1828. He was educated privately, and served for a time in the Rifle Brigade, where he reached the rank always associated with his name. In 1851 he married Emily Charlotte, the only child of Mr. Edward Irving, and had four sons. One, who survives, has lived abroad for many years; the others predeceased their father, the youngest leaving a widow and two daughters. Mrs. Noble died a few years ago. Captain Noble was elected to the Council of the Royal Astronomical Society in 1866, and sat at the board almost continuously after that date. It may be mentioned, as illustrative of one phase of his character, that he refused for many years to be a member of the R.A.S. Club, though invited to do so, for he seemed to think that this was a clique inimical to the best interests of the society, but quite lately withdrew his opposition and joined the circle. The immediate cause of his death will be gathered from the following extract from a letter received by the writer of this notice from him on April 18 last:—

"... I have been somewhat seriously ill. At the beginning of the year, thanks to our infernal climate, I got a chill, which brought on kidney and bladder troubles, and I am still under medical (and surgical) treatment. My chief present grievance is my inability to eat, and I am as weak as a rat. I am ordinarily a great walker, but a mile is quite as much as, or more than, I can manage at present. I do hope that I shall pick up enough to be present at the May meeting of the R.A.S., but, like the man you have heard me quote before who went for four ounces of mixed tea, 'I hope for the best and am prepared for the worst.'"

He did not appear at the May meeting, and grew rapidly worse during May and June, suffering a good deal of pain at the end, but bore up in the most wonderful way, and tried to keep up all his pursuits till the last. The end came on Saturday, July 9.

An admirable photograph of Mme. Sarah Bernhardt appears in a French illustrated magazine. It represents her among the rocks at Belle-Isle, communing with the Ocean, and probably adorning it, after the manner of Byron, to "roll on." To reach the rocky altitude the actress must have had a stiff climb; yet she is wearing a pair of fashionable, high-heeled shoes, totally unsuited for climbing. This seemed odd until a keen observer discovered in a corner of the photograph another pair of shoes, admirably business-like among the rocks, but not picturesque enough for communing with the ocean. They had served their purpose; they had borne the burden and heat of the day; and now their rivals had the glory. But the camera had done them justice after all, and as the keen observer remarks, they will go down to posterity as proofs of Mme. Bernhardt's artistic care even for the humblest details.

THE SCIENTIFIC METHOD.

We observe that an organisation is being formed, under the name of the British Science Guild, with the object of insisting on the importance of applying scientific methods to every branch of the affairs of the nation. The movement has grown out of a suggestion made by Sir Norman Lockyer last year in his address as President of the British Association. The Organising Committee has issued a memorandum describing briefly the objects, methods, and proposed organisation of the guild. The objects are stated to be as follow:—

- (1) To bring together as members of the guild all those throughout the Empire interested in science and scientific method, in order, by joint action, to convince the people, by means of publications and meetings, of the necessity of applying the methods of science to all branches of human endeavour, and thus to further the progress and increase the welfare of the Empire.
- (2) To bring before the Government the scientific aspects of all matters affecting the national welfare.
- (3) To promote and extend the application of scientific principles to industrial and general purposes.
- (4) To promote scientific education by encouraging the support of universities and other institutions where the bounds of science are extended or where new applications of science are devised.

ORGANISATION.

All British subjects, both men and women, are eligible for membership of the guild; it is expected, however, that its members will be recruited principally from the following—the House of Lords, the House of Commons, Colonial Legislatures, county, district, borough, and parish councils; municipalities, educational committees, scientific and literary societies and organisations, commercial and industrial chambers and organisations, the learned professions, universities, colleges, educational bodies and graduates of all British universities, and representatives of labour. The Organising Committee is composed of the following:—Lord Avebury, Professor W. E. Ayrton, Sir George Sydenham Clarke, Captain E. W. Creak, Mr. Clive Cuthbertson, Dr. William Garnett, Dr. Sydney Lee, Sir Norman Lockyer, Lady Lockyer, Mr. N. MacColl, Professor Raphael Meldola, Professor J. Perry, Sir Gilbert Parker, M.P., Sir W. Ramsay, Dr. W. N. Shaw, Professor S. P. Thompson, Dr. A. Waller, and Sir Henry Trueman Wood. The Organising Committee has elected Sir Norman Lockyer president, Lord Avebury hon. treasurer, Lady Lockyer hon. assistant treasurer, and Mr. C. Cuthbertson hon. secretary. The committee is now engaged in communicating with those corporate bodies and individuals whose support and sympathy are desired. A general committee will be appointed, which will subsequently select from among its members an executive committee for the management of the affairs of the guild.

The following have already signified their general approval of the objects and proposed organisation of the guild:—Lord Alverstone, Sir John Wolfe-Barry, Dr. W. Blandford, Sir James Blyth, Mr. Brabrook, Sir George Birdwood, Sir John Brunner, Sir Lauder Brunton, Major-General Sir Owen Tudor Burne, Sir Edward Busk, Mr. R. H. Caird, Sir William Church, Sir John Cockburn, Professor W. E. Dalby, Dr. Ferrier, Sir Michael Foster, M.P., Sir Archibald Geikie, Sir Robert Giffen, Mr. Hammond-Chambers, K.C., Professor Herdman, Professor J. Larmor, Dr. Lockyer, Sir A. Noble, Lord Reay, Sir Wemyss Reid, Sir William Richmond, Sir Henry Roscoe, Mr. E. Robertson, M.P., Sir A. Rücker, Mr. Alex. Siemens, Lord Strathcona and Mount Royal, Sir L. Alma-Tadema, and Viscount Wolseley.

ADVERTISING by Photography.—A very progressive retailer has evolved a scheme in advertising for a country district which proved a great success. It was advertised that on a certain day a large photograph of the shop would be taken, and people from the surrounding country were invited to be present. It was further announced that everyone whose face appeared in the picture would be entitled to a free copy. The result was the biggest sort of an "opening." People even secured positions on the roof. In order to get a copy of the completed photograph, each person was obliged to call a second time, and on such an occasion would be apt to buy something. Besides the photographs would likely be preserved permanently, and would thus form a perennial advertisement.

THE AMERICAN AND EUROPEAN PHOTOGRAPHIC PRESS ON THE "B.J." JUBILEE.

OUR congratulations are extended to the *BRITISH JOURNAL OF PHOTOGRAPHY*. Its Jubilee issue is a volume in itself. We are glad that there is one staple publication, and particularly in the photographic field. It is to be hoped that the *BRITISH JOURNAL OF PHOTOGRAPHY* may continue its usefulness and celebrate its centennial.—"The Camera" (Philadelphia).

The *BRITISH JOURNAL OF PHOTOGRAPHY*, the oldest photographic journal in the world, in its issue of June 10, celebrates the beginning of the fifty-first volume. As would be expected, many of the old contributors indulge freely in interesting reminiscences, while the younger generation make practical contributions on modern subjects. Altogether, it is a large and interesting issue, and we can but wish it even greater success in the second half-century of its existence than it has had in the first.—"The Photo-Beacon" (Chicago).

The "Deutsche Photographen Zeitung" sends us its congratulations in the following short paragraph:—No. 2301 of the *BRITISH JOURNAL OF PHOTOGRAPHY* takes the form of a Jubilee Number, as fifty years have elapsed since the foundation of the paper. Consequently, this number is one of exceptional size, and is adorned with many pictures relating to photography. The portraits of the most important contributors to this paper are included, and the general character of the issue serves the one purpose in view. We congratulate the undertaking upon its Jubilee and hope it will have many more years of similar success.

Another German photographic paper—"Apollo"—also sends us its best wishes in the following terms:—No. 2301 of the *BRITISH JOURNAL OF PHOTOGRAPHY* (London, Henry Greenwood and Co.) appeared as a Jubilee Number, in commemoration of the fiftieth year of the paper's existence. The portly volume contains 75 pages devoted to numerous excellent treatises, many of which are by authors who have been active contributors to the *BRITISH JOURNAL OF PHOTOGRAPHY* from twenty to forty years. The Jubilee Number also contains an interesting history of the paper to which are added the portraits of its former and present editors. We wish this respected and worthy photographic paper the greatest success in the future.

The *BRITISH JOURNAL OF PHOTOGRAPHY* has just celebrated its fiftieth anniversary and its Jubilee Number, which came to hand this week, reviews its past history and its former editors, amongst whom we find such worthy names as Sir William Crookes, John Traill Taylor, W. B. Bolton, and Geo. Shadbolt. The *BRITISH JOURNAL*, like some of our monthly publications over here, started in life as a club journal, reporting from time to time the doings of the Liverpool Photographic Society, and it was only after various vicissitudes that it eventually came into its present proprietor's hands. The *BRITISH JOURNAL OF PHOTOGRAPHY* is not a lively paper, although very much a live paper. More professional than amateur, it does not pretend to cater to the beginner and it scoffs at the pretensions of the pictorialist. But it has done in the past and is doing in the present, a great work in the interests of photography, and I, for one, offer my heartiest congratulations to our esteemed contemporary, the staid, old *BRITISH JOURNAL OF PHOTOGRAPHY*. Long life to it!—"The Photographer" (New York).

The *BRITISH JOURNAL OF PHOTOGRAPHY* is the first among the photographic publications in the world to celebrate its fiftieth birthday anniversary. This event was celebrated by the publication of a sumptuous number of the journal under the name of the "Jubilee Number," in which is contained a vast amount of interesting and instructive matter, particularly of a retrospective nature. We would commend it to the attention of all who are interested in the past and present of photography. Published as it has been without interruption during all these years, it has steadily maintained a high position among the technical publications of Great Britain. Its policy has always been progressive, and its influence has been of decided weight in advancing the interest of our profession. The Jubilee Number is a fitting climax to its first fifty years, and should be interesting to the older members of the craft, for the reminiscences and experiences of the past, and to the younger members of the fraternity, as demonstrating some of the conditions under which their progenitors laboured in the early days of photography.—"Wilson's Photographic Magazine" (New York).

HALF-TONE ENGRAVING ON A RAILWAY FLIER

OUR contemporary, the "Daily Mirror," claims to have made a record which will be hard to beat.

Photographs illustrating the Tariff Reform demonstration at Welbeck Abbey were taken on Thursday afternoon, and reproduced in them appeared on the front page of the paper the next morning.

This, proceeds the "Mirror," may not sound particularly startling to the uninitiated, but it is a feat that has never before been accomplished in the history of journalism. Some time ago the "Mirror" was able to show its readers the reproduction of a photo of the winner of the Derby the day after the race was run. This was a record, but Epsom is so much nearer the metropolis than Welbeck that the photographs could be developed and the blocks from which the illustrations were printed could be made in London. Here the "Mirror" has special apparatus which enables photographs to be developed and process blocks made from them in record time. But Welbeck is 146 miles from London, and the record was much harder to make. It was accomplished by a happy combination of good management, and luck.

The negatives were taken by Mr. A. Seaman, of Chesterfield, whose well-equipped studio caused that town to be chosen as a work centre in preference to stations nearer Welbeck. A Beeston-Hul motor-car, supplied by the Cavendish Cycle Company of Chester, was waiting for the plates, and raced with them over the eight miles between Welbeck and Chesterfield. In less than an hour Mr. Seaman had developed his negatives and taken the excellent bromide prints from which the pictures were made. Then Messrs. Haider and Kettle, the process engravers, who with all the necessary apparatus had been despatched to Chesterfield by Messrs. Gee and Watson of St. Bride Street, at once set to work upon the photographs. Another hour pictures had been made from them upon zinc plates by means of the process camera. It was now getting on for five o'clock, and the London train was timed to leave Chesterfield twenty minutes past four. A special "Mirror" car was attached to the train, and in this the delicate work of engraving the plates was to be performed. It is 146 miles from Chesterfield to London, and the Midland Railway Company's train covers the distance in a little over three hours. During a great part of this journey the train is travelling at the rate of 60 to 65 miles an hour.

Never before have process blocks been made under such circumstances. The swaying of the train as it rattled over the metals made it almost impossible to keep the graver upon the surface of the metal. Each jar splashed the acids that are employed in the process of engraving the tanks, and necessitated their frequent refilling. But the work was accomplished, and, under the circumstances, to the great credit of all concerned. Half an hour before St. Pancras was reached the engravers were able to inspect their finished work. The "Mirror" motor-car waiting at the station snatched the plates and took them to the office in good time for press. The following is a time-table of the work performed:—

1. 0.—Photos taken.
- 1.45.—Motor-car reaches Chesterfield (18 miles).
- 2.45.—Pictures finished by Mr. Seaman.
- 3.45.—Zinc plate made.
- 4.21.—Train left Chesterfield.
- 7.50.—Train arrived St. Pancras.
8. 0.—Plates reach "Mirror" office.

The successful accomplishment of this feat is due in the first place to the enterprise of Messrs. Gee and Watson, of 20, St. Bride Street, and the skill of Messrs. Haider and Kettle, their employees. A great deal of credit must be given to Mr. Seaman, of Chesterfield, who performed his share of the work with skill and despatch.

In drying photographic plates, the electrically driven fan motor offers a means of greatly accelerating the process. This may often be done in twenty minutes or half an hour, by setting the plates in front of an ordinary 110-volt fan motor; but great care must be taken to allow dust to accumulate upon the film of the plates as a result of the blowing process.

THE GREAT SIZE OF THE ST. LOUIS EXPOSITION.

American people are credited with a love for big things; and the mere element of bigness were its strongest attraction, writes "Scientific American," the great Exposition at St. Louis ought to be the most popular and successful of the many exhibitions of the kind to which the country has been treated during the past decade. Yet anyone who is present on the grounds, and takes a careful note of the vast throngs which are to be found trying to get the round of the two square miles that are devoted to the Exposition, will be forced to the conviction that if the mere size of the Fair is an attraction, it is an attraction that is more of a sentimental than of a practical character; for it must be conceded that for the average visitor, with only limited time at his disposal, the Exposition of 1904 is altogether too big.

Judged from the merely spectacular side, the vast proportions which this enterprise has been planned and carried out have served their purpose well; for a view of this wonderful congregation of buildings, taken, let us say, from the steps of the great Festival Hall, is certainly magnificent, beautiful, and artistically impressive as anything that could well be imagined. But when, by giving himself up to the emotions that are aroused by this splendid panorama, the like of which will probably never be seen again, the visitor sets himself resolutely to the work of inspecting the buildings and their exhibits, the conviction is soon borne in upon him that to gain anything more than a cursory glimpse would require a work calling for several weeks, if not months, of study. The problem is particularly serious, if he is desirous of following up only the main lines of exhibits, which may be, and probably are, scattered throughout several different buildings on the grounds. The exhibition palaces themselves are so immense, the distances between them so great, that it is impossible to follow out a line of investigation of this kind consecutively, day after day, without becoming practically exhausted.

Now we say this, not in any spirit of unkindly criticism, but merely to draw attention to the fact that in the endeavour to make the International Fair of this kind represent, by its vast proportions, the extent of the resources, the range of the industries, of the country which it represents, the limits of practical usefulness have been far exceeded. It must already have forced itself upon the sponsors of this exposition that future exhibitions of the kind must be restricted in their dimensions.

The difficulties of adequately seeing the Fair and inspecting in detail the various exhibits, might have been largely reduced if the Intramural Railway System had covered at least four times as much ground as it already does. At present, as actually built, in making the outside circuit of the grounds it covers a total distance of about eight miles; and when we remember that the Exposition grounds, which are in the form of a parallelogram, measure one mile in width by one and three-quarters in length, it can be understood that the distances across the main group of buildings, encircled by this road, are necessarily very great. Had intersecting lines of track been run in gridiron fashion through the main plazas and passageways, the problem of transportation would have been greatly simplified. Nor would the presence of these tracks have marred the landscape and architectural effects. So vast are the various plazas and courts, that the presence of the trains would scarcely have been noticed.

To give some idea of the great scale upon which the place is laid out, let us consider one single building, the Palace of Agriculture. The plan of this structure is a parallelogram, which extends in width for five hundred feet and in length for sixteen hundred feet. It contains eight or nine corridors, each sixteen hundred feet in length, crowded each of them on both sides with exhibits, and it is intersected throughout its full length with numerous transverse corridors. This means that anyone wishing to cover the whole field of exhibits within this single building, would have to walk at least three or four miles. The other industrial palaces, though not so large as this, are every one of them of great proportions. Thus the United States Government Building is 250 feet wide by 800 feet long; the Palace of Mines and Metallurgy is over twice that width and of about the same length. Then we have the Palace of Manu-

factures, 1,200 feet in length by 525 feet in width; the Palace of Varied Industries of the same dimensions; and the Palace of Transportation of the same width, but 1,300 feet in length. And so it runs, each of these buildings containing a covered acreage that would represent a large proportion of the total area that was under roof at the Centennial Exposition at Philadelphia.

To those people for whom the theories of Bellamy have an attraction, the problem of attempting to house 5,000 people in a single hotel within the grounds will present a decidedly interesting study. Of course, nothing of the kind, or even approaching it, has ever before been attempted; and considering the ambitious scale on which the hotel is being run, probably the guests are securing about all they can reasonably ask for. But here again the distances to be traversed become a serious problem, as may be judged from the fact that the writer, on starting out for the day, found that a rainstorm was threatening, and in returning to his room for an umbrella had to cover nearly half a mile of walking before he was back at the main entrance.

FORTHCOMING EXHIBITIONS.

August 16-20.—Royal Cornwall Polytechnic Society Photographic Section. Secretary, Edward Kitto, The Observatory, Falmouth.

September 16 to November 5.—Photographic Salon, Dudley Gallery, Egyptian Hall, Piccadilly. Hon. Secretary, Reginald Craigie, Photographic Salon, 1904, Dudley Gallery, Piccadilly, London, W.

September 20-28.—Newbury Photographic Society. Hon. Secretary, E. J. Forster, Guildhall Club, Newbury.

September 22 to October 29.—Royal Photographic Society's Forty-Ninth Exhibition, New Gallery, Regent Street, London. Secretary, A. W. W. Bartlett, 66, Russell Square, London, W.C.

October 1-30.—Berlin International Photographic Exposition. M. Franz Goercke, Berlin W. 62, Maassen-Strasse 32, Germany.

October 15-29.—Coatbridge Photographic Association. Hon. Sec., Geo. W. Campbell, Ailsa Cottage, Coatbridge, N.B.

October 18, 19, 20.—Kettering Church Institute, Photographic Exhibition. Hon. Secretary, E. Claypole, 112, Hawthorn Road, Kettering.

October 19-22.—Rotherham Photographic Society. Hon. Sec., H. C. Hemmingway, Tooker Road, Rotherham.

November, 1904.—Ilford and District Photographic Society. Hon. sec., W. N. Beal, 155, Thorold Road, Ilford.

November 2, 3, 4, 5.—Newark Photographic Exhibition. Secretary, L. C. B. Appleby, Barnbygate House, Newark.

November 3.—Frome M.I. Photographic Society. Hon. Secretary, B. J. Mitchell, 3, Willow Vale, Frome.

November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Sec., James Dunlop, Myrtlebank, Motherwell.

November 9.—Hackney Photographic Society. Hon. Secretary, Walter Selfe, 70, Paragon Road, Hackney, London, N.E.

November 15-19.—Sunderland Camera Club. Hon. Sec., Selby-Ord, 52, Frederick Street, Sunderland.

November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.

November 22-23.—Ipswich Camera Club. Hon. Secretary, R. H. Sutton, 37, Henley Road, Ipswich.

November 23-26.—Hove Camera Club. Hon. Secretary, A. R. Sargeant, 55, The Drive, Hove.

November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., G. W. Simmers, Aberdeen House, Ramsgate.

December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.

December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104, West 101st Street, New York.

December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.

December 13-20.—Southampton Camera Club. Hon. Secretary, S. G. Kimber, Oakdene, Highfield, Southampton.

December 28-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 138, Glasgow Road, Wishaw.

January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.

January 20-21, 1905.—South Essex Camera Club. Hon. Secretary, T. Michell, 180, Browning Road, Manor Park, E.

January 28-February 12, 1905.—Photographic Society of Marseilles. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hill-head, Glasgow.

June, 1905.—Northern Photographic Exhibition. Secretary, F. G. Issott, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

September 30.—"Photographic News." Quarterly Competition. "Photographic News," 9, Cecil Court, Charing Cross Road, London, W.C.

October 1.—Thornton-Pickard. £100 cash prizes for pictures taken with Thornton-Pickard cameras and shutters. Thornton-Pickard Manufacturing Co., Altrincham.

October 10.—Luna paper. £240 cash prizes for prints on Luna paper. Lucien Allegre and Co., 59a, New Oxford Street, London, W.C.

October 15.—Belgian Association Lantern Slide Stereogram Competition. Secretary, M. Vanderkindere, 97, Avenue Brugmann, Brussels.

October 31.—Coxin. 68 prizes for users of Coxin. Judging twelve pictures. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.

November 1.—The "Graphic." £50 in cash prizes. Manager, Photo Competition, the "Graphic," Tallis Street, Whitefriars, London, E.C.

December 31.—Barnet. Nineteen classes. Prizes valued at £500 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

March 15, 1905.—Ilford. £750 in prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

Patent News.

The following applications for Patents were made between July 25 and July 30, 1904:—

Tripod Head.—No. 16,359. "Improvements in or connected with tripod heads for photographic purposes." John Ambrose Sprason.

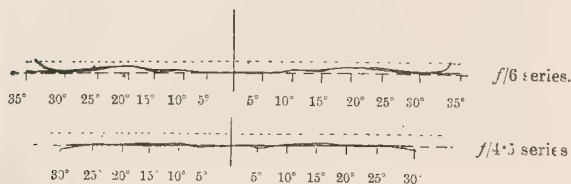
Cameras.—No. 16,507. "Improvements in and relating to photographic cameras, and to a check exposing device thereon." Complete specification. Frederic Edgar Cheesman.

Film Case.—No. 16,526. "Improved case or cassette for flat films, plates, and the like." (Date applied for under Patents Act, 1901, 28th July, 1903, being date of application in Germany.) Complete specification. Robert Krayn.

Cameras.—No. 16,572. "Improvements in photographic cameras." Robert Scott.

Colour Filters.—No. 16,659. "Improvements in and relating to mounting and operation of photographic colour filters." Complete specification. Hans Schmidt.

THE Unofocal Lens. At the request of several correspondents we republish the Astigmatism Chart of the Unofocal Lens, as given with the report of Mr. Beck's lecture at the Royal Photographic Society in our issue for July 15:—



Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

August.	Name of Society.	Subject.
15.....	Bowes Pk. and District Ph. Soc.	Competition. Outing Prints.
16.....	Nelson Photographic Society...	Members' Print Evening.
17.....	North Middlesex Photo. Soc. ...	Indoor Portraiture. Mr. G. Williams.

CATFORD AND FOREST HILL PHOTOGRAPHIC SOCIETY. MEMBERS of this society met at Keston on Saturday last for purpose of photographing the picturesque spots surrounding the lake. Mr. J. Wheeler Bennett granted the party permission to enter beautiful grounds, and it was here that the amateurs were busily employed during most of the time, some very successful pictures being produced. Unfortunately, the early part of the afternoon was not propitious, owing to dark clouds and showers, later the sun shone brilliantly, and the clear atmosphere, which usually follows a shower, afforded excellent conditions for enthusiastic photographers. All expressed themselves delighted with the day's doings, and many hoped that the visit might be repeated at an early date. Mr. A. W. Nunn, F.C.S., was the conductor on this occasion.

THE PHOTOGRAPHIC SOCIETY OF INDIA.

THE Photographic Society of India, on July 8th, gave an "Home" at No. 40, Chowringhi, to bid farewell to Mr. N. Giannacopulo, the president of the society, who is shortly retiring from India. There was a large attendance of ladies and gentlemen. An excellent exhibition of lantern slides was first given, comprising views of "Sunset on the Hughlie," by Fr. Oldbury Burne; "In the Flowers," coloured in oil by Mrs. Wilson; "Sunssets," by Mr. Art. Norman; a series of slides by Mr. A. J. Oliver, including some specially fine views of the Kali Caves; some interesting views of Dalny and Port Arthur, by Mr. H. M. Bretten; and last, though not least, some beautifully coloured views from Japan. Mr. Art. Norman, one of the vice-presidents of the society, in an appropriate speech alluded to Mr. Giannacopulo's connection with the society since 1886. He thanked Mr. Giannacopulo for the amount of trouble and trouble the latter had expended on their behalf, and asked him to accept a silver salver and a silver tea service, which had been subscribed for among them, hoping that they would be of use to him, and also that they might keep the recollection of the meeting out here fresh in his memory. Mr. Giannacopulo, in acknowledging the presentation of the handsome souvenir, said that he had taken a great interest in the society ever since it was started seventeen or eighteen years ago. There was a saying that India was a land of regrets, but he doubted if any of them really realised its meaning until they were about to quit its shores. They did not regret its heat and its muggy rains, nor yet the amusements of the cold weather, but the real and heartfelt regret was the parting with good friends. This souvenir would be treasured and have the place of honour in his new home. He would take this opportunity of saying good-bye.

SOUTHAMPTON CAMERA CLUB.

AUGUST 8TH.—At a meeting of the members of this club, under the presidency of Mr. G. T. Vivian, a print competition took place the subject being "Southampton Common." Each set of prints consisted of three, and a prize of £1 was offered by Mr. Council S. Tebbutt for the best set. Over twenty sets were proffered for competition, and the contributions were of such an excellent order that the judges (Messrs. R. McFadden and G. T. Vivian) experienced great difficulty in allotting the places of honour, but ultimately bracketed Messrs. C. C. Cook and Geo. R. Johnson for the premier position. A similar difficulty arose for second honours, which had to be shared by Messrs. G. Fridge and H. W. Miles. The competition being of so keen a nature, 10s. were voted from the club fund as a second prize. The prints generally were of a very satisfactory character, and place beyond doubt the unlimited resources of Southampton Common for such purposes. It was decided to place the matter before the committee with a view to considering the most suitable means of preserving such an excellent and representative collection of views of Southampton's miniature forest.

DR. C. F. GRINDROD'S PICTORIAL PHOTOGRAPHS.

THE twelve reproductions of Dr. C. F. Grindrod's photographs which constitute the tasteful and handsome album that has been sent by the Photochrome Company, of 35 and 36, Hosier Lane, Snow Hill, E.C., might at the first glance deceive even an expert in process matters. They look for all the world like prints in brown carbon pigment. But they are not. They are half-tone impressions on paper having an intaglio surface, which, with the very skilfully-chosen ink employed, operates to produce a distinctly pleasing result. In phototypic printing the end justifies the means, and the latter, in the present case, are, without doubt, successful.

Dr. Grindrod finds a prelatory appreciator in the person of his confrère, Mr. H. Snowden Ward, who descants upon the genial silvern worker's "New Outlook upon Life," and his ability to show us "Something of the Sturdy Dignity of Swine." We suspect

take occasion to commend the collection, as a whole, to the lover of nature photographs which do not offer you riddles for solution before you know the meaning of them. Each example is worth a frame, and as the album costs only 3s. 6d., an excellent collection of artistic photographic work may be had cheaply. The appended illustration is given by courtesy of the Photochrome Company. In conclusion, we would thank Dr. Grindrod for the rich bit of humour, "The March Home," a flock of geese waddling past a stone inscribed, "116 miles from London." The deadly dullness and appallingly unimaginative monotony of pictorial photography of the bepuffed-up exhibition kind is only too infrequently relieved by such delicious achievements as these.

TECHNICAL OPTICS.—Day courses in Technical Optics, to meet the requirements of those who desire a more thorough training than can



Photo by]

A FOREST GIANT'S FUNERAL.

[Dr. C. Grindrod.

that Mr. Ward has been sitting at the feet of Mr. Hartmann, the glorious inventor of plastic psychological syntheses and other fearful wild photographs. You can carry this sort of thing to such lengths that even the late Mr. Robert Browning will appear, by comparison, a marvel of verbal and descriptive lucidity. Now, it is not as an interpreter of porcine dignity that Dr. Grindrod appeals, or appears, to us, but rather as the sympathetic student of field life which he illustrates by the aid of the camera. He is quite one of the Emerson school—humorous, and observant, and with a keen eye for the proper grouping of figures. Such specimens as "The Ferry Boat," "In Noonday Heat," and "The Harvesters," quite recall Emerson's earlier work. Here and there we have a suggestion of Gale, as, for example, in "Getting Tired," a reaping scene at "Close of Day."

But detailed criticism of these charming specimens of photographic work is not on the present occasion called for. We would rather

be obtained in evening classes, will be established at the Northampton Institute, for the session 1904-5. The chief object will be so to train the students, both theoretically and practically, that they will be in a position on leaving the institution to deal with the numerous scientific and practical problems which all who aspire to take the higher positions in the optical trades must be prepared to solve.

SUNDERLAND Camera Club.—The Sunderland Camera Club is to hold an Open Photographic Exhibition this year in St. Peter's Schoolrooms, Green Street, Sunderland, on November 15 to 19. The Rev. F. C. Lambert, F.R.P.S., and Mr. F. M. Sutcliffe, of Whitby, will act as judges. There are six classes, one of which is confined to photographers resident in Northumberland and Durham. In place of medals, handsome plaques specially designed by R. J. S. Bertram, of Newcastle-on-Tyne, will be awarded in each class. The prospectus will be issued shortly by Mr. Selby Ord, 52, Frederick Street, Sunderland.

Commercial & Legal Intelligence

WE learn from the London Scientific and Novelty Supply Co., of 1, Clerkenwell Close, London, E.C., that they have taken over the photographic and stereoscopic plant, etc., of Mr. A. Pumpherly, of Birmingham.

AN improvement in photographic "blue" printing is mentioned in patent No. 6,930,103 whereby the electric arc is made to descend at a predetermined speed within the glass cylinder around which the tracing to be copied is mounted, thereby enabling correctly timed blue prints to be obtained automatically, such being effected by means of a piston within a cylinder and to which is mounted a piston rod on the end of which is arranged a rack to operate glazing for rotating the drum around which the cord that is attached to the lamp is wound. The movement of the piston within the cylinder is obtained by the displacement of oil from the upper or lower to the lower or upper surface of the piston through the medium of a pipe outside the cylinder. The pipe is provided with a valve for regulating the flow of the oil.

AN Extraordinary Reception.—At the West Riding Assizes, on Thursday last, Annie Millimore (30), Annie Clare (29), and Albert Fieldhouse (25), were indicted for robbery with violence, with another person, on Morris Kitchen, and stealing from him a cigarette case and 2s., at Bradford on May 6. Mr. Harold Newell prosecuted and Mr. Percy Middleton defended Clare. The prosecutor is a Russian and canvassed for orders for enlargements of photographs for the United States Art Company. On May 6 he went in search of business into Back Ebenezer Street, Bradford. Kitchen's story was that he knocked at a house door and was invited to go in. He opened the door and entered. Inside he found three women, including the two prisoners. Clare at once acted in an indecent manner and asked him for some money. A moment later Fieldhouse came downstairs, seized Kitchen by the neck, and held him while the women rifled his pockets. Next day the prosecutor identified the two female prisoners and the man, but was unable to identify the third woman. The female prisoners both blamed the other for what had occurred, and denied that they personally participated in the robbery. Fieldhouse declared that he was not in the house at the time. In summing up, the Judge remarked upon the "enthusiastic manner" in which the prosecutor had carried on his canvassing, and the "extraordinary reception" he had met with at the house in question. The jury found all the prisoners guilty, and a Bradford detective gave them very indifferent characters. Fieldhouse was sentenced to nine months' hard labour and the two women to six months' hard labour.

CHARGE of Fraud Dismissed.—The Redditch magistrates were occupied a considerable time on August 3rd in hearing a case in which Robert Hayward, 15, Gooch Road, Sparkhill, and Frederick Miller Bickmore, 142, Grove Road, Sparkhill, were charged with obtaining with intent to defraud 3s. from Mr. Clive Taylor, George Street, Redditch. It was stated that prisoners called on prosecutor and represented they were engaged by the Midland Counties Photographic Company, County Chambers, Corporation Street, Birmingham, in conjunction with Messrs. A. and G. Taylor, photographers, Redditch, and on the strength of their statements Mr. Taylor gave them 3s. as a deposit towards the cost of a photograph of a family group which was to be executed. Joseph Ginns, manager of the Midland Counties Photographic Company in Redditch, said prisoners had no authority to represent the company in Redditch, and they had not accounted to him for the sum they had from Mr. Taylor. Police-Sergeant Branton deposed receiving prisoners from the Sparkhill police. Prisoners had books with duplicate forms in their possession, and also specimens of photographs, all relating to the Coventry branch of the Midland Counties Photographic Company, Birmingham. Walter Tandy, manager of the Midland Counties Photographic Company, Birmingham, stated that on July 21 he started prisoners off for Coventry. Their duties were to canvass in Coventry. They were to report themselves to the manager there, and had no right to canvass at Redditch. It was the rule for them to report to the branch managers the results of their work. In this case prisoners had not reported to the manager. Prisoners' defence was that the rule referred to by the

manager had never been rigidly observed and that the books of town had frequently been used for other towns.—The Bench said that there was not sufficient evidence to justify sending prisoners to trial and discharged them. Another and similar charge against prisoners was also dismissed, and Superintendent Hayes would proceed with a third.

IMPROPER Picture Postcards.—At Stonehouse last week, before Messrs. W. H. Jennings and J. S. Hawker, William Bartlett Lutwenty-two, Manor Street, was charged with offering for sale improper prints.—Mr. J. P. Dobell appeared for defendant, who pleaded guilty.—P. S. Richards stated that on July 25, acting on the instructions of Supt. Hacon, he went to defendant's shop, and said he wanted to buy some picture postcards similar to those in the window. They were offered at 2d. each, and he purchased the eight cards produced for 1s. On July 30 he bought the three postcards produced, and when he was on sale at the time of his previous visit to the shop.—Mr. Dobell handed witness a copy of a London periodical, dated August 3, and asked witness whether several small pictures called "Art Plates" contained therein would not, if they were coloured, be something of the same nature as the postcards produced.—Witness replied that he should not think so.—Dr. Dobell: Do you consider the exposure of limbs is the improper part?—Witness: I leave that to the magistrates. Dr. Dobell asked under what Act the proceedings were taken, and was told the Towns Police Clauses Act.—Mr. Dobell read the section and pointed out that it commenced with the words "Every person who in any street, to the obstruction, annoyance, or danger of residents or passengers commits any of the following offences." He submitted that unless the sale took place in the street there was no offence. The postcards in question were sold in a shop, and that had been held not to be the same as street under the Act.—The Bench decided against Mr. Dobell, the chairman remarking that the prints being exposed in a shop window and priced was a public offer of sale. Dr. Dobell asked for a note to be taken of his objection, and, continuing his defence, said that defendant had been a resident in Manor Street for nearly twenty years, and if he thought that the prints were such as contravened the statute he would not have been the means of circulating them. He did not say that they were not vulgar, but did say that they were not improper. The magistrates should have regard to the locality in which they were offered for sale. When might be considered vulgar in Durnford Street or Chapel Street might have a very different significance in Manor Street. Was there anything more improper in the postcards produced than in the "Art Plates" in the periodical he had handed to the magistrates, which might be found on almost every drawing-room table in the kingdom? Except that they were not coloured, those pictures were quite suggestive to people affected by such productions as any of the postcards in that case.—The Chairman said it was the opinion of the Bench that the postcards produced were improper and disgusting, and it was a matter of surprise that anyone claiming to be a respectable tradesman should deal in such pictures. They had decided to inflict a penalty of 40s., inclusive of costs.—Mr. Dobell gave notice of appeal on the legal question he had raised.

News and Notes.

No. 62 of the "Photo Miniature" is to hand. This latest addition to the series deals with the topical subject of "Vacation Photography."

MR. RICHARD KEARTON, the distinguished photographer and describer of wild life, has been suffering from appendicitis. An operation has just been successfully performed, and he is progressing favourably.

WE are indebted to an African correspondent, Mr. Percy M. Clark, for an album of views of the Victoria Falls and neighbourhood. Published by Mr. Ellis Allen, stationer, Main Street, Bulawayo, the views are printed from half-tone blocks, and the pictures give one a very good idea of the grandeur and the magnificence of the Zambesi river.

THE Coatbridge Photographic Association holds its second annual exhibition in the Photographic Institute, Coatbridge, from Saturday

October 15, to Saturday, October 29, inclusive. The judges will be Messrs. W. M. Warneke, Arch. Cochrane, and T. W. Robertson, and the secretary is Mr. G. W. Campbell, Ailsa Cottage, Coatbridge, N.B. There are six open classes, and silver and bronze medals are offered for each. The entries close October 3.

The proposed Dublin Permanent Gallery of Modern Pictures is so far a thing accomplished that, under a guarantee of friends, two works of art, worthy of the name, have been already secured. These are a bronze by Rodin, and the "En Voyage"—a portrait of the artist's mother—exhibited by Signor Mancini in the Royal Academy exhibition just closed. International rivalry is as likely as a Committee of Inquiry to supply the Chantry trustees with a prod, and Dublin is to be congratulated on having now bought what should have been secured for the Tate Gallery last May.

The picture postcard is a never-failing source of delight to many persons, though it adds another terror to travel if the traveller has many collectors on his list of friends. But great interest will be created even among those who have not yet succumbed to the mania by the announcement in a Japanese paper that the authorities of the Empire intend to issue pictorial postcards "as souvenirs of the war." The intimation is added that "the cards will be first distributed among the officers and men at the front, and the remainder, if any, will be sold to the public." The reservation "if any" seems to betoken a short supply and high prices. But the British public will prove equal to the severest financial emergency in such a case.

DURING these summer and autumn evenings the planet Saturn may be seen rather low down near the southern horizon, about ten or eleven o'clock. The ringed planet is specially interesting to astronomers just now, for he is suspected of having had an addition to his family. Saturn has for certain eight satellites or moons, which have been discovered at intervals between the years 1655 and 1848. In the year 1899 a ninth satellite was reported to be shown by a photograph taken at Harvard College Observatory; but the evidence was not deemed to be conclusive. Lately, however, information given with much confidence comes from America that the satellite has been again seen on photographs taken this year at the same observatory. The ninth moon is excessively minute, so that none but possessors of the largest instruments can hope to see it.

The "Graphic" Photographic Competition.—The previous "Graphic" Photographic Competitions met with such great success, and attracted so much interest amongst amateur photographers, who sent in many thousand contributions, that the proprietors of the "Graphic" have decided to hold another competition, and to offer prizes of £20, £15, £10, and £5. The prize photographs will be published in the "Graphic," together with any others which the judges think worthy of special mention. The fee of one guinea will be paid for each photograph reproduced, with the exception of the prize photographs. At the last competition a large number of photographs were selected by the judges for publication and special mention, in addition to the prize photographs. Full particulars can be obtained on application to the manager of the "Graphic" Amateur Photographic Competition, the "Graphic," Tallis Street, Whitefriars, London, E.C.

ROYALTY and Engraving.—There was an interesting item in the single speech which constituted the toast list at the outing if Mr. Carl Hentschel's employees on Saturday. The three or four hundred employees of this engraving firm met under the shadow of Windsor Castle at the White Hart Hotel, Windsor; and this prompted Mr. Carl Hentschel to mention that King Edward was so pleased with a large portrait of himself executed by the firm by the familiar "three colour" process, that he signed a proof and sent it to the Kaiser as his Christmas card. Mr. Hentschel also told the company that when the Prince and Princess of Wales recently visited the new "Graphic" offices they were exceedingly interested examiners of the methods of process engraving as there in evidence. The details of working, the negatives, and subsequent preparations of plates were briefly and lucidly explained to the Royal visitors. It may be added that this interest is hereditary. Queen Victoria and the Prince Consort having been enthusiastic amateur etchers. Many a plate embodying their workmanship

was etched in Windsor Castle. Mr. Hentschel said the public had no idea of the rush and strain under which plates illustrating events of the day were now habitually produced, two hours having to suffice for work for which twenty years ago twenty hours would have been demanded by the platemakers. A hint to manufacturers in various industries was offered, when Mr. Hentschel remarked that, during the "heat wave," the hundred workers engaged in the colour-plate department of the firm at Norwood had begun work at five in the morning and left off at noon.

"THE Camera Can't Lie."—The great advance which has been made in the newspaper world in the past decade through the employment of the camera as an adjunct to the gathering of news is dwelt on by the "Times-Star" of Cincinnati. The vogue of the camera is chiefly due to its truth-telling proclivities," says our contemporary. "A forcible illustration of this is given in the London 'Leader.' Reuter's News Agency sent out from Bombay a despatch to the effect that on the departure of Lord Curzon for England that Viceroy's route from the station was thronged with large crowds which displayed much enthusiasm. The 'Leader' reproduces a photograph from the 'Empress' of Calcutta, which ought to bring a few explanations from the Reuter's correspondent. The picture shows Lord Curzon's carriage passing the Bombay Club. First came a squad of horsemen in Indian costume, then the Viceroy's carriage, then more turbaned riders, and in the distance a few more. On each side of the procession is a long line of soldiers presenting arms. But what are the soldiers there for? 'To keep back the thronged populace,' Reuter's man would probably answer. But where is the thronging populace, where these large crowds, which displayed marked enthusiasm? Alas, where? A group of forty or fifty people are standing at the junction of two streets, idly watching the parade. There are no waving caps. On the other side of the car-tracks are a few bicyclists, cabs, and foot passengers. Everybody appears to be going about his business, paying no more attention to the representative of the Emperor than if he were a wealthy merchant driving down to his office. The 'Leader' says: 'There is a sense of desolation in the picture that can almost be felt,' and that is putting it mildly. If it is an illustration of 'marked enthusiasm,' the 'Empress' would oblige us by furnishing a picture showing Indian apathy."

SOME points in landscape photography. One of the principal difficulties in landscape work where a satisfactory pictorial effect is desired lies in the elimination of the unnecessary, writes a photographic correspondent to the "Newcastle Chronicle." With regard to the proper arrangement of the parts of the picture, it is generally possible to so choose the point of view that the composition shall be more or less what is right, because a movement of a few yards does not materially alter the appearance of distant objects, while the foreground objects may occupy quite different positions in the picture. It is also often quite easy to move some of the foreground stuff, rolling a log of wood to a different place, pulling up a few tufts of dog daisies, carrying a couple of boats' anchors to such a position that they properly break up the foreground and arranging the ropes attached to them so that they do not form curving lines leading into the picture, and so on. But to exclude what is not wanted cannot always be so readily accomplished. It may be done sometimes by dodging one object behind another. At other times it is possible to get, say a chimney or telegraph post near to the edge of the plate, even if it cannot be got out of the picture entirely. Then a little retouching medium, followed by careful pencilling, will usually be sufficient to obliterate a small object. Telegraph wires are frequently a source of much annoyance. If they come quite close to the lens, they will sometimes not show at all, especially if care be taken to give a full exposure. But when twenty or thirty yards from the camera they show very aggressively, particularly if one of the anastigmat lenses is being employed. The best thing in such a case is to get them as much out of the focus as possible, and then to pencil carefully over the marks. It is always easier to work out a blurry, ill-defined mark, than one with sharp clear edges. Light objects, such as a white piece of paper, a child in light dress who happens to have moved, or anything lighter than its background, must, of course, be obliterated by scraping, the scraping being followed by pencilling until the even tone or tones of the background are filled in.

Correspondence.

- Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.
- We do not undertake responsibility for the opinions expressed by our correspondents.

THE FUTURE OF PROFESSIONAL PHOTOGRAPHY.

To the Editors.

Gentlemen,—Having read with interest the articles appearing from time to time in your columns re the future of photography, I should like to add my humble opinion and testimony to what has already been written on the subject. The outlook is certainly anything but cheering, either for employer or employee, and I take it that this state of things is due to several causes. Competition has effectually stopped the amassing of fortunes by employers, and in another direction has been equally disastrous to assistants. The ease with which a superficial knowledge of photography can be obtained, owing to the advent of dry plates, up-to-date apparatus, the almost mechanical forms of printing papers, etc., renders it possible for anyone to turn out passable work with very little practice and theoretical knowledge; consequently our ranks are being swelled every year by amateurs and improvers, who are filling berths which a few years ago would have required a really good pro. Again there are hundreds of people being trained every year at the various Polytechnics and similar institutions, at a fee of a few shillings a term, who, when they attain anything approaching proficiency, help still further to crowd the labour market.

The competition already referred to has caused hundreds of business men to cut down their prices to an absolutely ridiculous figure, thereby rendering it impossible for them to pay a fair living wage to their assistants, and here especially the mediocre worker comes in, and, in lieu of anything better, is glad to accept the magnificent salary of £1 or £1 5s. so impudently offered in the Situations Vacant Column, to say nothing of the (not afraid of work), whose work is quite good enough for the class of business. Photography, being a light, non-laborious means of livelihood, ladies are crowding into it, who can afford to work for salaries which it would be impossible for a man to entertain, especially if, as in many cases, he is married. I do not wish for one moment to hurt the feelings of any ladies reading this, but the fact remains nevertheless, and my advice to those about to enter the profession is Punch's advice to young men about to marry, "Don't," for the prospect for ladies in photography is by no means rosy.

The foregoing, however, refers principally to the third and fourth rate photographer, and, so far as it goes, should not affect the really competent ladies and gentlemen who find employment in our first-class firms, but (and in my opinion this is the most lamentable part of the business) the cutting down of salaries is by no means confined to the inferior worker, but has extended even to our best houses, where, to my knowledge, the ratio has been reduced quite 50 per cent., and I am not stating this merely from hearsay, as only a very short time ago I myself was offered the princely sum of £3 per week as operator and manager by two of our leading West-End firms, and £2 and commission by another. There is no excuse here of unskilled labour or of having to cut prices to suit the clientèle, or of an almost impossible task to pay the rent, etc. With a poor struggling master it is in a measure understandable and very excusable for him to pay a low wage, but, notwithstanding the general depression in business, there is no necessity for the best houses, whose business is entirely with aristocracy, to cut their assistants down in this shameful manner, and especially when we consider the qualifications necessary to obtain an engagement with these firms, which are as follows:—Absolute proficiency, both technical and artistic, good education, deportment and conversation, almost unlimited patience to deal with children, and oft-times rude and crotchety adults, especially found among the upper classes, a faultless appearance, and, in many cases, smart business capabilities. I also know that ladies applying for positions as receptionists to some of these firms have been offered 15s. per week, which is far less than that given by a certain firm of three for 2s. 6d. with coupon, who pay a 10 per cent. commission, as well as a little salary.

The question is, how much farther can this state of affairs go?

Surely it must have by now reached the limit; if not, we may expect very soon to see advertisements something as follows:—"A gentleman of ability required by a firm of Court photographers as operator and manager; only those with experience in highest class studios invited to apply. Permanency to really clever man. Salary £3 rising to £1 10s."

In conclusion, may I say that it is my firm opinion that employers very often considerably over-reach themselves and lose far more than they gain by this policy of grinding Shylockism, as, for my part, I would do my very utmost to improve the business for an employer who considered my interests a little as well as his own, but I should certainly not put myself out a little bit for a man who regarded me merely as a machine, for which he begrudged me a little oil; making all allowance for the degeneracy of human nature, I venture to affirm that in this respect I by no means stand alone.—Yours sincerely,

August 6th, 1904.

[Mediocrity unhappily abounds in professional photography; really good workers are scarce. Is it not the case that the low rates of wages at present current in the photographic labour market is directly caused by the poor quality of the ability at the command of employers?—Eds. B.J.P.]

DEVELOPERS WITH ACETONE.

To the Editors.

Gentlemen,—With regard to Mr. Smith's letter re my remarks on acetone developers, I took three minutes for the pyro-acetone developer and eight minutes for the ferrous oxalate (the exposures being the same), because these are about the times usually given in practice for developing an actual negative with the developers respectively, and I think such a comparison serves better than a scientifically comparative one for the class of readers my article was intended to interest. Mr. Smith is quite right in his remarks, but we are merely looking at things from different standpoints.

I beg to thank Mr. Smith for pointing out my misquotation from Eder. I only cursorily glanced through the article referred to, and was under the impression that I have read in other Continental works that Cyspek had obtained results with acetone as early as anyone. I believe that Vogel and Valenta were as early in the field, almost anybody, but definite historical notes are difficult to obtain on this subject.—I am, yours faithfully,

T. THORNE BAKER

16, Rutland Park Mansions, Willesden Green, N.W.

August 5, 1904.

THE STEADMAN SYSTEM OF EXPOSURE.

To the Editors.

Gentlemen,—I am asking myself whether the weather or aught else has contributed to my being exceedingly dense after reading the article upon this subject on page 686 in your last issue. I am sorry to say that there is a very negative result to me after wading through it, and should like very much to know what some other fellows think of it. It seems to me, on the face of it, to be American in production, it has much wind about it, and that delightful factor (of which Americans are so proud in their way of stating things) of being twice as long as it need be to tell the story. Of course, because it may be American, it need not damn it, any more than because I can get no light—or very little—out of it. If it is an English production perhaps we ought to be very proud of it, as a duck that is a swan should be, but I shall be glad to know what the other fellows think.

Anyway, what, I wonder, do the other fellows imagine is "a plainly observable tint"? Does this depend upon the colour sense of the observer, because everybody has not the same notion of a tint, except, perhaps, in connection with soda water—say. If it does, then one person's observation would give a longer exposure than another's. What is the rate of speed, or exposure time, of a plate which I use? It is not given on the plate boxes, and how does such an expression help general practice?

Will some of the fellows who have gripped this thing in their beak put it into ordinary, terse English—say in two hundred words—tell all they know?

London time we know, New York time we know, St. Louis time we know, Chicago, and 'Frisco time we know; but what in its simplicity

to time? Is it kodak time? But, there, it is spelled with "s" and not "8."—I am, yours, etc.,
JNO. NINNYHAMMER.
August 5, 1904.

A PART GREATER THAN ITS WHOLE.

To the Editors.

Gentlemen,—If man had been constructed in as definite and as varying a way as a geometrical figure it would be impossible in his life to go beyond the Euclidian axiom that—"the whole is greater than its part." He has, however, a good deal more about him than a geometrical figure or shape, which limits the field of application of the axiom. Upon his artistic side—as befitting the complete contrast between the freedom of art and the rigidity of geometry—the axiom may even be completely reversed and the contrary statement be regarded as perfectly true, that the part is greater than the whole. Indeed, every artist recognises the truth of the fact, and acts upon it. In depicting a face, a form, a landscape, or an incident he never gives more than a part. He knows very well from his own experience that the imagination must be given room for action, and that if he seeks to lead that imagination unduly by lengthening its leading strings in giving fuller detail it will resent its effort. He also knows that as imaginations vary with position in life, training, intellectual capacity, and constitutional temperament the more likelihood there is of providing stumbling-blocks and diminishing the circle of appreciation of his picture by introducing what his particular imagination, however high an opinion he may have of it, may regard as extremely telling detail. This bottom principle and practice of the artist is well worth the consideration and adoption of the photographer in the effort at improving his work in the broader fields lying outside the bounds of the purely technical. The photographer's disadvantage, compared with the artist, of not being compelled to submit every item in his proposed picture to the criterion of his judgment—or, rather, of submitting the whole to a process of mental and psychological digestion for the assimilation and consequent expression of the best. Still, whilst not compelled to do so by the working methods of his craft, he might do so as far as practicable with a corresponding gain in results.

The wide range of working photographic conditions at this time of the year makes it a tempting season for trial of the principle. The dawn comes early and the sunset is late; shadows can be caught at any and all lengths; every dark and cool recess has its particular penetrative maximum of light; and if it is desired to catch movement exposures are at their shortest. Finally, it is the holiday season, with its spare time for thought and practice. An examination of the artist's picture will prove that although he may only have shown part it is the right part and right in expressing what is characteristic. "A Cornish Village"—merely a scrap, cottagy street, a boat or two; a fisherman leaning against a post, and the free sea. Surely there is a point of view from which the same thing could be taken with a camera! The great thing is to approach the photographing of the village from the same mental as well as physical point of view as the artist. It is rather a difficult matter for the photographer to select the right part upon his screen, as so much that cannot be wanted is shown at the same time, and tends to disturb the judgment by its presence—usually prominent presence, to boot. The orthodox effort to produce a perfect negative also tells against success. The final positive print is the real thing, and if in that the characteristic part can be got by blocking out, vignetting, or by other expedient, any objectionable detail, there is no reason why the latter may not be accepted and included in the negative if without its inclusion the desired part is impracticable. To assist the judgment in selecting and composing, a piece of paper placed over what is undesirable on the screen will serve. "Somewhere-on-Thames" again—water, a boat, a lane leading up from the river, a riverside inn or cottage, with roofs amongst the trees in the distance. The elements are simple enough, and a score of such pictures will immediately suggest themselves to anyone who has any knowledge of the river. Or, as to the lower river below London Bridge, the many excellent representations upon pictorial postcards will give all hints to the photographer, with artistic instincts of what he needs if he subscribes to the view that "the part is greater than the whole."

Where length of exposure will permit of its use the telephoto lens gives a great aid in this particular form of photographic expression. It sifts away such a large amount of extraneous detail. It is a pity

that the peculiar power of this lens to represent objects at comparatively near should have been overshadowed by its capacity to work also at telescopic distances. The difficulty in focussing is a serious one. If this could be overcome by some device for better illuminating a finer screen—as a whole or partially—appreciation of the powers of this form of lens at nearer distances would undoubtedly and immediately rise to a high standard. As it is, where there is an object against a sky line the difficulties of focussing are much reduced. The exposure with it is also longer, although at this time of the year at its least long point. The use of a colour screen, obligatory as a rule, to minimise the effect of haze when photographing objects at a distance is unnecessary with objects nearer at hand, and largely reduces the length of exposure. There is a very high charm about a good telephoto picture. It is due in chief measure to the fact that it must of necessity be more of a suggestive part than of a whole. This is proof of our contention as to the artistic higher relative value of a part compared with the whole. Let the thoughtful amateur, equipped with whatever lens he may happen to possess, at least give the principle a trial. He is certain to feel gratified with his results, and at realising in practice some of the artistic possibilities of photography.—I am, yours, etc.,
ELDON.

August 4, 1904.

New Book.

"Leitfaden der Landschafts-Photographie." Fritz Loescher. Verlag von Gustav Schmidt. Berlin.

It is with much pleasure we see that a second edition of this work has been published. The author's object has been to place in the hands of the amateur a book which will be of service to him in the pursuit of landscape photography. We can but confirm the appreciative remarks we made in our issue of July 5, 1901, concerning the excellence of the book in this respect. On the other hand, we think it unfortunate that the author has not revised the remarks concerning perspective published in the first edition, to which we then drew attention. In graphically representing the external world, the most perfect perspective is geometrical perspective. With this the photographer can comply, and his work may be more exact than that of any artist. To introduce the question of "subjective perspective" confuses rather than assists the reader. Concerning the selection of a hand camera, the recommendation of the dark-slide type is probably a wise one, as the author is addressing German readers. Were he acquainted with the best type of English magazine cameras, however, we think that his ideas would be modified, as he would find his criticisms groundless. We have used one of these instruments for many years, and have never had trouble in changing the plates, nor scratches from such a cause. The magazine is detachable, and a screen is provided for focussing in case of need. We may even mention an advantage which this form has over the dark-slide pattern, which we think Herr Loescher will not think unimportant. For twelve plates in dark slides, the twelve frames upon which the plates rest must be in perfect register, but in the magazine we refer to all twelve plates are brought into focus by contact with one pair of stops. With such a magazine, who would be troubled with dark slides?

* * NOTICE TO ADVERTISERS.—Blocks and copy are received subject to the approval of the Publishers, and advertisements are inserted absolutely without condition, expressed or implied, as to what appears in the text portion of the paper.

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It may also be obtained from all Booksellers, Photographic Dealers and Railway Bookstalls.

Answers to Correspondents.

- * All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.
- * Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.
- * Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.
- * For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

- JOHN & PAYNE, 9, Lower Sackville Street, Dublin. Photograph of front of Oliver Plunket Memorial Church, Drogheda, showing Cardinals Vannutelli and Logue. Photograph of Cardinals Vannutelli and Logue and Most Rev. Monsignor Segura.
- Excelsior Photographic Company, 17, King Street, Carmarthen. Three Photographs of Twelve Girls in Welsh Costume, entitled, "Merched Llandissilio."
- H. Adamstone, London Road, Mersham, near Redhill. Photograph of a Cricket Match. Photograph entitled, "At the Death of Foz."
- G. C. Fisher, 36, Fore Street, Bridgewater. Photograph of Interior of Agapemone, Spaxton, Bridgewater.
- D. C. Latham, Grove Studio, Station Road, Buxton. Photograph of Cat and Fiddle Hotel, near Buxton.

TINTOMAD.—Messrs. Wyndham and Co., of Acton, will supply the sort of thing you require.

QUERIST.—1. Messrs. R. and J. Beck, 68, Cornhill, publish a book which should answer your purpose. 2. We know of no such work.

J. W. COOPER.—We are much obliged for your interesting letter and enclosure; there is, however, nothing novel in the idea. Nor do we think it of much practical photographic value.

COPYRIGHT.—K. OSBORNE says: "I should be glad if you would let me know for how long the copyright in a photograph lasts?" In reply: The copyright in a photograph lasts during the life of the author, and for seven years after his, or her, death. After the copyright is once registered no further fee is payable.

LICENCE TO PHOTOGRAPH.—J. BLIGH asks: "Am I obliged to have a general pedlar's licence for taking photographs on the beach? Is there a law to this effect? Kindly let me know." In reply: A pedlar's licence will not be required. But we believe a licence is necessary from the local authorities in most places to practice photography, commercially, on the beach.

BOOKS WANTED.—"W." says: "I should be glad if you will tell me if there are any books published on posing and lighting, and the price of same." In reply: Yes, there are several—see the list on pp. 974-5 of the Almanac. The prices are appended. "The Studio and What to do in It," by H. P. Robinson, is a good book, but there are several others.

PROFITS OF BUSINESS.—"X. Y. Z." asks: "Could you tell me if £100 worth of material would turn out £600 worth of work at 12s. per dozen, without waste? My reason for asking is, I am offered a business taking £600 yearly, and they state they save £250 yearly. Rent, £60. Taxes, £17. Do you think this possible?" In reply: We should say that this is possible if the cost of labour is not taken into consideration and the business is economically managed.

SEPIA PLATINOTYPE PRINTS.—R. RUTHEVEN asks: "Can you give me the formula introduced by Mr. C. F. Inston for giving sepia tones on ordinary cold bath platinum paper?" In reply: The formula you refer to is as follows:—(1) Potassium oxalate, 1 oz.; water, 7 ozs. (2) Potassium citrate, 75 grains; citric acid, 120 grains; mercuric chloride, 45 grains; water, 7 oz. The solutions may be used cold and in equal parts. The clearing bath to be used after development is composed of hydrochloric acid, 1 part; water, 120 parts.

ENLARGING.—GREAVER asks: "I am fixing up an enlarging apparatus. I wish to work with an incandescent gas-light, with an electric condenser. Will you tell me what distance I should place the gas from the condenser to get the most even light on screen? Of course I am anxious to get a good even light." In reply: The focus of the condenser is not mentioned. The best way will be to set up the apparatus and then move the light back and forward until the most even illumination is found on screen.

PAPER WANTED.—H. H. AND CO. write: "One of our foreign correspondents informs us that he has seen a description in certain journals, the titles of which he omitted to note, of a photographic paper capable of producing photographs in colour. The name given to the paper is 'Multico,' and it is believed to be the invention of M. de Slavick, an Austrian, and Hezequiel, a German. We should esteem it a favour if you could inform us if the photo paper is obtainable in England, and if so, at what address." In reply: We believe the paper may be had through Messrs. Penrose and Co., Farringdon Road, E.C. Better to communicate with that firm for particulars.

ONE SOLUTION INTENSIFIER.—"PAN" asks for an intensifier requiring only one solution. In reply: The following formula will be found reliable:—No. 1. Mercuric chloride, 12 grains; water, 2 ounces. No. 2. Potassic iodide, 3 drachms; water, 2 ounces. Put No. 1 into a graduate, and add No. 2, drop by drop. As soon as it will become cloudy, but finally clear up again. When it is clear, and add a small piece of hypo about the size of a pea. Pour over the plate and rock until desired density is obtained, then wash for twenty minutes. You will notice that this is not a double process bath, and the plate does not bleach. Instead, it steadily intensifies, and requires no further treatment.

REDUCER FOR BROMIDES.—L. B. ROBERTS writes: "I have several bromide prints that have been over-printed and developed, so that much of the shadow details are lost when the prints are viewed by reflected light, but are visible when seen by transmitted light. I cannot produce duplicates of these prints as the negatives are not accessible. Please, give me a formula for reducing the density of the prints without staining them." In reply: The following is excellent for reducing bromides on developing papers: Potassium ferric oxalate, 20 grs.; sodium sulphite, 200 grs.; water, 5 oz. Shake till dissolved and add Oxalic acid (crystal), 75 grs., and shake till the solution turns bright green; pour off from any undissolved acid, and add Hypo, 2½ oz.; water to 10 oz. For use mix with two parts water.

SPOTTY PRINTS.—ALCO EDWARDS asks: "(1) Will you kindly tell me what is the matter with the enclosed prints? They were developed over-night on the enamelling glass, and were quite right when squeezed down. On coming to take them off this morning they were as you see them. I enclose a piece of the blotting-paper I use. (2) I should be very much obliged if you could recommend a pure stout blotting-paper. (3) Can you also give me the address of the Rotograph Co.?" In reply: The cause of the spots is that the print, or the plate, was splashed with some chemical before the pictures were squeezed upon it. The blotting-paper has nothing to do with the trouble. (2) Blotting-paper suitable for photographic purposes may be had from any of the large houses, such as Marion's and others. (3) The address is 14, New Union Street, Moorfields, E.C. We do not answer correspondents by post.

SENSITISING DRAWING PAPER.—E. D. S. SEYMOUR asks: "Is it possible to prepare ordinary drawing paper so that photographs can be printed on it from ordinary negatives?" In reply: The following will be found an excellent and easy method of sensitising any drawing paper for printing out:—Take arrow root, 1½ ozs.; water, 1½ ozs. Boil until quite clear, and dissolve in the hot solution: Salt, 15 grs.; citric acid, 5 grs. Allow to get quite cold and take off the skin, then, with a soft brush, spread the clear jelly rather thickly over the paper, which should be pinned to a drawing board or other flat surface, and allow to thoroughly dry, then brush over it a solution of silver nitrate, 50 grs.; water, 1 oz.; to which strong liquid ammonia has been added till the brown precipitate first formed has been re-dissolved, then dry and print on it within two days. With platinum toning this will give blackish brown prints.

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THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1905.

Edited by THOMAS BEDDING, F.R.P.S.

The forty-fourth annual issue of THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC will be published on December 1st. This year's ALMANAC reached a total of 1,604 pages, and the entire edition of 25,000 copies was sold out before publication. Of no other photographic book ever issued two such unique facts be recorded. The edition for 1905 will also consist of 25,000 copies.

The striking favour with which past ALMANACS have been received is the surest proof that the lines upon which the publication is produced meet the requirements of its readers and supporters. Upon such lines we propose continuing the volume for 1905. At the same time, we shall be pleased to receive and consider suggestions for increasing the value of the ALMANAC in directions which may occur to readers as susceptible of improvement.

The ALMANAC for 1905 will appeal to photographers all over the world as a daily reference guide in practical work. The standard matter and formulæ will be revised and added to where necessary, the year's advances in theory and practice will be recorded, and wherever practicable new features of an informative nature will be added.

*** IMPORTANT NOTICE.**—The attention of advertisers is specially directed to the announcement that this year's entire edition of the ALMANAC (25,000 copies) will be placed in the hands of dealers and the trade on December 1st—a fortnight earlier than usual, so as to be well advanced of the Christmas publication season.

EX CATHEDRA.

The Traill Taylor Lecture. We learn from the Honorary Secretary of the Traill Taylor Memorial that Dr. R. T. Glazebrook has accepted the Lectureship for the current year. The delivery of the lecture will probably take place in the course of December next. Dr. Glazebrook's position as Director of the National Physical Laboratory, and his reputation as author of several of the Cambridge Natural Science Manuals dealing with Light, Heat, Mechanics, Hydrostatics and Electricity should cause photographers to make a mental note of the lecture and endeavour to attend.

* * *

An Improvement in Self-registering Thermometers. Though these instruments are less used by the photographer than the physician, there still arise many occasions, manufacturing and meteorological, where the former makes use of them; hence a reference to an improvement recently devised by Mr. Hicks will be of interest to many of our readers. The present well-known form of registering thermometer acts by a constriction near the bulb, permitting the mercury expanded by heat to pass beyond it, but not to return, as the metal contracts and leaves the column in the tube at the highest point it has attained since setting. The setting is made by swinging and jerking the thermometer when cold, so as to jerk the column back to join the remainder in the bulb. Everyone who uses these instruments has at times experienced the annoyance of the difficulty in getting all the mercury back. Mr. Hicks' improvement consists in making the constriction double and wider, and it has been shown, not to enter unnecessarily into the theory, that this doubling of the throttling, with its attendant widening, makes the former troublesome jerking entirely unnecessary.

* * *

Dry-Plate Glass. One of the drawbacks to cheap German dry-plates is the quality of the glass used in their manufacture. Native industry has been encouraged by the imposition of a duty on foreign glass, but from the report of the Dresden Chamber of Commerce the foreign manufacturers, and especially the English, still holds the field. The report for 1903 states that the Lommatsch factory turned its attention to dry-plate glass in the preceding year and found a ready sale at remunerative prices. However, in 1903 Belgian and English manufacturers entered into keen competition. We thank the Dresden Chamber of Commerce for the restrained compliment which follows, that English glass is good, in a moderate degree, and for the frank acknowledgment, that though the Belgian prices are cheaper, the material does not enter into serious competition. But the result of the year's business is still more satisfactory from a British

aspect. The Lommatzsch factory has been compelled to reduce considerably its output of dry-plate glass and produce window glass instead. This means that German dry-plate makers find it more to their interest to use the British article, notwithstanding the duty placed upon it.

The Causes and the Suggested Remedy.

In the report referred to, the Lommatzsch firm gives as a reason for its want of success the difference in the cost of carriage. It reminds us of the complaints made by the English farmer, when he cries out about foreign competition. It is alleged that the freight from England to the principal places of dry-plate manufacture in Germany is one farthing per square metre, but from Lommatzsch, not far from Dresden, it is five farthings. We cannot give exact figures, because we do not know what is the average yield of quarter-plates from a square metre of glass, but assuming it to be one gross, the difference of carriage amounts to less than one-half farthing per dozen. Against this must be set the present import duty on glass into Germany. From these figures it seems doubtful if the difference in cost of carriage is the chief reason for the preference given by German dry-plate manufacturers to English glass, although it may claim their attention. Perhaps the German glass manufacturer has an axe to grind with the State railways, and takes the opportunity to strike a blow, but from conversation with Germans, who know the English shilling quarter-plate, we think the chief reason is the superior quality of the English glass, which generally excites their admiration. The remedy suggested is, of course, an increment of the duty on foreign glass, but the German plate manufacturer might have something to say on that subject, as it would affect their export trade.

A Use for Radium.

Those who have worked at Photomicrography earnestly enough to cut their own sections with the microtome, will call to mind a difficulty which often occurs at the last moment. The section to be cut has been hardened and buried in paraffin wax, and all that remains is to see that the knife of the microtome has an edge as keen as that of a razor, before proceeding to cut the delicate shavings from the mass. Here comes the trouble. The friction of the knife against the paraffin arouses a certain amount of electricity, and this makes the shavings, instead of falling off as they should do, curl up and stick together in the most exasperating manner. Some genius has hit upon the expedient of dispelling the frictional electricity thus induced by the use of radium. We may remind our readers that this rare element, amongst its other curious attributes, possesses the power of discharging an electroscope. To put the matter more plainly, when the two strips of gold, or aluminium leaf, which constitute the electroscope, are charged, they stand out from one another, each repelling its companion. But when a morsel of radium, or a lump of pitchblende containing radium is brought near the instrument, the charge of electricity is dispelled, and the metal leaves fall once more together. The ingenious one already referred to arms his microtome knife with a tiny tube containing five milligrams of radium bromide, and this is quite sufficient to at once drive away the electricity which is aroused by the action of the blade over the paraffin. We have heard so much about radium and the wonders which it is likely to accomplish, including the cure of cancer and half a dozen other diseases, that it is quite refreshing to hear of it being of some kind of real use.

Ruby Glass.

In the early days of the gelatino-bromide dry plate it was quickly seen that, the comparative flood of bright orange light that experience

showed to be harmless to the wet plate during the period of development and quick fixing could not be employed with the new plates without producing irreparable fog. The consequence was the bringing largely into use of ruby glass, often so sparingly as to make illumination of the plate scarcely visible at all. Notwithstanding this, it was found that even ruby glass acting sufficiently long on the film, produced fog. Spectroscopic investigation quickly showed the cause—the transparency of this glass to a certain amount of rays of high refrangibility. When this defect of ruby glass was seen experimenters ran riot in the extraordinary recommendations as to the colour of screens to be used, and this day there is no certainty as to what colour of adiacent medium may not be come across on entering a strict dark-room. At a recent meeting of the Royal Society a paper read by Mr. J. C. Maxwell Garnett contains some interesting references to the matter. At an early stage in the manufacture of the ruby glass it is colourless, and does not attain the well-known colour till the second heating. In this first stage the gold or copper which gives the colour is in a state of solution or combination. After the second heating it exists in the form of minute spheres as observed by Siedentopf and Zsigmundy. In a case of this kind where we have a medium (glass) made up of metal spheres embedded in a non-light absorbing substance and of a distance apart of the spheres, but upon certain optical qualities of the metal of which the spheres are composed and the refractive index of the embedding material, the glass in its colourless stage can be brought to the colour by the radiation from radium. A further point of interest in the paper was the evidence adduced to show that the remarkable coloured preparations of metallic silver discovered by Carey Lea, and termed by him photogenic salts, are examples of this type of medium.

Decaying Leather Bindings.

One of the minor ills of life to which the professional photographer is liable is the rotting of the leather binding of his books, whether his commercial records, works of reference, or bound albums of specimens or registers, that have been stored on his shelves for some years. The defect manifests itself by the backs either coming apart, or becoming so fragile that a mere touch causes pieces to fall away, and render the volumes most unsightly. The evil is not confined to photographic studios; it becomes a most important object of investigation to the possessors of books or their custodians. What the exact cause is has not been definitely agreed upon; probably it is two-fold. First, seeds of decay inherent in the leather employed, through the retention of deleterious agents, mainly acid, used in their manufacture; and secondly, the action of the products of the combustion of gas in the apartments the books are stored in. Nearly all gas contains sulphur, which, after combustion of the gas, enters the atmosphere as sulphurous acid, soon to be oxidised to sulphuric acid, and this, year by year being absorbed by the bindings, increases in quantity till a time arrives when there is sufficient absorbed to decompose the leather. This view has been questioned, but that it is one cannot admit of dispute, as our own experience proves. We possess a gradual accumulation of a number of volumes of a scientific journal, bound in leather, some of which occupied the top shelves in a room lighted by gas, others were on lower shelves. Those on the upper shelves where the gas fumes would mainly act, when they came to be removed fell to pieces. Those on the lower shelves, where less gas fumes had play, were in good condition. The lesson this teaches to photographers having

able records, bound, or "half-bound" in leather is to be careful not to store them on upper shelves in rooms where gas is burned. Some time ago the question was discussed at the Society of Arts, the general feeling being that gas fumes were not the primary cause, but that acids in the process of manufacture was the chief factor in the process of decay. A committee was formed by the Society, and issued certain recommendations as to a suitable mode of preparing the leather. Such leather has now been prepared, and upwards of sixty institutions have been arranged to give it a trial, and report results. These reports, when issued, will be interesting to everyone.

* * *

Lightning. A good photograph, showing all the wonderful ramifications of a complex flash of lightning, makes a beautiful picture and its producer generally values it only because it means the one successful negative of a heap of plates which have been sacrificed in the name of science. Such photographs are of extreme interest to the meteorologist, for they record in a manner impossible by any other means the exact form of the course pursued by the electric charge, whilst any peculiarities due to local conditions are accurately noted. But there is one form of lightning which, so far as we can discover, has never yet been photographed, and the omission is solely due to its rare occurrence. In Ganot's "Physics" a phenomenon to which we refer is thus described:—"There are, further, the lightning flashes which appear in the form of globes of fire. These, which are sometimes as large as much as ten seconds, descend from the clouds to the earth with such slowness that the eye can follow them. They often rebound on reaching the ground; at other times they burst and explode with a noise like that of the report of many cannon." We remember once to have seen a flash of this kind in the North Sea, the globe of light taking about two seconds in its descent. Evidently something of the same nature took place the other day at Portsmouth during a thunderstorm, although it has not been described by one paper as "a thunderbolt," and by another as a meteoric stone. Here is the account as published in the "Daily Telegraph":—"A tremendous flash of lightning was seen, and at the same instant a brilliant electric burst from the clouds and shot downwards into the sea. It fell into Portsmouth Harbour, between the Victory, flagship of Admiral Sir John Fisher, and the gun-crews signalling school. . . . The general impression of those who witnessed the incident was that a meteorite had fallen." Another instance of the vagaries of lightning recently came from America, and it revives the old idea that lightning has the property of printing upon the skin of its victim a picture, generally of the identical nature under which the person chiefly concerned was seeking shelter when he was struck down. Photography has been its best to explain away this apparent mystery. The action of the sudden discharge upon the skin is to draw out the blood of the minute vessels and to make a kind of latent pattern upon the epidermis. This effect has been photographed, and the picture has been published more than once. But pictures, said to present an accurate representation of the surrounding scenery, and printed upon the skin of those struck, continue to be reported. In this latest account from America, the skin pattern is said to be that of a crucifix, and to be regarded by many as a miracle. Possibly later on this marvel may be photographed, and we shall have an opportunity of judging of its merits. If the picture does not come to hand, we shall regard the story as yet another production of the ingenious wonder-monger.

THE PASSING OF THE PEN-DRAUGHTSMAN.

THE art of drawing with the pen has for some years been closely allied with photography, although as every one knows it had some distinguished artists among its professors long before photography brought it into prominence and pushed it forward into a position which it would never have assumed had it not been for the camera and lens. There is every sign that to photography, its whilom friend, the art of line drawing with pen and ink will also owe its extinction, or at any rate its retreat once more within the narrow limits which it formerly occupied. For the larger section of the public, which knows nothing of art beyond what it picks up in a kind of vicarious way during a visit to the Royal Academy with a borrowed and marked catalogue, a public which cannot see the beauty of a curved line, naturally prefers a photograph. And if not a photograph, a wash drawing, which to them is so like the work of the camera that they cannot readily distinguish the one from the other. Fate is on the side of the public in this matter, for out of a hundred artists who can make a presentable picture in monochrome wash, there is hardly one who can arrive at the same result when restricted to pen and ink.

It was a happy day for the pen artist, as it was a fateful one for the poor wood engraver, when it was discovered that by means of the camera a line drawing could be converted into a block, which could give impressions in printers' ink. It was not the first boon that photography had granted to the artist—at least to the artist who devoted his efforts to illustrations for the press. If we look back to some of the early issues, say, of the "Cornhill Magazine," we shall find many illustrations to novels by Thackeray, Geo. Elliot, and others, by Millais, Fred Walker, and artists of a like calibre. It might be reasonably thought that the original drawings from which these blocks were made would be priceless. Or if not quite that, we may be certain that a collection of them would represent a very respectable fortune. But, unfortunately, they do not exist. These artists drew their designs direct on the boxwood block, and in the operation of cutting out the "whites" between the lines, the engraver destroyed the originals. The work of these eminent artists was reduced to tiny chips, which in due course were swept into the dusthole.

It was after this period that the good fairy Photography stepped in, and granted her first boon to the producer of pictures for the press. "Do not draw on the wood," she said, "but on the paper or cardboard to which you are better accustomed, and with a touch of my wand I will transfer your drawing to the wood block, will reduce or increase its size to anything you like, and leave your original work unchanged in every way." This was a gift indeed, and it seemed as if the days of the old magicians had once more come upon us. Possibly at first it benefited publishers more than the actual workers, and it can easily be understood how often it came about that they could sell an original drawing for a good deal more than they paid the artist for it, even after they had drawn a handsome profit by using it in the printing press.

Then the fairy again appeared, and she offered a second boon to the pen and ink artist. "I have already taught you," she said, "how to transfer your drawing direct to the wood block; now I will show you how to do without the wood block altogether." And while the artists were blessing the fairy for her good works, the poor engravers were cursing her as an evil genius. Most of them had been brought up from their youth to the cutting of wood blocks. It was a difficult art, and one which required a long apprenticeship. Beautiful machines, on the principle of the ruling machine, had been introduced to help

the graver in its work, but for the most part it was literally a manipulatory process, this art of wood engraving. And it had been brought to a surprising pitch of perfection. It was no longer necessary for an artist to draw in actual line; he could, if skilful enough, simply tint—that is to say, he could rub his drawing in with washes of Indian ink and Chinese white. The engraver was able to translate these half-tones into line, and would alter the depth of the cut, the pressure of the tool, and the distance apart of the delicate ridges, with every variation of tone presented to him. It was a wonderful art, and its professors did not get half the credit due to them, simply for the reason that the public could only admire the picture, without troubling themselves to understand the methods by which the effects were produced.

As we have said, it was a fateful day when the knell of doom came to the poor wood engraver. One of those sad instances which occur of the individual being submerged for the general good; one of the cruelties of progress, which have to be accepted as a necessity. There were naturally a large number of admirers of wood engraving who mourned the extinction of a beautiful form of artistic expression, and there is no doubt that an effort would have been made to save it, had it not been for the inexorable logic of those three little letters, *£ s. d.* When a block which would cost several pounds to engrave could be produced by photographic process for less than as many shillings, the dilettante had to hold his peace. "It's the money that makes the mill to go," and the cheaper rate at which the machinery can be driven, the more there is for the proprietor thereof. The expense of making these new blocks was so insignificant compared to wood engraving, where very often the engraver claimed as much as the artist, that publishers jumped at them as greedily as a trout will snap at a May fly. Line artists were immediately in demand. Schools for their instruction were established, and journals full of pictures, good, bad, and indifferent, fell upon the world as thickly as leaves in Vallambrosa. Many benefited by the boom, and even the makers of collodion, who when dry plates came to the front found their occupation almost gone, became more busy than ever. The old wet plate process was restored as the best method of making negatives of the necessary opacity for the new system of block production. Every one rejoiced, except the poor engraver, who, unless he had the prescience to turn to zinc and copper as alternatives to wood—unless, that is, he had the pluck to march with the times—found himself in a very bad way.

And so the pen artist had a good time of it, and a few workers came to the front who did masterly work. In a recent book by Mr. Pennell, one of the masters, he goes so far as to affirm that pen-draughtsmanship is the only healthy art developed in the nineteenth century. Certainly it is something which stands apart from all other methods of artistic expression. Every line has to tell, and has to have a meaning. Take, for example, one of Phil May's remarkable pen drawings. It looks as if the lines were thrown together in the most careless manner, but it is well known that this artist made a careful pencil study first, and afterwards worked his pen lines above it. Take away one of those subtle lines from one of his faces, and the loss will be apparent.

Once more the good fairy came to Earth, and it would seem that by this time she had a little changed her mind with regard to pen drawing. Possibly she thought that the boon which she had given had been too lightly regarded, or possibly that the artists were getting too bumptious with success. This time she brought as a gift to art the half-tone block. At first it did the penmen no harm, for two shillings per inch could not compete with fourpence. Besides which, the printers declared that

the blocks were no use; they were so shallow that they quickly clogged up with ink, and were not worth this of seriously. We know now how wrong the printers and how the various difficulties connected with the tone block have been surmounted. Competition, too, stepped in, and competition is so keen that a half-tone block can now be had at the price of one in line. The result is obvious; the drawing in pure line is being discarded for more easily accomplished wash drawings. Photography, which a couple of decades ago gave the draughtsman such a splendid lift, has now dropped again, and he must retire into his old groove. Although we have headed this article in a manner which would indicate his extinction, we do believe that drawing will be valued by those who can really appreciate its merits. Possibly the familiarity with it of its sometime yokefellow, photography, has brought about a will do something to make people understand its beauty, but for the present, at all events, the half-tone block, either from a photograph or a wash-drawing, is in the ascendant.

IS PHOTOGRAPHIC PERMANENCE DESIRABLE?

THE above question should be one of considerable importance to every one who practises photography, whether as a professional or as an amateur. The subject is too frequently neglected by both. It must be admitted that a very large number of photographs are now produced daily that, for the credit of the art, it is by no means desirable that they should prove too stable. There are others in which permanency is a most important consideration—family portraits, to wit—for life is not certain. More photographs are, undoubtedly, now being made daily than at any previous time in the history of photography, and there is little question that a large proportion of them will prove fugitive in the near future than has ever been the case before. With all the knowledge gained, both in theory and practice, during the past forty years and more, is this to the credit of photography and photographers?

The carbon and platinotype processes both yield pictures of undoubted permanence. But need silver prints be as unstable as many persons seem to imagine? We say, no. There are thousands of silver prints still in existence which were made forty, and upward, years ago, that up to the present show no signs of lack of stability. If these could be produced forty years ago, why, with our extensive knowledge of the chemistry of the subject, cannot similar results be done now? It may, *en passant*, be asked how long should a silver print last. Some seem to be of opinion that if it exists for three or four years, that is all that should be expected of it, and it is to be regretted for the credit of photography, that very many do not do for anything like that time, some even show a marked change in as many months. Indeed, we have seen examples of silver prints in an exhibition that, though good at first, showed a decided change before the exhibition had closed.

During the past few years every effort has been made by manufacturers to simplify photography, in reducing the trouble in its working to a minimum. But it is interesting to inquire if this has not, to an extent, been done at the expense of permanency of the results obtained by those who do not fully recognise the principles involved, or, if understood, are neglected.

The old prints that have so well withstood the test of time—the only true test of permanency—were made on plain paper, or on albumenised paper, which the user had to sensitise himself. These papers contained nothing

chloride of silver, with a considerable quantity of the nitrate of silver, plus, in the case of the albumenised, trace of an organic compound of silver termed "albumen of silver." The paper was in a neutral state, and had to be used the day, or day after, it was sensitised. Later on, ready sensitised albumen paper was introduced. This contained an organic acid as a preservative, hence the paper was acid, instead of being neutral as previously. Then gelatine papers, now called P.O.P.s, were introduced. These, in addition to the gelatine, contain chloride of silver, an organic salt of silver, free acid, and only a small proportion of free nitrate of silver. These papers yield very pleasing results, are easy to manipulate, are well suited to the weak negatives of the present day, and, what more, have good keeping qualities. Hence they are very convenient to employ, as well as being economical. For these reasons they have almost entirely ousted the older papers from the field. Where albumen papers are now employed they are usually bought ready sensitised. Indeed, we much doubt if the unsensitised albumen paper is now stocked by any but the larger dealers.

As a further trouble saver, the combined toning and fixing bath was introduced for "P.O.P.s," and became largely used by amateurs, who do not like the trouble of toning and fixing their prints separately. To the use of this bath may be attributed a very large proportion of the fading prints of to-day. Although paper makers, as a rule, give a formula for this bath, they, most of them, discourage its use; yet for all that it is largely used. There is not so much harm in the combined bath if the tones are really obtained by a deposition of gold; but to often the bath is repeatedly used long after its life has been exhausted, as then it will still continue to yield good tones, but they are produced by sulphur toning, the stability of which is more than doubtful. Furthermore, with the combined bath the desired tones are frequently obtained long before the prints are sufficiently fixed, with the result that within a very brief period they develop yellow stains. The latest thing in the way of saving trouble in working is the introduction of the so-called "self-toning papers." These have been too short a time on the market for one to pass any positive opinion as to the stability of the prints made upon them.

One naturally likes to obtain one's results with as little trouble as possible; but, at the same time, is it desirable that this should be done at the expense of their stability? One goes to the trouble to produce a negative that will yield "a thing of beauty," it is desirable that it should be so "a joy for ever," instead of only a fleeting one, even if it should involve a little extra trouble in its production. When commencing this article, we had intended to point out the difference in the conditions of working when the able prints of forty years ago were made and those prevailing at the present time—and they were widely different—but space will not permit. We may, however, recur to the subject at some future time.

DURING these summer and autumn evenings the planet Saturn may be seen rather low down near the southern horizon, about ten or eleven o'clock. The ringed planet is specially interesting to astronomers just now, for he is suspected of having had an addition to his family. Saturn has for certain eight satellites or moons, which have been discovered at intervals between the years 1655 and 1848. In the year 1899 a ninth satellite was reported to be shown by a photograph taken at Harvard College Observatory, but the evidence was not deemed to be conclusive. Lately, however, information given with much confidence comes from America that the satellite has been again seen on photographs taken this year at the same observatory. The ninth moon is excessively minute, so that none but possessors of the largest instruments can hope to see it.

HEDGEROW PHOTOGRAPHY.

As we ramble along through the quiet country roads and lanes in search of pictorial material for our cameras, our eyes are from time to time attracted by some flower growing on the banks, or the movement of some timid retreating animal in the hedgerows that border our path. We pause for a minute to admire the flower, or peep amongst the dry russet and brown leaves that half-fill the shallow ditch by the hedge, to obtain a glimpse of the creature we have disturbed; but there our interest generally terminates, and we wander on again along the road with perhaps a mental note, that upon another occasion we will devote a plate to those groups of hedgerow flowers. Unfortunately the resolution, for one reason or another, is rarely, if ever, carried out, and one of the most interesting environments of the country that the naturalist photographer could wish to find, remains unexplored and neglected.

At almost every season of the year, the photographer will find interesting material in the hedgerows; from early spring until late autumn, so numerous are the subjects and models to be found there, that his only real difficulty will be in making up his mind which to select. The first flowers of the spring are nearly all children of the hedgerow, delicate of hue, sweet-scented, and all too short-lived, giving place with the advancing season and increasing heat of the sun's rays to a more robust and sturdy generation of plants. The vegetation of the hedgerow is of particular interest, for in such a situation the struggle for existence is at its keenest, and affords the most striking examples of adaptation to environment. One of the most interesting and instructive collections of photographs any one could wish to produce would be a series taken throughout the year showing the ever-varying vegetation of the hedgerow.

Although at first one might be led to suppose that photographing the plants of the hedgerow would not be a very serious or difficult matter, actual experience will very quickly prove that it is by no means the simplest or easiest branch of outdoor photography. Indeed, it requires a very great deal more patience and skill than is generally imagined; while if really pictorial results are to be obtained, the photographer must have an artistic temperament and a critical eye for grouping and effective lighting. One of the first, most frequent, and greatest difficulties in photographing the vegetable denizens of the hedgerow, is the constant movement of the plants. Even on the calmest day in summer, when apparently not a breath of wind stirs the foliage, careful watching at once reveals the fact that really the leaves are not altogether motionless for a period sufficiently long to permit of giving a "time" exposure. Therefore, it is of vital importance, if clean, unblurred pictures are to be obtained that the exposure shall be as short as possible.

A hedgerow that crowns a sunny grass-grown bank facing the warm south, generally abounds with bird and animal life, and will yield the photographer an inexhaustible supply of material for his camera. But the birds and animals of the hedgerow are shy, nervous creatures, and many hours of quiet, patient watching and waiting, and the exercise of much ingenuity will be required if the photographs are to be a real success.

All the year round a wonderful variety of bird life frequents the hedgerow, finches, sparrows, robins, thrushes, wrens, and many others; each exhibiting a wonderful degree of individuality of character. Some appear quite bold and friendly, almost desirous of sitting for their portraits; while others are so timid and shy as to be almost impossible to photograph, taxing the patience and resources of the photographer to the utmost. With the advent of spring the courtship of the birds begins, and the photographer will have many a chance of portraying a duel between rival male chaffinches. After the courtship comes the season of nest building, and many a wonderfully constructed nest does the hedgerow shelter. The nest ready for the reception of the eggs, the nest containing the eggs, and with

the mother bird sitting, and later the young fledglings ere they quit the home, all offer material for the photographer.

The animal life of the hedgerow, though not so varied as the bird life, nevertheless will be found of great interest, and to yield a large number of subjects for the camera. The hedgehog makes its winter nest of leaves in a dry cavity at the foot of a secluded hedge; all through the winter it sleeps curled up and hidden away under a warm counterpane of leaves, on the south side of the hedge. As spring advances, and the sun shines with greater warmth, and for a longer time each day, the hedgehog at last awakens from its long winter sleep, which has covered a period of perhaps five or six months, and crawls out of his leafy nest, dazed and weak with his long sleep to bask for an hour or two in the warm life-restoring sunshine.

Other animal denizens of the hedgerow, more picturesque in appearance, are the voles, though the latter are rarely seen above ground. The toad and the grass snake are also to be met with, and these much maligned creatures will be found to yield most quaint and interesting photographs; the toad is a particularly good subject, and if properly treated with gentleness and consideration is a capital model, and will pose *ad lib.* before the camera.

Insect life abounds in the hedgerow, and will keep the photographer busy from spring until autumn. Beetles, butterflies, caterpillars, flies, and spiders, all love the hedgerow and make it their home.

And now a word as to the most suitable apparatus for hedgerow photography. A stand camera with a good extension of bellows is necessary, as a long focus lens is the best type for hedgerow work. A good reflex camera, like the "Birdland," is of inestimable value, as it permits of focussing moving objects up to the instant of exposure, and shows the object exactly the same size as it will appear on the plate. Rapid orthochromatic plates will be found to give the best results all round, and for the "plant-life" of the hedgerow are an absolutely necessity. Given some half-mile of somewhat neglected, wild hedgerow, the photographer will find that he has a happy hunting ground for subjects for his camera, that will keep him busy for many a long day.

F. MARTIN DUNCAN.

ON THE ACTION OF WOOD ON A PHOTOGRAPHIC PLATE IN THE DARK.

[Abstract of a Paper read before the Royal Society.]

It has been shown in former papers that many substances are capable of acting on a photographic plate in the dark and producing a picture of themselves. Further investigation shows that this property belongs probably to all woods, some, however, being much more active than others.

To obtain a picture the wood has to be in contact or at a little distance above the photographic plate, and has to remain there for times varying from half an hour to eighteen hours, and to be at a temperature not higher than 55 deg. C.

The wood of the conifers is very active, and gives pictures which are very definite. Fig. 1 is a picture of a section of a branch of a Scotch fir, and shows well the rings of spring and autumn growth. It is remarkable that the former are very active, producing in this picture the dark rings, and so with the other pictures, the part which is active in the original is dark in the picture. The rings seen in the wood are very sharp and strongly pronounced in the picture. If the action exerted on the plate be owing to the presence of hydrogen peroxide, as has been previously suggested, no doubt it is produced by the resinous bodies present in the wood, but it is remarkable that there is no action from the dark autumn wood. Experiments described in the full paper shows that resin exists in the dark

rings, but apparently under such conditions that it can escape. Other members of the pine group have been experimented with and have been found to behave in the same as the Scotch fir.

With the spruces the action on the plate is not so definite and well marked; the white wood is always active, but in some cases the dark rings are also active, and the pictures are so sharp as with the firs. Larch wood gives a very interesting result, for the picture is the reverse of that of the Scotch fir, that is, the dark rings in the wood are the active rings and light rings are inactive.

With regard to woods other than conifers, oak and beech both active and give very good pictures, so also does ash (*Robinia*), Spanish chestnut, and sycamore; on the other hand, ash, elm, horse chestnut, plane are comparatively but slightly active. In the full paper lists of woods are arranged according to their activity.

Many foreign woods are very active, but as the annual rings are often not well developed, the pictures they give are of somewhat different character. The African black wood, rosewood, cocobola, and many others are very active. Several



Fig. 1.

the foreign woods have a ring of white wood which is quite active.

Knots in a wood generally, but not always, give a good picture. Some of the resin in immediate contact with the knot is in some cases but little active. The marked difference in properties of resins from different sources is described, and it is shown how difficult it is to remove it, so that the wood should be no longer active. Boards that have been exposed to the sun for a long time, an oak box a hundred or more years old, rotted wood from the stump of a tree, and even bog wood have all been found to be still active.

In addition to woods many different resins and allied bodies can, when used alone, be proved to be very active, some naturally much more so than others. Ordinary resins, Burgundy pitch, gum mastic, are very active, asphaltum, dragon's blood much less so, but true gums such as gum-senegal and gum-arabic are entirely without action on a photographic plate.

In certain cases the picture obtained on the plate does not resemble the markings which are visible on the wood. With some woods this more commonly occurs than with others. The picture which is persistent in the wood is shown by fresh sections

ons giving the same result. The true bark of a wood is apparently quite without action on a photographic plate, so is the internal pith of a plant.

There is another and a very interesting action, which occurs with wood, it is the great increase of activity which it exerts on a photographic plate after it has been exposed to a strong light. For instance, if a piece of deal be half covered by black paper or tin foil and be exposed for five to ten minutes to bright sunlight, and then put up in the usual way with a photographic plate, it will give a dark picture where the light has fallen on the wood and only a very faint picture of the part which has been covered. This is shown in Fig. 2. Even comparatively inactive woods such as elm and ivy after a short exposure to bright light give good and dark pictures. The action is not an indiscriminate darkening over the whole wood section, but an intensifying of the parts already active. This increase of activity by the action of light appears to occur with all woods. Artificial light, such as that from the electric arc, or from burning magnesium ribbon, act in the same way, so does even a faint light. A piece of wood put at a window for some

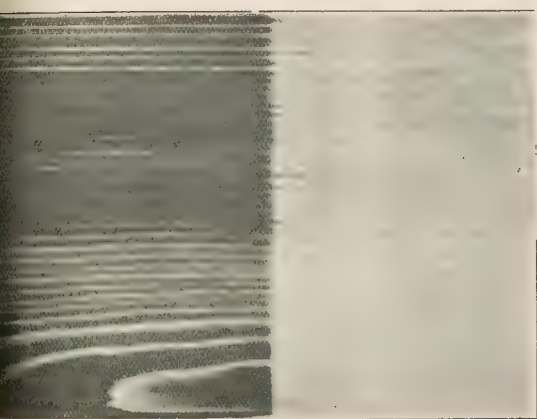


Fig. 2.

hours will give a darker picture than a similar piece left in the middle of the room. This increase of power of a wood to produce a picture does not rapidly pass away. After twenty-four hours the action is visibly less, and decreases more rapidly the first than after some days, but it will be a fortnight or may be a month before the wood resumes its former condition. This action, like the former one, is entirely stopped by interposing the thinnest piece of glass or mica between the photographic plate and the active body. An inactive card painted with an alcoholic solution of resin, acts in the same way, and turpentine which has been exposed to a bright light acts more strongly on a photographic plate than it does when it has not been so exposed. Again, old printing which is now nearly inactive becomes much more active after exposure to sunlight. Bodies other than those which may contain resin or allied substances are not affected in this way by light, for instance, flour, sugar, porcelain; metals are not rendered active by sunlight.

The next point was to ascertain which of the constituents of light was most active in producing these effects, and the first experiments were made by simply placing strips of different coloured glass on wood sections, exposing them to sunlight and afterwards putting them up with the photographic plate in the usual way. Pictures of the results are given in the paper. Red glass entirely prevented any increase in the activity of the

wood, in fact, it acted in the same way as a band of black paper or tin foil would act, and a green glass acted in much the same way, but under a blue glass the activity of the wood was increased to much the same extent as under colourless glass or under no glass. Fig. 3 shows what happens when a red glass and a white glass are placed upon it and is exposed to sunlight. On the right of the figure there was no glass.

Further experiments were made by placing similar pieces of deal in light which had passed through different coloured solutions. Three double-cased bell jars were taken, one was charged with a solution of potassium bichromate, another with copper ammonium sulphate solution, and the third with pure water, and all were exposed to sunlight for four hours. The deal in the red light gave only a faint picture, that in the blue light a dark picture and that with the pure water was only a slightly darker picture. Resin, guaiacum, copal varnish, white oil paint

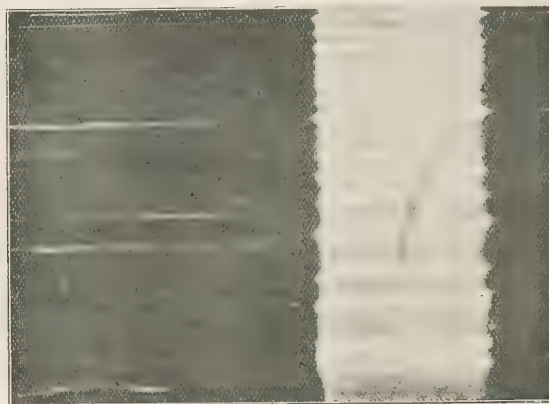


Fig. 3.

and resin sized paper all acted in the same way and gave similar results.

The light from an arc lamp when passed through a red glass and allowed to fall on a wood section for one and a half hours produced no effect, but when the same light was passed through a blue glass and fell on a similar wood section for only one hour it produced a dark picture. With liquids this same increase of activity by the action of blue light is produced. Turpentine, which has been exposed to blue light is more active than when in its ordinary condition.

W. J. RUSSELL, Ph.D., F.R.S.

AFFILIATION of Photographic Societies.—The executive committee is arranging for a meeting of members of affiliated societies in London during the coming autumn. With the generous assistance of the Royal Photographic Society, this meeting will take place at the New Gallery on the evening of Friday, October 14th, that evening being entirely set aside for the purpose. The committee believe that the members will welcome this opportunity of fraternising and of viewing the 49th exhibition of the Royal Photographic Society, which will be in progress, and that the meeting will do much to foster friendly relations between the affiliated photographic societies. There will be no charge for admission, the council of the Royal Photographic Society having promised free admittance to every member producing his Red Book or the special red ticket issued by the executive committee for the current year. The reception of visitors by the executive committee will commence at 7 o'clock. At 8 o'clock there will be an address by the chairman, followed by an exhibition of the competition slides and slides in natural colours by various processes.

GUM BICHROMATIC PRINTING.

[A Condensed Account of a Demonstration given before the Royal Photographic Society. By Mr. J. C. S. Mummery.]

The gum bichromate process is the most flexible of printing methods. One may exercise greater personal control with it than with any other method of printing, and it has the additional charm that the whole process may, one might almost say must, be carried out from beginning to end by the worker. Any colour may be employed, the prints are permanent, any intensity of deposit may readily be obtained, and the values—the stumbling block of photography—may be corrected or further violated according to the knowledge of the worker. It is the process *par excellence* for those who work for the joy of the work and for those who strive to impart something of their own feeling and sentiment to their photographs.

The process rests upon the action of light upon the bichromates in contact with a colloid substance. It was originated by Mr. Pouncy of Dorchester and, as Pouncy's Carbon process, was published in "Photographic Notes" in 1858. It was laid before this Society at two meetings in 1859, the record of which, in the journal, is very amusing. Pouncy's experiments were possibly based upon the previous work of Fox Talbot, Poitevin and others who had endeavoured to produce a chromic process with gelatine as the colloid, and it is probable that the adoption by Pouncy of the less refractory gum assisted him to obtain his results.

Pouncy produced some very fair specimens which were hardly distinguishable from the silver prints of the period, but judging from the correspondence in the journals of the time, many who tried the process could get no result at all, and some went so far as to say that Pouncy produced his prints by means which he had not disclosed. The process languished, and was pushed aside by the introduction of Mr. Swan's process of carbon printing, which gave a certain and ready method of rendering the exact densities of negatives and could be used commercially. The gum process was unearthed later, and the Artigue paper, which appears to be very similar to gum, was invented in 1889, Mr. Rouillé Ladevéze and others exhibited gum-prints in 1894 and since then it has come into increasing use. The introduction of multiple printing has been of much advantage to the process, giving a depth and transparency hardly otherwise obtainable.

The special materials and apparatus required are suitable paper, gum arabic, bichromate of potash, pigment, brushes, muller and slab, palette knife and actinometer. Almost any kind of paper will be found workable. Mr. Mummery prefers a machine-made drawing paper, manufactured by the O. W. Company of Great Russell Street; it is a hard sized paper which works satisfactorily with the formula given below. Whatman's drawing paper, various cartridge papers—Michallet, Ingres, Allongé—Autotype single transfer and many others work equally well—but for multiple printing a good hard sized paper is desirable if the whites are to be retained. As a rule a soft paper requires a greater proportion of gum, and with a very soft paper it may be necessary to size with gelatine.

Ordinary gum arabic in tears, not necessarily of the best quality, but free from the insoluble gums used as adulterants, should be used. The solution is prepared by placing 4oz. of gum in a piece of linen, tying it up into a bag and suspending it in 12 oz. of cold water in a wide-mouthed bottle. The gum will dissolve in the course of two or three days, and will last a long time. It will become strongly acid, but this is not a matter of much moment; if neutralised with ammonia it will work more freely and give a very fine image, but in multiple printing it seems to have a tendency to reversal and in addition is very much slower in printing. If fungi form upon the stock solution of gum, it is only necessary to filter the solution. Albumen as a substitute for the gum has been tried, but Mr.

Mummery has no personal experience of this modification. The consistency of the gum is an important point, the thinness of the coating depending largely upon this. The bichromate of potash should be in saturated solution.

The pigment should be that obtained from an artist's colour man as levigated powder colour, as this form can be measured better than the moist colour in tubes. Lamp and ivory black, red ochre, burnt sienna, the browns and many other colours are suitable, but sepia and white do not work satisfactorily.

The brushes required are an ordinary camel or bear hair for coating, and a hog hair softener. A piece of ground glass or a muller are necessary for properly mixing the gum and pigment as well as a knife of some sort. An actinometer such as Sawyer's is useful for printing. A board whereon to coat the paper, a sheet of glass or metal to develop upon, and muslin for filtering are also required. The necessity for carefully working by measure cannot be emphasised too strongly; some gum and some bichromate and pigment to taste is an excellent formula for those who hope to fluke a result, but to work the process satisfactorily it is necessary to know what one requires, and to be able to obtain the result with reasonable certainty. The following formula is a kind of standard upon which variations can be made for particular cases:—

Ivory black, 40 grains; burnt sienna, 8 grains; gum (1-3 oz. solution), 1 oz.; bichromate of potash (saturated solution), 1 oz.

This will give a dark warm brown and the proportion of pigment is suitable for double or triple coating. If only one coating be required, the pigment should be increased to 45-50 grains of black and 9-10 grains of burnt sienna. Mr. Mummery does not advocate a large number of coatings; he gets all that he requires in two or three printings. A pigment of a light tint must be used in greater quantity to obtain proper density and a slight increase of the proportion of the gum is desirable. Pouncy, in his original formula, specified 60 grains of lamp black, but this is rather excessive as lamp black has much greater covering power than ivory black.

Black mixed with brown gives the colour most easily worked, and one with which the beginner will get the best results. With some of the other colours there is apt to be difficulty, because of the different exposures they require.

Mr. Mummery then grinds the pigment and gum together with the muller and slab. A pestle and mortar are not adapted for this process, but if a spatula or palette knife be used, the operation takes two or three minutes. The fineness of the result largely depends upon the grinding to which therefore special attention should be given. He then added the bichromate and stirred the mass, afterwards filtering it through two thicknesses of muslin. For single printing one thickness only should be used.

When well mixed a coating on a saucer should appear quite smooth. The sheet of paper to be coated is laid upon a new paper without creases, and pinned to the board. The pigment should be kept well stirred and too much should not be taken on the brush as the essential point of the process is a thin coating. A thick coating peels off, and requires longer exposure. A hog's hair brush, a few inches wide, is useful for working over the paper after the colour has been laid on. This brushing, however, requires to be done very quickly or the coating will become too dry. The brush should not be allowed to "drag" along the paper. If the brush does not pass over smoothly the coating is probably too thick. These details, however, can only be learned by actual experience with the particular colour employed. In the ordinary way, black requires longer exposure than any other colour, and if the coating be at all thick the exposure will have to be prolonged.

The coated paper should lie flat for about thirty minutes to harden and should then be desiccated on the rack over a kitchener or in a cool oven. It is advisable, to lay the paper

a sheet or two of newspaper, so that the bars of the rack do not mark the coated paper. The coated paper is laid flat on a table, because if hung up the sheets will stretch considerably.

Paper coated in this manner will remain workable for some time, even six months, if kept perfectly dry, but it is better to use it within two or three weeks. It is very sensitive to moisture and must be kept in a calcium tube. The coated paper is not sensitive to light until dry; it should be slightly rubbed upon the surface; and an unexposed piece should lose the whole of its coating if soaked in water, a property of preening the paper, introduced by Mr. Packham, is that in which the paper is saturated with bichromate and dried, and afterwards washed with pigment and gum, with water added in place of the bichromate, but no particular advantage attaches to the method.

When multiple coating is resorted to, precaution must be taken to adjust the paper and negative so that they may be placed for the second and following exposures in exact register. An effective printing frame for multiple printing may be constructed with a drawing board, as the base, two fillets of wood screwed at right angles to one another along the edges of the board. The paper is laid upon the board; two strips of board are placed close up to the fillets, the whole being kept in position by means of clamps. The negative is laid upon the top, and on this a piece of thick plate glass. The process is best suited for a thin well-exposed negative with plenty of detail. Good graduations cannot be obtained from a negative made for carbon or platinum printing. Paper negatives may be used in the process, but the exposure with them will require to be somewhat prolonged. Paper prepared as described is better than P.O.P. and will be sufficiently exposed when a negative of Paget P.O.P. shows the depth required in a finished print; such an exposure will be correct for development with ammonia, but for prints to be allowed to develop mechanically a shorter exposure is sufficient.

The chief charm of the print is a certain slight running of the image after development and during drying. Most methods of development by friction, such as brushes, cotton wool, etc., have a tendency to remove too much of the softened gum, and leave the print hard, especially if over-printed. Mr. Packham contrives to have some resistance left in the material rubbed upon, and does not try to get the very last out of it; in development is carried on in this way the colour will run off only a very little. The exposure will be from 2 to 9 tints on the actinometer, according to the colour and density of the negative; a piece of paper mineral at the back of the negative will increase exposure 8 or 9 tints. In a properly exposed print the image will be clearly visible by transmitted light; it is necessary to keep the print absolutely dry if development be hurried, or it will rapidly become insoluble and heavy, and for the same reason a print should not be left longer than is necessary in the printing frame. The "continuating action of ammonia" experienced in the carbon process occurs also in this process after the paper has been exposed, and development should be carried out as soon after the printing as possible.

A variety of methods are available for the development or washing up of the image. The print may lie face downwards in water and develop itself; the image may be washed up under a spray of water, or by laying with water, and an excellent method is with a washstand as used in the Artigue process; this is very useful for high surfaced papers, or, again, a soft brush or pledget of cotton wool may be used either under or above water. The ordinary spray as used for fixed drawings is perhaps the most convenient method as it gives either a delicate or powerful washing at will, according to the distance of the nozzle from the print and the pressure of the air. It may be used either with the bellows with which nature has provided us, which maintain a pressure of nearly 4 lb. to the inch, or with one of

Fletcher's bellows giving a pressure of about 2 lb. per inch. Although the latter requires less effort to work, it is not so delicate or so much under control as the breath. If the high lights come away from the paper in development, it is probable that too much gum has been used in the coating.

The double coating process enables one to intensify all the darker tones, or such as may be desired, and the object of multiple coating and exposure is to get finer graduations in the finished print. It is not necessary that a second or third printing should be of the same duration as the first. The first printing should be longest, the second rather less, and, if a third printing be necessary, it should be still less than the second.

In order to work upon the print with a brush it is desirable that the print should be first dried or nearly so; although a better plan is to entirely dry the print in the dark and wet it again, when the brush may be used with safety. For spotting, the best colour to employ is pigment like that used in coating the paper. Details, such as the clouds, worked in at the first coating, will not be obliterated by a second coating of colour. With regard to fixing the print in the ordinary way this is not necessary. Fixing is simply the removal of the bichromate, and the print is quite permanent when once exposed to light for a time. When using colour such as ivory black and burnt sienna it is not necessary to remove the bichromate of potash, but if it be desired to take out the bichromate, this can be done with a five per cent. solution of alum or a five per cent. solution of bisulphite of soda. Some colours necessitate the removal of the bichromate after development. The prints should not be laid flat to dry or the colour may run into the whites. The best way is to lay the print on a support in a slanting position, keeping the darker portions at the bottom. Alcohol flowed over the print may hasten the drying, but gum prints when wet are so delicate that great care is necessary, or the pigment will leave the paper in a sort of wave. The prints may be varnished either with gum solution or ordinary paper varnish, but before varnishing it is necessary to size the paper with ordinary size or isinglass. Aqueous mountants, such as starch paste, may be used for gum bichromate prints, but Higgin's photographic mountant is a very convenient article for the purpose.

J. C. S. MUMFORD.

No. 1 of the Journal of the Röntgen Society has recently been issued. The editor is Mr. J. H. Gardiner, F.R.S., who has secured the co-operation of many well known investigators interested in the study and discussion of X rays and allied phenomena in their relation to medicine, the arts and sciences, published at 19, Hanover Square, W. The number before us is an excellent production, the literary matter and illustrations bearing on the various applications of the X rays, being of high scientific value.

The arrangements for the annual meeting of the Society of Chemical Industry, which is to take place in New York from September 7 to 12 next, have now been completed. The president, Sir William Ramsay, K.C.B., F.R.S., is to give an address in the gymnasium of the University of Columbia on September 8, and in the evening of that day the annual dinner of the society will be held at the Waldorf-Astoria. A tour has been arranged, to last from Monday, September 12, until Thursday, September 29, with the object of affording members and guests an opportunity of attending the international congresses in St. Louis during the week beginning Monday, September 19. Among the cities to be visited in the course of the tour are Philadelphia, Washington, Pittsburg, St. Louis, Chicago, Detroit, Buffalo (Niagara Falls), and Boston, the last-named to be reached on Thursday, September 29. Ninety-four persons, in addition to those resident in America, have already signified their intention of attending the meetings. Further particulars may be obtained from the general secretary of the society, whose address is Palace Chambers, 9, Bridge Street, Westminster.

A SIMPLE METHOD OF CORRECTING LOCAL DEFECTS IN NEGATIVES.

THE following method of correcting local defects in negatives has for its basis the well-known valuable staining action of anilin dyes. It is described at length in a recent number of "Camera Craft," by Bernard C. Roloff, and the idea is to use a certain dye which has been found to serve the purpose best, and stain the film of the negative at the portions desired. To achieve this result successfully, it is necessary to make a number of applications of a weak alcoholic solution of the dye.

The dye found to be most suitable for this purpose is the red, which may be procured at any drug house. Other dyes, such as orange or yellow anilin, may be used, but the first mentioned is the one which gives the most uniform results. The solution should be as follows:—

Solution A—alcohol (wood), 2 drams; anilin, red, 3 grains.

Solution B—alcohol (wood), 2 drams; anilin, red, 5 grains.

Weaken with $1\frac{1}{2}$ drams alcohol, if too strong.

Ignore sediment, if all the dye does not dissolve.

This produces a somewhat weak solution, but it is not advisable to have the colour strong enough to give a dense stain, as this would defeat our object, viz: a gradual stain, which is barely perceptible at the edges, and which shows no line of demarkation at any point. This latter requirement depends upon the skill and ability of the worker, but by following these explanations and directions any one will be able to apply the stain successfully in the most approved manner.

To apply the solution, use a piece of very soft cloth, perfectly lintless, instead of cotton, which latter, no matter how pure and soft, always leaves a stringy trail of fine particles of lint behind it. All the work may be done in broad daylight, for the light has no appreciable action on the stained film, so that the negative may be taken right before a window and set up at an angle of about forty-five degrees (as in retouching), with a sheet of white paper under it to reflect the light through the negative. The negative, however, should be set solidly so that the circular motion used to apply the stain will not move it, and possibly cause a smudge or stain where none is desired. Having secured it in place, the cloth is now dipped into the weak alcoholic solution (A) of stain and applied directly on to the dry negative on the portion it is desired to stain, care being taken that the circular movement used be very light, no pressure being necessary at first. The first application should entirely cover the part to be stained, with one movement clear to the edges, while the next and following applications may be carried on nearer the centre of that portion. (The last applications may be made with the stronger solution (B), if necessary.) Continued applications are made in the above manner until the stain becomes visible to the eye and your judgment will aid in determining whether or not enough has been applied. The solution being an alcoholic one, the stain rapidly dries, and in a very short space of time, the negative will be dry enough to make a proof to determine exactly if enough stain has been applied. If, by accident, or ignorance, too much has been applied, a solution of alcohol laid on in the same manner will remove as much as is desired.

Before staining is commenced, it would be well for the worker to make a print of the negative, so that a comparison may be made between that and proofs made after staining.

We will suppose that our negative contains good detail and proper gradation in the foreground, but the sky is too dense, although we know that clouds were there when the picture was taken. It is only necessary to stain the landscape portion, and if the stain extend over the edge on to the sky portion very slightly, it will not matter (unless the stain at this edge be too dense), it being sometimes preferable to have the sky darker near the top than at the horizon, as it appears in reality. Practice

makes perfect, and although anyone will be able to do a "stunts," such as staining the landscape portion of a negative, allowing the sky to print darker as just described, yet, on trying a few times on waste negatives, the amateur will be surprised at his own dexterity in "doping" in clouds where absolutely no detail existed, staining a face in a portrait negative that prints dark, or in securing detail in any desired portion of a landscape negative (if the detail be there), by staining the other portion.

It is an easy matter to correct a hypo stain, no matter irregular it may be. Many of us possess such negatives and print always appears in a lighter shade at the portion affected by the hypo stain. This is corrected by staining the negative (while dry), all around the stained portion, until a proof print no longer shows the difference in density.

It will be found that a thin negative may be greatly improved by this staining, either by staining the entire surface, if underexposed, or, if the thinness be from over-exposure and underdevelopment (and it is not desirable to intensify in the same manner, and then reduce), by staining all but the high light thus giving the needed contrast in a most delicate manner, and if this be carefully done with a solution properly prepared, too strong, the print will show absolutely no sign of "doctoring." The method, however, refers more particularly to printing skies, restraining portions which it is desired to print dark, and correcting the appearance of hypo stain, and a trial will certainly demonstrate its extreme value for these purposes.

THE RÖNTGEN SOCIETY: ITS PAST WORK AND FUTURE PROSPECTS.

[Abstracted from an article in No. 1 of the "Journal of the Röntgen Society."

At the end of the present session the Röntgen Society will have completed its seventh year, a period which seems to furnish a suitable opportunity or reviewing the work it has done and taking a glance at its probable future. It will be convenient to remember at the outset that it was in December, 1895, that Professor Röntgen made his announcement at Würzburg, that in working with a Crookes tube he had observed certain rays which produced results unknown to him at the time, and that, as he was unable to define the character of these emanations, he proposed to call them "X rays." This announcement, it will be remembered, excited the whole scientific world. Physicists in all countries set themselves to investigate these strange phenomena, photographers who had the necessary apparatus commenced to take radiographs, and medical men encouraged by the physicists and photographers to persevere in their work, so that the results obtained might be used for the benefit of humanity, by assisting in the diagnosis, from the exterior of the body, of injuries and diseased conditions which it had only been possible before to reach by the use of probe and scalpel. The year 1896 seems to have been spent in carrying on experiments and further investigations in the subject, which was now growing in universal interest. At the beginning of 1897 it appears to have suggested itself to the minds of a few medical men that it would be well to found a Society for the systematic study of the new phenomena and the turning of the radiations into practical use.

The first definite record I can find of this movement was in March, 1897, when a meeting was held at 20, King William Street, Strand, which was attended by Drs. Fenton, Harrison, Low, and Walsh, Dr. Low presiding. These gentlemen seem to have previously consulted their friends on the subject, for I find that letters were read at that meeting from gentlemen approving the scheme, who regretted their inability to be present. Dr. Walsh was appointed temporary Secretary, and he was instructed to write to prominent members of the medical profession, asking if they would join a Society for the study of the X rays if one was formed. Another meeting was held on April 2, 1897, which was more largely attended, and at which it was unanimously decided that a Society should be formed for the study of the X rays. The idea at first appeared to be to confine the membership to the medical profession, but at this second meeting a draft of proposed rules was drawn up which it was decided to

submit to a large general meeting, together with the recommendation that the Society's basis should include non-medical members, and a sub-committee was formed at that meeting for the purpose of approaching a prominent scientific man, with the view of inviting him to be President. It is interesting to note that our late treasurer, Mr. Thomas Moore, took a prominent part at this and subsequent meetings. At a later meeting it was announced that Professor Silvanus P. Thompson had accepted the presidency, and was also decided that the name of the Society should be "The Röntgen Society."

It must be noted here that, though the basis of the Society was widened so as to include all those taking a scientific interest in rays, it was also thought it might be desirable to form a medical section to deal with matters necessarily excluded from discussion before a mixed audience. This is seen in a report published in the "British Medical Journal" of April 10, 1897, as follows:—"At a meeting of medical men interested in the X ray, held last week at 11, King William Street, Strand, rules were drawn up, subject to final approval at a large general meeting, on the lines common to most scientific societies. It was resolved that membership should not be restricted to medical men, but should include all who are interested in the scientific study of the Röntgen rays. The difficulty of discussing medical matters before a mixed audience will probably be got over by forming a medical subsection. Any inquiries may be made of the Honorary Secretary, Dr. Walsh, 5, Pump Court, Temple, E.C." It is worthy of note, also, that at one of the earliest meetings of the Committee the Secretary was instructed to report both to the lay and the medical press. In order to show the wide basis on which the Society was founded, I ask you to note that in the first list of Vice-Presidents and Members of Council exactly one-half consisted of medical men, and the remainder were laymen representing general physics, electricity, and photography. This is not to be wondered at, because up to that period few medical men had made a special study of electricity, and scarcely any of them possessed the necessary apparatus—such as a large induction coil to carry on the experiments—while a large number could not possibly have the time for the necessary investigations; they therefore sought their scientific friends, and invited their help and co-operation, which was most readily given, and the meetings of the Society testify to the mutual work and co-operation of the lay and medical members.

I particularise this point just now because it has recently been suggested by some, who have not grasped the spirit of the Society, that the lay members have desired to invade the province of the medical man. Nothing could be further from the truth, and I am quite sure the majority of our medical members would bear testimony to the fact that the lay members have always been willing to render them any assistance without obtruding on their special functions. I do not wish to press this point unduly, but before leaving it I would remind you that the action of electricity on the body and its functions is principally physiological. Some of the most eminent physiologists have been laymen, and it is largely their discoveries that we are indebted for the principal part of our knowledge on this important subject. The names of D'Arsonval, Röntgen, Tesla, etc., will at once occur to you in this connection. I would here say that, when the subject of the formation of the Society was first mooted, there were some of us in the scientific world, myself among the number, who hesitated to agree to entertain the proposition, because we felt that there were no many societies already in existence, and that the work of investigating the phenomena of X rays might well be undertaken by some existing society—e.g., the Physical Society. It was soon seen, however, that the facts connected with the subject and the results obtained, were so numerous as to call for continuous attention, and that no existing society could spare time from its ordinary work to give the necessary attention to the new phenomena, around which public interest grew with enormous rapidity.

I think, therefore, there were good grounds for the formation of our Society, and I believe I shall be able to show by its record of work that it has justified its existence. The first general meeting of the Society was held at the rooms of the Medical Society in Chandos Street, Cavendish Square, on June 3, 1897, under the presidency of Professor Silvanus Thompson, and I find that in the course

of some most interesting remarks he said, "the position of the Society was between those devoted purely to medicine, to physics, to photography. In themselves they focussed a number of interests provided for by no other existing bodies, such as, for instance, the Royal Society, the Physical Society, the Photographic Society, and the Institute of Electrical Engineers." The formal inauguration of the Society took place at St. Martin's Town Hall on November 5, 1897. There was a very large attendance, and Professor Silvanus P. Thompson, F.R.S., the President, gave a most brilliant address. Many distinguished men attended including Sir William Crookes, Dr. J. H. Gladstone, Earl Crawford, and Dr. Ferrier, and the exhibition of apparatus and radiographs was full of interest, and bore ample evidence to the value of the work which had been done in the short time since Professor Röntgen called attention to his discovery, and of the immense interest it had excited.

In a short editorial in the archives for February, 1898, the objects of the Society were succinctly stated to be—

1. A study of the nature of the rays.
2. A practical inquiry as to the best apparatus for their production.
3. An investigation of all details bearing on their useful application.

So much for the foundation and constitution of the Society; and now let us look for a short time at the work it has accomplished.

I find, on looking through our archives, that there have been some sixty papers read before the Society since its foundation, besides the valuable presidential addresses. There have also been exhibition meetings each year and evenings devoted to discussion. There must be included with the work of the Society the valuable addresses delivered by the presidents in their respective years of office: Professor Silvanus P. Thompson, Mr. C. W. Mansell-Moullin, Mr. Wilson Noble, Dr. Macintyre, Professor Herbert Jackson, and Lord Blythswood. Then, in each year there has been one evening set apart for discussion, and another for the exhibition of apparatus. I think this shows that a very creditable amount of valuable work has been accomplished by the Society since its commencement.

In estimating the value of the work done by the Society, it is only necessary to compare the X-ray tube and the radiograph of to-day with those obtainable seven years ago. Among the greatest improvements in the tube must be reckoned the introduction of the feature which gave it the name of the "focus-tube," for which advance our late eminent president, Professor Herbert Jackson, was largely responsible. The tube competition, under the presidency of Dr. Macintyre, did a great deal, also, to accentuate the points where improvement was desired in the manufacture of tubes. The exposure necessary for a good radiograph at the present time is only a fraction of that which used to be required in the early days, before X-ray plates, and apparatus were improved, while instruments for the therapeutic application of ultra-violet rays and high frequency have been made and largely improved by members of this Society.

Before leaving this part of the subject, dealing with the constitution and work of the Society, there is just one thing more to record. As soon as the various radiations with which we deal in this Society became known as powerful therapeutic agents, it was obvious that the methods of their application would principally interest the medical members, and it was soon seen by them that the discussions connected with the use and application of these rays involving the treatment of patients could not, in accordance with medical etiquette, be brought before a mixed audience. The matter was laid before the Council, and, with the consent of the members, a new rule was made, under which the medical members could have special meetings whenever they required them for discussions. Since that time no strictly medical subject has been brought before the general meetings, and though the medical members have not made large use of their privilege yet, it is gratifying to note they have made a commencement, and that this evening a paper has been read which could not have been discussed in general meeting. No better evidence could be afforded of the good feeling prevailing in the Society, nor of the regard in which the lay members have always held the medical profession, than the readiness with which the members agreed to the necessary alteration of rules to accomplish this object, by which the medical members really obtained greater privileges than those accorded to the other members of the Society.

We now come to the final part of my subject—the future prospects of the Society. Let me at once say I claim no prophetic

instinct, nor do I propose to indulge in speculations; the question I wish to consider is, "Is there work left for the Society to do?" I cannot answer this question better than by quoting rather largely from the two valuable presidential addresses delivered by Professor Herbert Jackson. In that delivered in November, 1901, he made these pregnant remarks:—

"I hope there may be some opportunity during the coming session of discussions connected with this part of the subject, out of which we may reasonably expect fresh hints for research and for further investigation of the relation of X rays to light, and to those interesting 'Becquerel rays,' which seem, from their behaviour as regards refraction and polarisation to come midway between X rays and ordinary light." After a certain time has elapsed since a new discovery has been made, and when the discovery has been followed up by many enthusiastic workers, it is often by no means unprofitable to return to first principles, and to pass in review the facts which had been gleaned, and to ascertain how far they help us to realise similarities between the phenomena under investigation and others of a kindred nature. The recognition of such similarities is often of the greatest service in interpreting results and in suggesting new lines to work upon. Such a review, in the form of discussion among the members of this Society of the relation between the phenomena connected with X rays and those of light and electricity, might well be of help at the present time, when some generalisation which may serve as a working hypothesis is much wanted.

"Turning to the medical side, I am dealing with an aspect of the subject of which I have no official knowledge. There are, perhaps, hardly any subjects of which it can be said more truly than of medical subjects that silence on the part of a layman is best. Therefore I have no intention of entering into such details as can only fitly be discussed by medical men themselves. Those who have had the opportunity of practical experience in the application of X rays, and who have had the time to carefully study the history of cases subsequent to such application, are alone capable of forming a critical opinion of the value which the rays possess as a therapeutical agent. The first object of the Röntgen Society is to further the knowledge of the employment of X rays in medicine by medical men, and it is highly desirable, in justice to the founders of the Society and in view of the great importance of the subject, that this main object should be constantly kept in mind. Whether as a means of treatment or for diagnostic purposes, the application of X rays and their employment in these directions should be left in the hands of medical men, who alone have the knowledge and experience required to allow of their forming judgments and of recognising and avoiding possible dangers. While, however, the treatment of individuals and the study of the effects upon them must remain with members of the medical profession, they would, I believe, welcome the results of any work which would help them in their own special branch. . . .

"If the importance of studying the results obtainable from X rays along with those from light, electricity, and no doubt also heat, be admitted on the physical and chemical side, it must appeal still more strongly to the members of this Society from the medical side, which, I would emphasise by repetition, represents its main function. I must not allow myself to indulge in speculative generalisations from the published results of the therapeutic value of X rays, light, and electricity, and I have not seen enough to permit me to make any remarks from my own experience; but I think I may venture to say that there are elements in common between the various effects on the animal body sufficiently strong to point to the growing necessity of studying them together and of devising further experiments on simple organisms in which the actions of rapid oscillations from all the various sources should be made the object of researches to endeavour to ascertain what changes in one and the same single cell can be brought about both immediately and in its life-history. . . .

"In the course of such discussions ideas will arise, and in the Röntgen Society there should be no difficulty in finding present members, and, let us hope, new members, anxious and willing to carry them out. Negative results will, no doubt, often ensue, and these would be of value in saving useless waste of time on the part of others; but there is no need to anticipate a preponderance of these. The field is a large one, and has not yet been so cultivated as to show even the faintest sign of exhaustion.

"I definitely, then, suggest to the Society the reconsideration of its constitution and its objects, with a view to modifying them some-

what in the manner which I have endeavoured in a very general way to indicate. Throughout what I have been saying I have had in mind the idea of a Society, composed of medical men and other meeting together to discuss propositions and ideas for original investigations, to communicate and exhibit to one another the outcome of these investigations, and to describe and discuss the results of experience. That the Röntgen Society has fostered this idea with satisfaction to its members I believe, but I also believe that if satisfaction is to be continued the Society must be prepared to considerably widen its sphere of activity."

And in his address of November, 1902, he concluded as follows:—

"Before I conclude I would like to offer a few suggestions, partly as a summary of what has gone before, and partly as an indication of lines along which profitable work might be done. Any suggestion made in an address such as this are bound to be incomplete and bare of details. Filling in the details is a matter for other and less formal meetings than the present. So far as our experience goes, it seems probable that in many cases at least the effect upon living organisms of the agents in which we are specially interested is to increase metabolism. It is highly desirable that some fairly simple experiments should be carried out to ascertain whether, and to what extent, evidence can be obtained of an increased output on the part of animals under the influence of these agents, of such substances as carbon dioxide, and such nitrogen compounds as urea and uric acid. A comparison in this respect of the effects of X rays, light, and high frequency currents, carried out with due regard to measurements of the energy expended and to the time of operation, could hardly fail to afford interesting results, of value to the practitioner. In such experiments it is, of course, necessary to eliminate as far as possible the influence of coincident rise in temperature; but by careful control experiments this would probably be found by no means impossible. Dealing with the same question of metabolism, one is led to a study of the behaviour of simple forms of life, and it would, I think, repay investigators to institute experiments directed to the end of ascertaining the comparative influence of the agents in modifying or accelerating the life-history of unicellular organisms.

"The influence of light upon cell division and upon conjugation have been studied to a considerable extent; but I do not know of any published work dealing in this respect with X rays and electric oscillations of high frequency. If only to fix some limits of overstimulation, it would be well worth while making experiments in this direction. The cleavage of carbon dioxide by plants and the manufacture of starch might with profit be studied while the plants are exposed to the influence of X rays and electric oscillations, to ascertain whether any parallel can be found between their effects and those of light. . . .

"Leaving living organisms, there is a good field for investigation in the process of fermentation. What effect, if any, and what kind of effect, the agents we are considering would have upon the action of enzymes in promoting the hydrolysis of fermentable substances is so far as I am aware, hardly in knowledge at present. A good example to experiment upon would be the behaviour of diastase upon starch and it would be most instructive to learn the comparative effects of the agents in hastening or retarding the conversion of starch into sugar, and to ascertain the relation of the effects, if any, to the intensity of the stimulus applied. Dealing with less complicated material still, there is a wide field for investigation in the possible influence which the agents might exert in bringing about polymerisation among certain classes of carbon compounds, or in effecting the cleavage of existing polymeric bodies. A comparison of the kind and extent of influence exerted by the three agents upon such substances as some of the cyanogen compounds and certain of the aldehydes, taken, for example, might lead to results of much value, even if these results proved to be negative in most cases; for it is essentially desirable to find some measure of the order of magnitude of the changes effected by those agents, and of the nature of the material which can be influenced by them. . . .

"In conclusion, I would emphasise what I said at the beginning of this address, and point out again the richness of the field of work which the Röntgen Society, by enlarging its sphere of activity, has opened up for its own special cultivation. There can be, I think, no doubt, bearing in mind the increasing importance of the medical applications of X rays, light, and electricity, that the inclusion of the study of the two latter agents, which are so closely connected

X rays, was a vital necessity in a Society which was avowedly devoted to the study of the properties of these rays mainly from a practical point of view."

I make no excuse for these lengthy extracts, because they contain words of wisdom spoken by a man who had the clearest insight into the work of this Society, who knew all its bearings, and who was capable of estimating the requirements of medical men as he was of knowing the extent of the assistance which might be expected from earnest students into the nature of the various emanations with which we deal.

J. J. VEZEY, F.R.M.S.

PICTURE POSTCARDS.

In which way we will, picture postcards meet us at every step, and in bad, and indifferent are to be seen in every other shop; but even going into account the millions produced and sold, I do not think of "East Anglian," in "Photographic Scraps") photographers made the most of the demand. No doubt many have sold their plates to publishers, for reproduction in one or other of the magazines, but it is perfectly feasible for every photographer to print and sell local cards, and it would pay well. Real photographs are appreciated by the better class of customers who are tired of the common printed cards, of which thousands can be purchased for a few pence like their own. In addition to this, new views are constantly being made. A customer will not buy the same view again and again, and this is where a professional or amateur can score, as it will only the publishing firms to reproduce a very large quantity of a view, while from one's own negatives few or many can be printed as they are required. For any one going in for the work a few hints will be of service.

First, then, the plates. Of course, two or three sizes may be used, but half-plates have naturally been most generally adopted, but I do not certainly advise the new postcard-size plate, as so much time is lost in the printing. Ilford plates are supplied in this size, $5\frac{1}{2}$ by $3\frac{1}{2}$ in., in all varieties, and I have lately been using them in Special Development, with the greatest advantage, as the lens can be stopped down, and yet very quick shutter-exposures be given. It should be remembered that nothing goes down with the general public but bright views. Carriers are used in the half-plate slides, and the printing-screen is matted to the size. The view is arranged accordingly, only just what is wanted is taken on the plate, and if a postcard size ($5\frac{1}{2}$ in. by $3\frac{1}{2}$ in.) is used, the card may be dropped into the frame closed at once, and when printed will come out with a white border, without any further trouble.

Picture Cards.—These are now made in all varieties. Ilford P.O.P. and self-toning both matt and glossy; gaslight, and ordinary. Workers can, therefore, choose those best adapted to their various methods. If the day can be spared for printing, no doubt P.W. will be used. I had a prejudice against self-toning papers for some time, I think because I tried a bad sample of a paper (not P.W.) when it first came out, but I have lately printed some Kalona and am delighted with it; the sulphocyanide bath is no trouble at all and gives a beautiful tone results.

For quickness, however, the "Gaslight" must be preferred to P.O.P. and a few seconds to daylight inside a room, behind a window covered with tissue paper; the light is diffused and very even. I use two boxes or drawers, one to hold the unexposed cards and the other those that have been exposed. I make a test exposure, at a small distance, say, six inches, develop this at once, and if satisfactory, I forthwith mark on the edge of the negative, G. (for Gaslight) and 6 sec. at 6 inches, so that it can be immediately repeated, or if the negative is not required again for several months, I have only to place it at it to know the proper exposure. A similar mark in another corner will register for bromide printing; and, of course, these particulars will serve for bromide papers as well as for postcards. If the exposure is made by gas, which will answer exceedingly well for an amateur, but takes too long for a professional, put a piece of fine ground-glass into the frame first, and then the negative. This works for all bromide printing, whether gaslight or ordinary, except in a very dense negative indeed; it saves many a weak one.

Developer.—If familiar with bromide work, by all means use the same you are used to, but if you are beginning, follow the Ilford

instructions, which are enclosed in each packet of postcards. For myself I use just a little stronger formula, which suits my method of working, and I therefore give it, as some may like to see whether it suits them as well:—

Metol	...	...	...	...	20 grains.
Hydroquinone	...	...	...	...	60 grains.
Sodium Sulphite	...	...	...	...	$1\frac{1}{2}$ ounces.
Sodium Carbonate (crystals)	...	...	...	...	$1\frac{1}{2}$ ounces.
Potassium Bromide	...	...	...	...	10 grains.
Water to	...	...	...	...	20 ounces.

Dissolve the metol in 8 oz. of water and the sulphite of soda in 10 oz. of water. When the latter is dissolved, add the hydroquinone, then the carbonate of soda and the bromide, finally add the dissolved metol, and make up to the 20 oz. Use as given for Gaslight paper or postcards and for bromide postcards. For bromide paper dilute with an equal quantity of water. This keeps well and, for the bromide paper, may be used over and over again, in fact, I do not add any fresh, if the quantity is sufficient, whether I do two, or two dozen pieces. With "Gaslight" it is different, this must be brought up quickly to give a good colour.

When developed, plunge straight, without any washing, into hypo, which is made up as recommended by Chapman Jones:—

Hypo	...	...	...	...	1 lb.
Water	...	...	...	...	80 ozs.

Add

Carbonate of Soda	...	...	...	...	$\frac{1}{4}$ oz.
Sulphite of Soda	...	...	...	...	1 oz.

Fix at least ten minutes, with the cards well under the solution. Wash as usual. For those who have no proper washer, I would advise the use of a large white enamelled kitchen bowl. Stand this under a tap with a piece of rubber pipe about eighteen inches long attached to it. Let the stream of water play in a forward direction upon the side of the bowl; this will give a circular motion to the water, and the cards will go gently, or fast, at will, round and round; keep them separate from each other, and twenty minutes' or half-an-hour's washing should be sufficient. I then lay the cards on a board covered with a clean, soft linen cloth, and if they should happen to be a little curled when dry, a few strokes with a paper-knife on the backs will soon put them right.

THE LATE ALEXANDER TATE.

MEMBERS of the Photographic Convention and many other readers of the Journal will regret to learn of the death of Mr. Alexander Tate, which occurred on the morning of the 29th ult., at his residence, Rantalard, Whitehouse. To his immediate friends the announcement, writes the "Belfast News Letter," will not come altogether as a surprise. For some time past he has been in failing health, and the weight of years—eighty-one—told heavily on him. Still the end was not expected so soon. He was able to go about, and so recently as the 28th ult. he enjoyed a walk in the open air. On the following morning he passed peacefully away in his sleep. During his illness he was attended by Dr. Manly. The late Mr. Tate, whose father was a resident of Dublin, received his early training as an engineer and architect under the late Mr. Owen, Commissioner of the Board of Public Works. He had as a fellow pupil the late Sir Charles Lanyon, and in his studies he displayed that intuitive faculty and grasp of detail which afterwards enabled him to succeed so well in his profession. When quite a young man he was appointed surveyor of a division of County Dublin, and this position he filled with marked ability for many years. Towards the end of 1861, upon the resignation of Sir Charles Lanyon, he was elected to the important office of surveyor of County Antrim and the County of the Town of Carrickfergus, and he then came to live in Belfast. For over twenty years he acted in that capacity, and under his supervision many important schemes were carried out. About 1884 he resigned the surveyorship of County Antrim, being succeeded by Mr. John H. Brett, and a year or so later he retired from the position in Carrickfergus. Since then he had not engaged in active work, so far as his profession was concerned, but if released from public service he by no means allowed time to hang idly on his hands. He was always interested in scientific research, and was a leading member of various societies. Among the number may be included the Belfast Naturalists' Field Club, the

Royal Society of Antiquaries in Ireland, the Institute of Civil Engineers of Ireland, of which he was the hon. secretary when in Dublin; the Royal Society of Dublin, the Photographic Society, the British Astronomical Association, and the British Association. In connection with the last-named body, of which he was a life member, he acted as secretary of one of the sections when the association met in Dublin in 1857. Technical education found in him a warm supporter, and he was prominently identified with the old Government School of Art before it was merged in the Municipal Technical Institute.

New Book.

Picture Titles for Painters and Photographers. By A. L. Baldry. Pp. 284. Published at the Offices of "The Studio," Leicester Square, London.

The list of Forthcoming Exhibitions, printed in another part of this Journal, testifies to the fact that the photographic exhibition season starts practically from the date of writing, and continues until the end of next June—a ten months' run. It is a time of year, therefore, when the exhibiting photographer begins to think about the production of his prints and the selection of titles for them. If in the latter regard difficulty be felt Mr. Baldry comes along with his selection, "chosen from the literature of Great Britain and America," to save the aspirant for gallery honours all trouble in the matter. Should your photograph be a landscape you have only to refer to one of thirteen sections to find a suitable poetical name for it. Under marine, you have three series, "open sea," "coast," "shipping"; under "Figure," nine series, and the volume is rounded off with "Sport and Animal Life," "Architecture," and "Topographical." The book contains quite 3,000 titles, and must have necessitated enormous labour on the part of the compiler. Some of the quotations are so long that if they are used extensively society secretaries who have the preparation of catalogues to see to may well be excused for taking exception to them. Photographers who make the exhibition of their work a constant practice will thank Mr. Baldry for the source of reference for unhackneyed titles with which he provided them. We shall be curious to see if there is much call for the author's assistance during the next ten months; also if there are any repetitions.

Patent News.

The following applications for Patents were made between August 2nd and August 6th, 1904:—

Washing Plates and Films.—No. 16,851. "Improvements for drying and washing photographic plates and films." William Lawrence Parkinson.

Changing Device.—No. 16,877. "An adapter and magnetically controlled flat film changing device for photographic cameras." Alexander Milne.

Reproductions.—No. 17,009. "Improvements in and relating to photographic reproductions." (John Jacobson, United States.) Complete specification. Henry Harris Lake.

Reproductions.—No. 17,036. "Improvements in and relating to photographic reproductions." (John Jacobson, United States.) Complete specification. Henry Harris Lake.

Magazine Cameras.—No. 17,155. "Improvements in magazine photographic cameras." Herbert Edward Hickox.

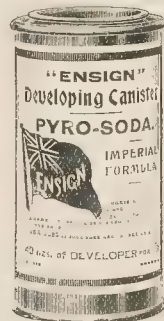
New Process.—No. 17,192. "New and improved photographic process." Ludwig Strasser.

ERRATA.—Mr. T. Thorne Baker has drawn our attention to an error in his article on "The Composite Print in Three-Colour Photography" in our last issue. In the last paragraph but one the final sentence, "and similar to that of $\lambda = 5896$ " should read, "and passing light of from about $\lambda = 450$ to the A end of the spectrum."

New Apparatus, &c.

"Ensign" Developing Canisters. Sold by Houghtons, Limited, and 89, High Holborn, London, W.C.

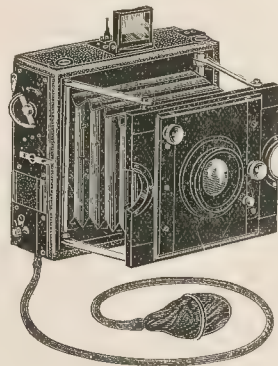
Notwithstanding the number of patent developers that have been placed on the market lately, there are always a great number of people who still prefer to use a standard pyro-soda formula, for all exposures that are likely to have been under. There has been nothing to equal a good pyro-metol formula, considering the popularity of the pyro-soda and pyro-metol for



given by the Imperial Company, these developers in a cheap handy form are likely to at once meet with the recognition that undoubtedly deserve. The "Ensign" Developing Canisters contain sufficient chemicals to make up 40 ozs. of developer of standard strength; and as they are sold retail at 1s. 3d., we do not think that any amateur, however economical, will consider that they are dear. Most workers are in the habit of diluting their solutions; they are something like half the strength given in the standard formula, and both of these developers will stand a considerable amount of dilution without their valuable qualities being materially affected. They are put up in air-tight lever-top tins, and the contents should keep excellently for a considerable time.

The "Primus" Focal Plane Camera," sold by W. Butcher and Sons, Camera House, Farringdon Avenue, London, E.C.

The principal feature of this camera is the style of the shutter, which instead of having an adjustable slit, as in most other focal plane shutters on the market, has a blind with five openings



different widths, either of which can be set as required. It appears to be a very simple shutter indeed, working extremely well and efficiently. Either opening can be wound up at once for use, the clamping arrangement is apparently very secure and strong, and that there appears no chance of a plate receiving an accidental exposure.

from the next opening in the blind. The finger release is conveniently placed, and a pneumatic release can be fixed if necessary. Exposures can also be given by setting the shutter to the width of the plate. As the shutter is wound up or the tension tightened, small numbers come into view on the left-hand of the camera, thus indicating exactly the aperture and speed of the plate or roll-holder is in position. The body of the camera which is really the shutter—is thoroughly well made in wood, lined with leather; the front is supported by extending spring arms, is made in mahogany, ebonised. The front is fixed by simply pulling out and replaced by pushing back. The lens board is stable for all positions. The lens supplied is the Aldis Anastigmat, working at F6, and is fitted in focussing jacket. The dark slides are of metal, and hold one plate each. They are very convenient to carry. Direct view-finder, screw and bushes for tripod, covered focussing screen, etc., are included, and the whole packs in a neat black leather case, forming an admirable little outfit for the tourist.

"Platino" Platino-matt Collodio Chloride Paper. Sold by The Leto Photo Materials Co., Ltd., 9, Rangoon Street, London, E.C. This P.O.P., which is of the popular matt collodio chloride type, features of its own that should make it much used. Prints on paper have a richness in the shadows and clearness in the highlights very suggestive of carbon. The range of tones obtainable extends from red-brown to warm black. It is necessary to print deeply until the shadows develop a distinct bronze tinge, as prints lose considerably during the toning processes. Wash in water until the last washing water is perfectly clear. The prints are then first partly toned in the following gold bath. Toning must not be carried on too far, but only until the prints seem to have changed colour. (A long immersion will yield blue-black and short immersion brown-black tones in the subsequent platinum bath.) Water, 17 ozs.; acetate of soda, 1 oz.; gold chloride, 1 gr. After toning, wash for a minute or two, and continue in the following platin bath, until the desired effect has been obtained: Water, 9 ozs.; phosphoric acid, 2 drs.; chloroplatinate of potash, $7\frac{1}{2}$ grs. Then fix in two to three changes of water. Fix for ten minutes in 10 oz., water 20 ozs., and give a final washing for at least one hour in running water or eight to ten changes. Rich sepia and red tones are obtained by diluting the above solutions with an equal quantity of water, and proceeding in the same way as for black tones.

We commend the excellent way in which the paper is packed, each couple of cut sheets being placed film to film, and each couple divided by a protecting piece of plain paper.

THE THORNTON-PICKARD 1904 PRIZE COMPETITION.

£30 in cash prizes are offered by the Thornton-Pickard Manufacturing Co., Ltd., this year in their annual prize competition. The prizes on this occasion are all of equal amount, viz., £5 each in each class. The classes are as follows:—

Class 1 (six prizes of £5 each).—For pictures taken with any of the Thornton-Pickard cameras and shutters, except "Focal Plane" and stereoscopic. Class 2 (five prizes of £5 each).—For pictures taken with the Thornton-Pickard "Focal Plane" shutter. Class 3 (six prizes of £5 each).—For pictures taken with any of the various types of the Thornton-Pickard shutters except "Focal Plane" and stereoscopic. Class 4 (three prizes of £5 each).—For stereoscopic pictures taken with the Thornton-Pickard stereoscopic shutter.

The latest date for sending in photographs is October 1. Full particulars and rules will be furnished on application to the Thornton-Pickard Manufacturing Co., Ltd., Altrincham.

CARDINAL VANNUCELLI, accompanied by the Archbishop of Westminster, and a numerous suite, paid a visit to the Italian Exhibition at Earl's Court last Wednesday afternoon. Some time was spent in the sacred art section, and the party inspected the famous model of St. Peter's at Rome, a work of art carried out by Pius the Seventh. The visit, it is understood, was made by personal desire of the Pope. Several photographic groups were secured of the party between the time of their arrival and departure.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

August.	Name of Society.	Subject.
23.....	Southampton Camera Club	Experiments of Flashlight Work.
23.....	Nelson Photographic Society...	{ Some Printing Dodges. Mr. A. Punkett.
24.....	Everton Camera Club	{ Album and Hypo Toning. Demonstrated. Mr. J. Hawkins.
24.....	North Middlesex Photo. Soc. ...	{ Natural History Photography. Mr. G. T. Harris.
25.....	Watford Camera Club	{ Competition—"Wild Flowers in Nature."

WALSALL AMATEUR PHOTOGRAPHIC SOCIETY'S PICNIC.

On Thursday, June 30, the members of this society held their annual picnic, the district visited this year being Tewkesbury, followed by a trip up the River Avon to Evesham. At Tewkesbury some of the party paid a visit to the Abbey, others contented themselves with a look at other places of interest in the old town. At noon they started up the river per steam launch. Luncheon was partaken of on board, and soon after arrival was made at Pershore, where an hour and a half's stay was made for the purpose of seeing the Abbey and looking through the grand old town. Tea was served on board near Cropthorne Weir, and after a most enjoyable trip through charming scenery arrival was made at Evesham about seven o'clock, where a few pictures were taken of the Old Abbey Tower.

The Walsall Amateur Photographic Society is to be congratulated on its "go-ahead" spirit in catering for these enjoyable outings in the summer, of which there have already been four half-day excursions to various places, and two more to come later in the season; and also on their roll of members, numbering over a hundred and twenty, making it the strongest society (excepting Birmingham) of its kind in the Midlands—a success due, in no small measure, to the energetic and indefatigable honorary secretary, and a few of the committee who go to a great deal of trouble in arranging both their summer and winter programmes. The thoroughness with which the executive enter into the spirit of affairs is evidenced by the fact that the salient features of the picnic above recorded have been printed, accompanied with no less than seven excellent half-tone reproductions of places of interest visited, and also a group of the members taken in Abbey Grounds, Pershore. Printed on art paper and distributed among the members, it forms an interesting souvenir of the outing. Among other attractive items announced for next session is the bi-annual ball, and an engagement of the famous war correspondent, Mr. Shelley, who will give his lecture on "The Kodak in Peace and War." Full particulars and information concerning the society can be obtained on application to the hon. secretary, Mr. W. T. Comer, of 6, Arcade, Walsall.

FORTHCOMING EXHIBITIONS.

August 16-20.—Royal Cornwall Polytechnic Society Photographic Section. Secretary, Edward Kitto, The Observatory, Falmouth.

September 14-15.—Cambridge Photographic Society. Hon. Sec., T. J. Scowdon, "Sunny Side," Guest Road, Cambridge.

September 16 to November 5.—Photographic Salon, Dudley Gallery, Egyptian Hall, Piccadilly. Hon. Secretary, Reginald Craigie, Photographic Salon, 1904, Dudley Gallery, Piccadilly, London, W.

September 20-28.—Newbury Photographic Society. Hon. Secretary, E. J. Forster, Guildhall Club, Newbury.

September 22 to October 29.—Royal Photographic Society's Forty-Ninth Exhibition, New Gallery, Regent Street, London. Secretary, A. W. W. Bartlett, 66, Russell Square, London, W.C.

October 15-29.—Coatbridge Photographic Association. Hon. Sec., Geo. W. Campbell, Ailsa Cottage, Coatbridge, N.B.

October 18, 19, 20.—Kettering Church Institute Photographic Exhibition. Hon. Secretary, E. Claypole, 112, Hawthorn Road, Kettering.

- October 19-22.—Rotherham Photographic Society. Hon. Sec., H. C. Hemmingway, Tooker Road, Rotherham.
- November, 1904.—Ilford and District Photographic Society. Hon. sec., W. N. Beal, 155, Thorold Road, Ilford.
- November 2, 3, 4, 5.—Newark Photographic Exhibition. Secretary, L. C. B. Appleby, Barnbygate House, Newark.
- November 3.—Frome M.I. Photographic Society. Hon. Secretary, B. J. Mitchell, 3, Willow Vale, Frome.
- November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Sec., James Dunlop, Myrtlebank, Motherwell.
- November 9.—Hackney Photographic Society. Hon. Secretary, Walter Selfe, 70, Paragon Road, Hackney, London, N.E.
- November 15-19.—Sunderland Camera Club. Hon. Sec., Selby-Ord, 52, Frederick Street, Sunderland.
- November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.
- November 22-23.—Ipswich Camera Club. Hon. Secretary, R. H. Sutton, 37, Henley Road, Ipswich.
- November 23-26.—Hove Camera Club. Hon. Secretary, A. R. Sargeant, 55, The Drive, Hove.
- November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., G. W. Simmers, Aberdeen House, Ramsgate.
- December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.
- December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104, West 101st Street, New York.
- December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.
- December 13-20.—Southampton Camera Club. Hon. Secretary, S. G. Kimber, Oakdene, Highfield, Southampton.
- December 28-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 138, Glasgow Road, Wishaw.
- January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.
- January 20-21, 1905.—South Essex Camera Club. Hon. Secretary, T. Michell, 180, Browning Road, Manor Park, E.
- January 28-February 12, 1905.—Photographic Society of Marseilles. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.
- February 6-11, 1905.—Blairgowrie and District Photographic Association. Hon. Secretary, Wm. D. M. Falconer, James Street Cottage, Blairgowrie.
- February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.
- June, 1905.—Northern Photographic Exhibition. Secretary, F. G. Issott, 62, Compton Road, Harehills. Leeds.

FORTHCOMING COMPETITIONS.

- September 30.—"Photographic News." Quarterly Competition. "Photographic News," 9, Cecil Court, Charing Cross Road, London, W.C.
- October 1.—Thornton-Pickard. £100 cash prizes for pictures taken with Thornton-Pickard cameras and shutters. Thornton-Pickard Manufacturing Co., Altrincham.
- October 10.—Luna paper. £240 cash prizes for prints on Luna paper. Lucien Allegre and Co., 59a, New Oxford Street, London, W.C.
- October 15.—Belgian Association Lantern Slide Stereogram Competition. Secretary, M. Vanderkindere, 97, Avenue Brugmann, Brussels.
- October 31.—Coxin. 68 prizes for users of Coxin. Judging twelve pictures. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.

November 1.—The "Graphic." £50 in cash prizes. Man Photo Competition, the "Graphic," Tallis Street, Whitefriars, London, E.C.

December 31.—Barnet. Nineteen classes. Prizes valued at £100 for lantern slides and prints made with Barnet products. E. J. Barnet and Sons, Limited, Barnet, Herts.

March 15, 1905.—Ilford. £750 in cash prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

Commercial & Legal Intelligence

KELVINDALE CHEMICAL CO., LTD.—Capital, £5,000, in £1 shares. Objects: To acquire from J. Meikle, manufacturing chemist, Ruchill, Glasgow, the whole stock, plant, book debts, and other assets of the Kelvindale Chemical Company, Limited (in liquidation) and to carry on the business of general chemical manufacturers, distillers, and dealers, etc.

FIRE at the Albion Albumenising Company's Works. —Damage estimated at £1,000 was done by fire early on Saturday morning in premises at 128, Sauchiehall Street, occupied by the Albion Albumenising Company, photographic dealers and camera makers. The establishment is situated on the second flat of a four-storey building, and, in addition to the destruction by the flames, considerable damage resulted from smoke and water.

PHOTOGRAPHY COMPANY, Limited.—Registered August 6th, by Deeds, Weld, and Dixon, 1, Lancaster Place, Strand, W.C. Capital, £20,000 in £1 shares. Objects: To carry on the business of photographing fine art dealers, publishers, lithographers, engravers, stereotypers, electrotypers, photo-lithographers, dealers in photographic apparatus and apparatus, dealers in mounts, frames, materials, chemicals, stationery, and other glass, scientific, and other instruments, and photographic stationery, etc. No initial public issue.

ANIMATED PICTURES of Armagh Cathedral.—The Irish Animated Photo Company were specially engaged for Monday last, to project in the Round Room, Rotunda, Dublin, their latest achievement in cinematographic photography in the consecration and re-opening of Armagh Cathedral; this picture takes in the procession of Cardinal Cullen, dignitaries and clergy; snapshots of the Maynooth Union of 1804; also shown, and the "Herald" go-as-you-please race to Naas; the local regattas; the King and Queen and Viceregal party at the regatta during the recent visit; Leopardstown, Ashtown, and other meetings, with numerous other subjects.

JUDGE as Art Critic.—At the Southport County Court, yesterday before His Honour Judge Shand, Annie Rymer sued Isidore Newman, 11A, London Street, agent for the British Artists Association, for return of 15s. paid by her for two enlarged photographs, on the ground that they were unsatisfactory. Plaintiff said that defendant called upon her and induced her to give an order for the enlargement of two photographs. He told her that there would be no charge for enlargements, but that the frames would cost 15s. The sum was paid before the work was done, and when the enlargements were finished she would not have them, because they were not worth looking at and she would not like to have them in the house. Mr. H. T. St. John (who defended): You say they are not good enlargements? Plaintiff: Can't you see for yourself? Why, if that young man (the subject of one of the photos) knew that he had been made to look like that, would come back from New Zealand and thump him (defendant). Honour inspected the photos and the enlargements, and remarked that while the photographs were bad the enlargements were atrocious. Judge gave judgment for plaintiff, with costs.

MESSRS. GIBSON AND SONS, of Penzance, are now exhibiting a series of photographs of the fleet at anchor in Mount's Bay. The photographs have been taken from several points of vantage, and give a fine panoramic effect.

News and Notes.

THE Blairgowrie and District Photographic Association are to have an exhibition from 6th to 11th February, 1905, entries closing January, 1905.

AUSTIN-EDWARDS Monthly Film Negative Competition.—The prize camera for current month has been awarded to Mdlle. Louise Hunt, 1, Campden House Road, Kensington, for her negative, "A Corner of a Studio."

ILFORD, Ltd., has asked us to draw attention to the fact that the £50 offered in the Ilford Photographic Competition will be paid in cash. Full particulars will be sent post free on application to Ilford, Ltd., Ilford, London, E.

A copy of the "Official" Guide to Bude has been sent us. It is an admirable example of printing, both as to letterpress and pictures. The latter, we note, are reproductions of photographs by S. Thorn, 17 and 18, Crescent, Bude.

We understand that Mr. Richard Kearton has made such an excellent recovery from the operation he recently underwent for appendicitis, that he is now hard at work writing his new nature story book, which will be published by Messrs. Cassell and Co. during the autumn.

THE nuptials were solemnised at the Wycliffe Congregational Church, Hull, last week, of Laura Constance Barry, daughter of Mr. W. Barry, photographer and artist, Park Street, and Albert Edward Davenport, eldest son of Mr. E. Davenport, Alliance Avenue, Hull.

AMONGST the pictures promised to the Newbury Photographic Exhibition next month are some from the Princess Louise of Schleswig-Holstein, who is showing some of her work taken in Ceylon. Any photographers who wish to enter pictures for this exhibition should at once apply for schedules, etc., to Mr. E. J. Forster, Guildhall Club, Newbury.

A PHOTOGRAPHIC Competition, which will be of considerable interest to amateurs, is at present running in "London Opinion." Practically no conditions are imposed. The prints may be of any kind, of any size, and the subject may be anything the competitor likes to select. The prizes are numerous. The first is £20 cash, and the second £10 cash. There are also four other prizes, consisting of various Kodaks. In addition to these, three cash prizes are offered to readers under twenty years of age.

SOUTHPORT Photographic Society.—The members of this society had an excursion on Monday to Furness Abbey, under the leadership of Messrs. J. Lambert (president) and J. M. Petrie. The Abbey was reached at 10.45, and several hours were very profitably spent in photographing the ruins of this ancient and interesting pile. Luncheon was served at the Abbey Hotel, and later the party proceeded to Carnarvon, where glimpses were obtained of the important shipbuilding yard of Messrs. Vickers, Son, and Maxim.

CHANTREY Bequest. Finding of the Commission.—The Select Committee on the Chantry Fund, which has been sitting for some time past, under the chairmanship of the Earl of Crewe, has presented its report. The committee are practically unanimous in arriving at the conclusion that the fund, as at present administered, does not fulfil the intentions of the testator, and they make various recommendations for the purpose of bringing about a change in this respect. We wonder what the ultimate result will be?

SCIENTIFIC Holidays.—About 150 members of the French Revue Générale de Science visited York recently. They are touring the British Isles, and have chartered the steamer "Ile de France," in which they sailed from Boulogne for Scarborough on Sunday. They inspected the Roman remains, the ruins of St. Mary's Abbey, and the Hospitium. The programme also included a visit to the Minster, the city walls, the Guildhall, York Castle and Clifford's Tower. The party returned on the evening of Scarborough, and proceeded to Scotland in the

"Ile de France." Thence they go to the Orkney Islands, and afterwards to North Wales and Dublin, returning to France on the 24th inst.

THE Kodak Exhibition held in the Midland Hotel Hall, Manchester, has been attracting much interest in that city. A series of 160 enlargements from negatives taken by amateurs with small cameras are ranged along the walls, and they are excellent productions. Numerous demonstrations are given daily on all phases of photography. A unique feature of the exhibition is the "Royal Room," containing enlargements of photographs of the King and Queen, and also a screen of photographs from the negatives taken by Queen Alexandra, who is an ardent devotee of the Kodak. The lantern lectures of Dr. Dixon have constituted one of the features of the exhibition, which has proved a great success.

A **NOTABLE** feature of the exhaustive report by Sir William Garstin concerning the basin of the Upper Nile are the photographic illustrations it contains. The photographs were taken by Mr. H. Samuel, M.P., Mr. G. Butcher, late of the Uganda Civil Service, and Major Loughlin, of the Uganda Rifles, and they certainly add greatly to the interest of a most informing work. Some typical pieces of scenery are given, such as the anthills in the Buddhu district, a causeway across a swamp, the Ripon Falls, and the source of the White Nile. Views of the Congo Free State and many other photographs are printed, and it is not surprising that 17s. is marked as the price of the Blue Book.

To Combat the Metre.—An association has been formed, which will be known as the "British Weights and Measures Association," having for its object the defence, standardising, and simplifying of British weights and measures. The society will take up a strongly antagonistic attitude to the enforcing of the metre as a British standard, and it proposes eventually to introduce simplified and scientifically related weights and measures based upon existing British measures. Offices have been taken at 25, Victoria Street, Westminster, and Mr. Geo. Moores, F.S.S., of Manchester, has been appointed secretary, of whom all particulars can be obtained, and who will be glad to receive the names of persons wishing to become members of the association.

THE Organising Committee of the Berlin Exhibition, Messrs. Schultz, Hencke, and Franz Goerke, have been compelled to issue a notice cancelling the exhibition, and consequently all the arrangements they have made for the representation of British work. They point out that the session of the Diet in the Deputy House (where the exhibition was to have been held) is unexpectedly called for October 18 instead of the middle of November as usual, a thing which has not happened for fifteen years. The Committee was anxious that the exhibition should be held in the excellent rooms of the Deputy House, and they point out that it is impossible, at this date, to obtain suitable accommodation in place of the rooms of which they are deprived. They regret that their work, and the great trouble taken by exhibitors abroad has been in vain, but they hope that those who have already promised their assistance will come forward again next year, when they propose to renew their efforts to organise an international photographic exhibition in Berlin.

HAND Cameras at the Bradford Exhibition.—A difficulty which probably never entered the minds of the authorities when sanctioning the promiscuous admittance into the exhibition grounds of hand cameras (writes a correspondent to the "Yorkshire Daily Observer") has recently arisen, and, indeed, has already given cause for considerable dissatisfaction. Probably the most interesting feature of an excellent exhibition, from the point of view of the average amateur photographer, is the Somali Village and its dusky inhabitants. This field closed to him, the bearer of the Kodak can have little further interest in the place as a happy hunting ground for the exposure of films—with the possible exception of an occasional snapshot at the water chute at a critical juncture of the boat's career. Unfortunately, however, the Somalis themselves have put a barrier in his way by the sudden development of an antipathy to being "taken" as intense as it is inexplicable to the unsophisticated. The appearance of a camera anywhere within range appears to act upon the Somali temper

in the same manner as the proverbial red rag is said to act upon a bull, and woe betide the hapless enthusiast whose apparatus comes within measurable distance of the villainous-looking spear-head borne by the valiant Somali warrior. As to what would be the consequence of the camera being put out of action, or a resort to personal violence on the part of the owner, one can only conjecture, but it is pretty safe to assume that the eternal craving for "backsheesh" provides the native with his motive, he, of course, having an interest, more or less direct, in the sale of the official portraits. Perhaps the committee may see its way to at least effect a sort of compromise.

THE R.P.S. Exhibition.—The Secretary of the Royal Photographic Society has asked us to draw the attention of our readers who are thinking of sending their photographic work to the New Gallery this year that entry forms and photographs must reach the Gallery, 121, Regent Street, London, W., by September 8, or September 9 if delivered by hand. The Exhibition will be divided into five sections, as follows: 1, Pictorial photographs, invitation collection; 2, pictorial photographs, competitive section; 3, scientific and technical photography and its application to processes of reproduction; 4, general professional photographs; 5, photographic apparatus and material. Intending exhibitors in the Competitive Section should note the new rule, which states that "no exhibitor will be allowed to submit for selection more than six photographs and six lantern slides." No charges, however, are being made this year for wall space in this section. The Exhibition will be inaugurated on Wednesday, September 21; by a private view, followed in the evening by a conversation, and will remain open daily (Sundays excepted) from Thursday, September 22, until Saturday, October 29, 1904, from 10 a.m. to 6 p.m. It will also be open on Monday, Thursday, and Saturday evenings, from 7 to 10 p.m., when lantern slide exhibitions will be given in the North Gallery. Admission, during the day or evening, one shilling. Members of the Society have free admission to the Exhibition upon production of their cards of membership. They receive a book of six passes (for presentation), and can purchase tickets or books of passes at half price. Every exhibitor who is not a member is entitled to a non-transferable season ticket. Members of affiliated societies can obtain tickets of their respective secretaries at half price. Entry forms and full particulars can be obtained on application to the Secretary, Mr. A. W. W. Bartlett, 66, Russell Square, London, W.C.

A SERIES of remarkable moving pictures has been recently secured at the plant of a prominent Pittsburg machine company by the American Mutoscope and Biograph Company with the aid of the Cooper Hewitt light. These pictures, states the "Scientific American," were taken for exhibition in St. Louis in the private auditorium of the company on the Fair grounds. When "moving pictures" of the Jeffries-Sharkey heavy-weight contest at Corey Island were taken the scene was an arena interior. The ring was cut down to 20ft., and 400 arc lamps were strung above it, the heat from which caused the combatants much discomfort. In several of the pictures in question the entire length of a quarter mile aisle is shown, and at no time were more than sixty-four of the mercury vapour tubes used. The camera was placed on a platform fifteen feet from the ground, suspended from an electric travelling crane. The crane was moved slowly down the long aisle about 50 feet in the rear of the Cooper Hewitt lamps, the latter being also suspended from a travelling crane moving at equal speed. So far as possible in the taking of these pictures, any sunlight through the glass skylights of shops was taken advantage of, but it is not safe to depend very much upon the help of the sun in a moving picture which is four or five minutes in the taking. The sixty-four lamp tubes were hung in sets of eight, in eight frames. They required only 30 to 40 kilowatts, or about one-fifth of the energy consumed by the four hundred arc lamps referred to above. The camera made fifteen exposures a second, or nine hundred to the minute. Among the more interesting pictures are the welding of a ten-foot ring for an electric generator, the railway motor aisle, the forging of a ten-ton steel crank shaft by a thirty-ton steam hammer, one of the eight main quarter-mile aisles devoted to the construction of big power types and a six minute view of employees leaving one of the shops in East Pittsburg.

METEOR Photography.—In recent years the "Perseids" have afforded the most prolific annual display, for since the desertion of our planet of the "Leonid" (November) shower they occupy premier position among our annual fêtes of shooting stars, with "F. R. A. S." in the "Daily Chronicle." Amateur photographers have, in these periodic displays, fine opportunities of "getting something" out of the ordinary, the credit whereof would resound in many places. Eye observations are, at the best, rather uncertain; one never knows where or when the thing is going to appear, and is therefore unprepared to note the various characteristics and to repeat the nursery rhyme. But the extra-rapid sensitised plate does not get excited or surprised; it remains calm and collected, and records everything bright enough for it to "see" just as it sees it. To attempt meteor-photography one should take an ordinary camera—the greater the effective aperture of the lens the better—focus it for "infinity," after having loaded up with a very rapid plate, of course, and expose on the directly overhead or on some well-known constellation, such as "Swan" (Cygnus) or "The Lyre." It is no use trying to snap meteors, for as "sitters" they are incorrigibly erratic. Just of the slide and let the exposure "rip" for, say, thirty minutes, then expose another, and meanwhile develop the first. The brighter stars owing to the rotations of the earth on its axis, will have imprinted "trails" on the plate, all symmetrically arranged as arcs of circles around the pole star as centre. Should a meteor trail have been "captured" it will be easy to recognise, for the chances are thousands to one against its being parallel to the star trails. It will be inclined to them, and therefore at once recognisable. If the observer wavered the sky whilst exposing his plates and notes the times and positions at which the brighter "shooters" appear, it will probably be found possible subsequently to determine the correct time at which the object recorded on the plate shot across the sky, and the lucky photographer will have achieved a fortunate and valuable astronomical success.

MULEY Mentality.—Mohammed was twenty-five years of age when he married Kadijah, who was fifteen years older, and who more than anyone else strengthened the hand of the Prophet in his labours to combat idolatry and establish a new and purer creed among the people of his race. The blood of the Prophet drags languidly through the amiable arteries of Muley Abdul Aziz, Emperor of Morocco, written Mr. Poultney Bigelow in the "Morning Post," and it has been dragging languidly for the past twenty-five years. Muley is in advance of his people; he is very much "up-to-date." Mahomed of Mecca could neither read nor write and knew little of the world save what he learned from driving a camel over the Arabian desert. But Mohammed like Paul Kruger, knew his own people, and for a politician that knowledge is more precious than all the volumes in the British Museum. Muley might do worse than invite the Hon. Richard Croker of New York and Vantage, to Fez for the unique purpose of teaching him how to behave in times like these. Mahomed disapproved portraits because to him they suggested idolatry. To-day no orthodox Moor permits himself to be photographed, no orthodox Moorish house contains pictures of people. Muley, however, ordered a Kodak—one, but a dozen. He created the post of Court Photographer, and had his sacred Moslem person photographed; and if there could be anything worse than that, it was to have this same photograph multiplied and sold at one cent apiece throughout the cities of the Mediterranean to the scandal of every Moslem from the Himalayas to the Pillars of Hercules, and the corresponding delight of Jews and Gentiles. It was a Christian who put this idea into the aimable head of Muley. For he said to the successor of Mohammed: "Your Majesty is a great Monarch—like your brother of Great Britain. King Edward is photographed; indeed many members of his family take photographs themselves. If your Majesty proposes to be a real ruler like King Edward, then you too must have a Kodak!" And so to-day there are in Fez dozens of photographic boxes of every imaginable make, one, for Imperial use, being of gold, and having cost more money than Mohammed himself ever spent on his fifteen wives in an one year as Chief Prophet. As near as I can get the figures to-day Muley has spent several thousand pounds on this one gold instrument and its accessories.

Correspondence.

Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.

We do not undertake responsibility for the opinions expressed by our correspondents.

THE FIASCO AT ST. LOUIS.

To the Editors.

Gentlemen,—Indirectly I hear that the BRITISH JOURNAL OF PHOTOGRAPHY has been kind enough to reprint the "Fiasco at St. Louis," which appeared in the issue of July 16 of the "Photographer" (New York). The article in question is absolutely misleading. I replied to it. The fiasco is solely 'due' to the outrageous management of the Exhibition authorities, to the cries of the mob of non-pressers, all of whom wished to have a voice in the show. The dignity of the British photographers and the British Government is a positive relief to all self-respecting photographers. Not my followers did not participate, but all other self-respecting photographers. Why? Because I dictated. —Bosh!—Yours truly,
ALFRED STIEGLITZ.

Mel Igleshof, Igls, Austria, August 9, 1904.

We shall be happy to reprint Mr. Stieglitz's reply when it arrives.—Eds. "B.J.P."]

THE "NEW" STEADMAN SYSTEM OF EXPOSURE AND PLATE SPEED MARKINGS.

To the Editors.

Gentlemen,—The interesting point about Mr. Steadman's communication in the BRITISH JOURNAL OF PHOTOGRAPHY of August 5 is the one in which the methods invented and published by other inventors (and largely used by the public) are paraded by Mr. Steadman as "my system of exposure." Where is one original point in his plan he expounds?

Is the plan of taking a "numerical statement of the light's intensity" by measuring with actinometer the light actually falling on the subject? I was the one who introduced this as an essential part of the finite exposure system.

Is the plan of using a diaphragm of such size for a certain plate that the actinometer and exposure time shall be the same? I was the first to invent this method, and it is largely used.

Is the plan of taking the first darkening of the sensitive paper as a guide instead of darkening to a stated tint? I was the first to do this method, and it is largely used.

Is the plan of combining the above three methods and publishing a table of diaphragm values to use with different speeds of plates to make the exposure the same as the "first darkening" actinometer test? I was the first to give such a table, which is to be found in the instructions of all my meters in the "Watkins Manual" in "Exposure Notes."

Is the plan of giving on a box of plates as their speed that size of diaphragm which makes exposure and actinometer time equal? Wynne has adopted this for a long time.

Is the plan of using an ordinary print out of chloride of silver for the actinometer? The first devisers of actinometers always adopted this, until Sir William Abney pointed out in a BRITISH JOURNAL Almanac about 1886 that a *sine qua non* in an actinometer is to use the same haloid of silver for testing the light as is used in the sensitive plate. Is it the plan of selecting some particular brand of paper, and therefore getting a new standard for the time of first darkening? Then we shall have a plentiful crop of Luma and Stella

Velox and Mariona plans, paraded (not by the makers of these excellent papers) as "my system of exposure." The table of subject values given by Mr. Steadman is in my experience far too complex. I commenced fourteen years ago by giving a much shorter table of subject variations for use with an actinometer plan. But I have even then this unnecessary for the average worker, and it is most convenient to give one standard subject value only, which applies in all cases out of ten, whether for outdoor, indoor, or portrait. For

the tenth exceptional case of sea view, glacier, or all-white subject the necessary variation from the standard can easily be remembered by the photographer.

I am not writing to criticise details of Mr. Steadman's plans. But I should point out that the average eye is incapable of timing the darkening of an actinometer (whether "first darkening" or to a tint) under $1\frac{1}{2}$ or 2 seconds. As far as I can judge by a rough trial, P.O.P. or Solio shows "first darkening" in brilliant summer sunshine in one-third of a second, which is a time quite impracticable for observation. If a paper slow enough for its "first darkening" to be used as an outdoor test is used as an actinometer, then it will be quite useless for indoor work, as it will take far too long to show any light effect. To use the same paper for indoor and outdoor work the first darkening plan must be used in the former case and a much darker tint or painted standard out of doors.—Yours truly,

Hereford, August 11.

ALFRED WATKINS.

DEVELOPERS WITH ACETONE.

To the Editors.

Gentlemen,—Mr. Thorne Baker's answer to my previous letter is not flattering to the average reader of the B.J., whom he obviously classes in that large category so well described by the Chelsea sage as "mostly fools."

What your contributor has done has been merely to prove that a shorter time of development gives a less steep gradation—a fact which, I must confess, I thought was known to every photographer to be he one of the Carlylean majority or minority.

Surely, considering the somewhat close acquaintance which Mr. Baker evinces, possibly undesignedly, with German writers, his statement that "definite historical notes are difficult to obtain on the subject" is a little inexplicable. He has merely to refer to various volumes of Eder's "Jahrbuch" or even the same author's "Handbuch der Photographie," Band III., p. 485, to find authoritative historical notes on the use of acetone.—Yours faithfully,

LEONARD SMITH.

Norwood Junction.

A DISCLAIMER.

To the Editors.

Gentlemen,—Permit us to call your attention to the fact that your notice re the prosecution of a shopkeeper in Wardour Street in your issue of July 22 is calculated to be harmful to others who are engaged in the sale of postcards in this locality, and you do not give name and address, and it is left to the public to surmise where the fault was committed.

As there are such a limited number of retailers of postcards in Wardour Street, we think that in fairness to those who conduct their business in this class of goods in such a manner as to eliminate any prints of a questionable nature, you should make it clear where the stigma rests.—Yours faithfully,

NILSSON AND CO.

16 and 18, Wardour Street, London, W., August 10, 1904.

[At this distance of time we cannot recall the name of the delinquent, but we have pleasure in stating that it was not that of Messrs. Nilsson and Co.—Eds. "B.J.P."]

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Answers to Correspondents.

- *** All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.
- *** Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.
- *** Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.
- *** For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

- A. M. Cromack, 30, Newborough, Scarborough. Three Photographs of Groups of Piers.
- A. Phillip, George Place, Stewart Avenue, Bo'ness, Linlithgowshire. Photograph of Town Hall and Carnegie Library of Bo'ness.
- A. Osborne, 2, Chelsea Villas, Dudley Road, Clacton-on-Sea. Photograph of Wesleyan Officials.

ADDRESS WANTED.—VERT and Co. ask: "Will you kindly let us know the address of Messrs. Underwood and Underwood, publishers of stereoscopic slides, etc.?" In reply: Messrs. Underwood's address is Haddon Street, Regent Street, W., and New York.

COPYRIGHT IN AMERICA.—R. GALLAGHER says: "I wish to copyright some views in America. Information as to how I am to proceed and cost of same will oblige." In reply: America is not a party to the Berne Convention, therefore you will not be able to make your pictures copyright in the States.

BOOK WANTED.—W. H. TURNER asks: "Is it possible to get a book on posing in studio? If so, kindly furnish me with the name and address of firm from whom it can be obtained." In reply: Yes; "The Studio and What to Do in It," by H. P. Robinson. Photographs," by Robert Johnson, will give you some useful information.

CELLULOID VARNISH.—W. B. AVERY writes: "I have a lot of waste film negatives, and wish to make them into celluloid varnish. How do I proceed?" In reply: The best plan is to boil the film negatives until every trace of gelatine has been removed and the celluloid is quite clean. Then, after it is well dried, cut into small pieces and dissolve in amyl acetate in the proportion of 80 grains in 20 oz.

BOOK WANTED.—ARS says: "I shall be glad if you can inform me of a really good book on how to work up enlargements, one that thoroughly goes into the art in every way." In reply: There is no work entirely devoted to finishing enlargements. The "Art of Retouching Negatives and Finishing and Colouring Photographs," by Robt. Johnson, will give you some useful information.

INJURED GLASS POSITIVE.—A. WALLHAUSER writes: "With regard to photograph enclosed, could you inform me where I could get the face filled in, as it has accidentally got rubbed off, or is there any possible way of reproducing it? The photo is greatly valued, and any information you can give as to it being restored will be greatly esteemed." In reply: Nothing can be done with the picture, as nearly half the face, and film, have been removed; also the hands have been rubbed off.

GUM FOR STAMP PHOTOS.—L. P. WISNER writes: "Will you please give me a formula for making gum that can be applied to the backs of home-made stamp photographs?" In reply: Dissolve $\frac{1}{2}$ lb. of the best gum arabic in a pint and a half of cold water. When quite dissolved, add two teaspoonfuls of glycerine, and 1 oz. of honey. Strain the mixture through flannel. The glycerine prevents the gummed paper from cracking and curling

up when dry. Ten drops of oil of cloves added to the mix will keep it good for a long time.

COLOURED MATT VARNISH.—CYMBIC asks for a formula for a coloured matt varnish to be applied cold to the back of negatives requiring "helping" in the shadows. In reply: Make up following matt varnish—Gum sandarac, $\frac{1}{2}$ oz.; gum mastic, 48 grains; ether, 5 ozs.; benzole, $\frac{1}{2}$ oz. Allow to stand several days before adding the benzole, then stand for days and filter, and add sufficient alcoholic saturated solution of iodine—usually about 1 part to 24 of matt varnish. Colour can be removed in patches if necessary by applying little saturated solution of hypo.

STUDIO QUERIES.—J. P. and S. say: "We shall be obliged if you will kindly inform us which would be the best way of light for a studio. We are building a new studio, and wish to have both ends if possible. We enclose two plans, which have been suggested, but would not the plan marked No. 1, with the windows cause shadows on the floor where the sitters sit? The plans are drawn to the scale of $\frac{1}{2}$ in. to the foot." In reply: We should prefer the design of No. 2, but with glass in the middle of the studio (if both ends are to be used), having about 5 ft. 6 in. at each end opaque. But the aspect of the building is not stated, we cannot advise further.

SHOW CASES.—BAILLEBORE Studio Co. ask: "(1) Where can I show cases for outside display, and what colour, design, etc., suits the best? I generally use dark grey mounts. Where can I get a block (line process) with an attractive design for advertising photography in a local paper. I supplied it with a half-tone block but they could not use it as they printed with 'Linotype,' but they can use any other kind; what of design do you consider the best?" In reply: (1) Messrs. Sage and Co., Gray's Inn Lane, and Messrs. Drew and Cadell, Holborn, are makers of show cases. But we should think could get them made for you in Ireland. A maroon will be a suitable colour. (2) No doubt the newspaper people who would like to use the block will obtain for you one that will suit their printing. The design is, of course, a matter of taste, and you can design for yourself.

LENS TROUBLES.—J. S. (Ceylon) writes: "I have been much disappointed with the results obtained on using two new lenses recently purchased, from which I expected great results—being a 12 x 10 lens, the other a 12 x 10, Series V. In use either of these lenses for outdoor groups, when one has to photograph against the light, so frequently the case here, only shade being a strip of shadow near some building, the camera out in the open, more or less facing the sun, result is invariably a hazy negative, every precaution being taken to shade the lens from the sun. On comparing the new lens recently with a rapid rectilinear (a very ordinary lens, poor covering power), the difference in brilliancy was not marked, the image as seen on the ground glass when using the R.R. lens being perceptibly brighter. Two negatives taken of the same subject under identical conditions with the two lenses show a marked difference in favour of the R.R. lens. In taking groups when any of the figures appear against the sky line, they are nearly obliterated by halation, the R.R. lens giving bright figures. The only occasions when I can get satisfactory results outdoors with either of the new lenses is when photographing with the light directly on the subject and behind the camera. For studio work, copying, enlarging, etc., nothing can be better, but I find it very risky to rely on them for outdoor work. I have an idea that both makes of lenses are deficient in projecting hoods to cut off reflected light." In reply: Both the lenses named are excellent, but they both include a much wider angle of view than do those of the R.R. form. Hence greater care is necessary to avoid extraneous light entering them when working under the conditions alluded to. We should recommend you to use a hood or box fitted on the front of the camera, so that light falls on the lenses, except from such of the subject as is required in the picture.

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EX CATHEDRA.

Photography and the Detection of Forgeries. The Berlin correspondent of the "Standard," writing one day last week, says that "excellent results have been obtained by the police at Ulm by the use of photography for the detection of erasures or corrections in documents and letters in cases where microscopic examination has not been successful. Railway tickets where the stamped date could no longer be deciphered were dusted with the finest graphite and photographed, whereupon the date was easily recognisable." We had an idea that this method of detecting erasures and alterations by photography was pretty old now. It will be remembered that the aid of photography has been invoked in the detection of forgeries, and in the alteration of documents by erasure and substitution has frequently come before the Law Courts in England, and, we believe, also in France and America. But, according to this writer the thing is new in Germany, though we doubt very much if there is anything novel in it even there. Still, we know that correspondents of the daily papers must write about something, and some allowance must be made for this being the "silly season" when "big gooseberries" are being grown and "sea serpents" are swimming about.

* * *

Weather Vaticination. In view of our recent remarks on the possibility of the Meteorological Office giving us forecasts of greater accuracy and for a longer period in advance, it is worthy of note that outside efforts are already being made in a similar direction to utilise the important advantages offered by the system of wireless telegraphy. It is an old joke that the weather has been the worse since we got telegrams from America regarding it; but, as a matter of fact, a great deal of our bad weather does come from the direction of the New World, as "dirty weather" is always passing across the Atlantic, and mainly from West to East, or perhaps it would be more strictly correct to say S.W. to N.E. These storm areas influence our weather considerably, and in the summer months, though it could not be properly said that they are the cause of strong gales, yet the rains and unsettled weather we experience are directly attributable to them in the main. And in winter time when severe gales so often sweep our coasts the Marconigraphs will probably be of value in giving much longer notice of the approach of storms, and the longer notice the more the system is improved. The Meteorological Office some little time ago were in treaty with Lloyd's upon this question, but up to the present no terms have been arrived at. It is to the "Daily Telegraph" that we are indebted for the storm forecasts we refer to.

B

THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1905.

Edited by THOMAS BEDDING, F.R.P.S.

THE forty-fourth annual issue of THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC will be published on December 1st. This year's ALMANAC reached a total of 1,604 pages, and the entire edition of 25,000 copies was sold out before publication. Of no other photographic book ever issued in two such unique facts be recorded. The edition for 1905 will also consist of 25,000 copies.

The striking favour with which past ALMANACS have been received is the surest proof that the lines upon which the publication is produced meet the requirements of its readers and supporters. Upon such lines we propose compiling the volume for 1905. At the same time, we shall be pleased to receive and consider suggestions for increasing the value of the ALMANAC in directions which may occur to our readers as susceptible of improvement.

The ALMANAC for 1905 will appeal to photographers all the more over as a daily reference guide in practical work. The standard matter and formulæ will be revised and added to where necessary, the year's advances in theory and practice will be recorded, and wherever practicable new features of an informative nature will be added.

**** IMPORTANT NOTICE.**—The attention of advertisers is specially directed to the announcement that this year the entire edition of the ALMANAC (25,000 copies) will be placed in the hands of dealers and the trade on December 1st, next—a fortnight earlier than usual, so as to be well in advance of the Christmas publication season.

Self-Lighting Burners.

Where electrical lighting with its concomitant advantage of not requiring the use of matches is not installed, the old system of first needing a match to be struck before lighting-up has been almost a necessity. It is true that self-lighting burners both with an ordinary fish-tail and with some types of incandescent burner are made; but, as all users of them are aware, the bye-pass is liable to get choked up after a time and so render the self-lighting action to become inert; hence any system not liable to this objection will be welcomed. A step in this direction has been taken by a well-known firm of chemical apparatus manufacturers, who have devised self-lighting burners, in which the employment of platinum black supplies the required means. This firm has introduced a self-lighting Bunsen burner, utilising the peculiar property of this form of platinum, and which, at any rate, in the laboratory, should be especially useful; a priori, there seems to be no reason why the incandescing of spongy platinum by the impinging upon it of hydrogen should not have a general application for illuminating gas burners if properly applied.

* * *

Acetylene Gas Illumination.

While discussing the question of gas illumination, we may call attention to a letter in a recent number of the "English Mechanic," which appears to dispose effectually of what is undoubtedly a popular idea that acetylene gas, so invaluable a light in photography, inevitably chokes up the burners in a short time. The writer says: "'M.' says that 'all burners require replacement from time to time . . . say, three months.' The Langley Station (G.W.R.) is lighted with the dry generation process of acetylene gas, and the burners have been in constant use for over three months, and all are in as good order as when first put up. In a table 'M.' gives as follows:—

	Candle Units.
Incandescent (high pressure)	30.35
" (Kern)	20.25
Acetylene gas by the dry process	31.7

If 'E. G. L. B.' wants a really first-rate acetylene gas generator let me recommend him the dry generation process. It is best for safety, simplicity, economy, efficiency, purity, cleanliness. No water, no mess, or sludge." If the process be all that the writer ("Edward Barnes, late Capt. 27th Inniskillings") claims, it is the one of all others likely to be of value for studio illumination.

* * *

Photographing the Unseen.

One of the qualities of photography, which though of the utmost value is least dwelt upon in a general way by popular writers, except in concrete cases, is the power it possesses of bringing to us a knowledge of things unseen. The most familiar instance, perhaps, is the representation of those rays of the spectrum that are utterly invisible to the eye and of whose very existence we should be ignorant were it not for the sensitive plate. In another direction we have pictures of the various positions of the limbs assumed by a horse when galloping, and which have so struck the fancy of some artists that they have reproduced them pictorially in representing a galloping horse, though no one had ever been cognisant of such positions till the camera had been brought into requisition. Present-day students have no idea of the excitement caused by the publication of the first photographs of this kind by Muybridge, of California. He was fêted and lionised, the guest of royalty, and of the most famous artists of the time; yet the only value of his pictures was the anatomical one. They were as improper a representation of what the eye saw as was the view of the

carriage wheels in rapid motion—every spoke as plain as if the vehicle were at rest. Nearly everyone has seen the views of a bullet in its flight after leaving the rifle. No one ever saw the air-waves. Then we have photographs of falling drops of water, and a great variety of cograte subjects, the most recent one published being on the effect of sound upon jets of water, an investigation which could not have been made at all without photographic aid. In a recent number of "Nature," a review of the paper is given illustrated with a singularly interesting photograph.

* * *

The British Association at Cambridge.

Much valuable work of interest to photographers has been accomplished during the visit of the British Association. Sir William Ramsay's paper on Radium, Professor Larmor's lecture on the "Relation of Röntgen Rays to Ordinary Light," Professor Rubens' communication bearing on the "Optical Properties of Metals," and Professor J. J. Thomson's discourse on "Radio Activity" are all of the highest importance. Addition to these Professor R. W. Wood, of Baltimore, described some recent improvements in the diffraction process of colour photography. The method he had invented, he said, depended on the use of three diffraction gratings placed in front of a lens. The three gratings were ruled with different degrees of fineness so as to appear red, green, and blue in colour. They possessed respectively 2,000, 2,400, and 2,750 lines to the inch, and were ruled so that overlapping squares on a single glass plate. The early gratings were faulty, but recently improvements had been made in the process of ruling. Professor Wood described the relation of his process to the Joly process, and showed how a specially ruled grating could be employed in the latter method. The difficulty of ruling such a grating was very great, but had finally been successfully overcome. In the geographical section Mr. Douglas Freshfield gave an interesting discourse entitled "Mountains and Mankind," in which he urged mountain explorers to attempt in more distant lands what the late Messrs. Adams-Reilly and Nichols, Mr. Tuckett, and Lieutenant Payer (of Arctic fame) did forty years ago with so much success in the Alps, and what the Swiss Alpine Club has done lately—take a district, and, working from the trigonometrically fixed points of a survey, fill it in by photographing with the help of the instruments for photographic and telephotographic surveying.

* * *

The Silly Season.

The time comes in every man's life when he loses faith in many of the cherished traditions of childhood, and pitches them overboard like so much useless top-hammer. Time was when we ourselves believed most implicitly in the big gooseberry. Its appearance used to be recorded without fail in our newspapers every year, and every year that gigantic berry grew more abnormal. It is perhaps as well that it should have passed away, for had it lived until now it would have increased in stature to such a degree that no newspaper—not even that of the largest circulation—would suffice to wrap it up. Now that Parliament is prorogued and the silly season is upon us, we miss our gooseberry terribly, so do the newspapers, and, if we may judge from the contents of some of them, they are hard put to it to find matter to supply its place. Fancy the "Daily Telegraph" (for example) devoting a column to "General" Booth's tour, and heading it "A Converted Sweep"! We have read the article—its title was all sufficient—because we do not appreciate tracts. This may possibly be due to our innate callousness, or perhaps because in early years we were so placed that we were surfeited with these ger-

erature. We have in our time shed tears of anguish "the converted burglar," "the converted pickpocket," "converted drunkard," and converted criminals of all and sizes. But why a converted sweep? Is not the work of a sweep as honourable an one in its way as any other reputable manner of earning a subsistence, and not a slur on a respected profession to hint that its members, like criminals, should be converted? Certainly, they get rather black, but even a nameless gentleman is as black as he is painted, and a decent sweep always dresses for Sunday. We must enter a protest against this sweeping condemnation by inference of the sweep profession, and we do so energetically, because we feel convinced that the sweeps will not long stand alone in general Booth's pillory. The photographers will come

For years thoughtless and irresponsible writers have added to them as practitioners of "the black art," and those who do not understand what a revolution has taken place in the methods of photography may imagine that the humble knight of the camera still merits the appellation "The converted photographer" looms large in the history of our imagination, but before the dream becomes a reality, we wish to put on record with no uncertain voice a protest against the ignorant assumption that photographers, as a body, are in need of public whitewashing.

Photography Fiction. Those who are familiar with the "Note Books" of Nathaniel Hawthorne will remember that he has dotted down a number of detached stories which he considered might be worked up into plots. Other writers have made the same useful foranda, very often it may be supposed, for after-ration by themselves. Mr. Bailey Aldrich, in his "Unkapog Papers," suggests several ingenious plots, which are amusingly treated in a recent number of the "Monthly Review." One of them is of photographic interest, and is thus sketched out. "In his memoirs, Potkin states the singular fact that the natives of the Malayan Archipelago have an idea that something is reflected from them when their likenesses are taken by photography. Here is the motive for a fantastic short story, in which the hero—an author in vogue or a popular actor—might be depicted as having all his good qualities actually photographed out of him. This could well be the result of a too prolonged indulgence in the efforts to look natural." First, the man loses his charming simplicity; then he begins to pose in intellectual attitudes, with finger on brow; then he becomes morbidly conscious, and finally ends in an asylum for incurable artists." This is certainly a very pleasant piece of fiction, but one is apt to smile at the idea that antipathy to portraiture is confined to the camera, and to the inhabitants of the Malayan Archipelago. It is a deeply-rooted prejudice which is prevalent over a large part of the world's face, and no doubt many of our readers have had to contend with it at places as comparatively near to this country as Algiers and Tunis. It is closely allied with the superstition of "the evil eye." Setting these considerations aside, Mr. Aldrich's idea is a fanciful one, which, in the hands of a gifted writer, would crystallise into something good. But might not the plot be twisted round a little so as to make the photographer the hero of the story? Let his work have such an effect upon him that every time he uses his camera something is taken out of him—part of his personality goes. He might at the beginning of the story be an accomplished worker, a good band and father, and one who always brought his pictures up to focus. Then he would gradually decline, under the influence of some new school he would smash focussing screw, purchase many yards of "bolting cloth," and try all he knew to make them as unlike

photographs as they could possibly be. Then he would sink lower and lower, producing pot-hunting fuzzy-wuzzies without number, sending them round in batches to the provincial exhibitions, until at last he sank a hopeless wreck of his former self—an addled egg sheltering under a pictorial wing. It seems a pity that the camera was not in evidence in Shakespeare's day, for he might have made his "Seven Ages of Man," into seven ages of the photographer. Here is another idea for the aspiring writer.

Thibet.

We may be quite sure that the expedition which has so recently reached Lhasa, the sacred city of Thibet, has several cameras in the possession of those who know how to use them, for military officers are often keen photographers, and know very well that their work often brings them within range for their lenses, as well as for their more formidable weapons, of things worth aiming at. So we may look forward some day in the near future to seeing Lhasa through the medium of trustworthy photographs. Very few travellers have, before the present time, been permitted to approach the city, which has been jealously guarded from the eye of the infidel, and we have plenty of evidence that the Lamas did their best to stem the advance of their visitors of to-day. But there have been a few exceptions to the rule. The new edition of a book has just been published, the author of which is Sarat Chandra Das, who obtained leave to visit the city more than twenty years ago, and was for six months the guest of one of the principal officials there. The reports made by him to the Indian Government were at first regarded as confidential documents, but were ultimately published in book form. There are several illustrations to the volume, the views of the city being of a diagrammatic character, while many of the pictures representing native customs are actual photographs. But it must be confessed that they are disappointing, in giving the idea that the men are posed for the occasion. Some of the customs are, to say the least, peculiar. Thus we read of a Thibetan funeral that "In every cemetery there is a large slab of stone, on which the corpse, stripped of its coverings, is placed face downwards. The officiating Lama then crosses it with lines, and while he repeats prayers, cuts it into pieces. The first pieces are flung towards the biggest and oldest vulture of the flock, called "Tankar," and the remainder to the rest. They are so tame that they come up, one by one, at the call of the priest. Last of all, the head of the corpse is crushed, and the bones pounded together are mixed with the brain, and distributed among the vultures." This is terribly gruesome and repulsive, but the photograph of the scene is tame in the extreme. There is the slab of stone, with the corpse, or a make-belief corpse, lying upon it, and the priest stands ready, with a long knife. A group of mourners, who do not mourn, stand around; but the vultures are not to be seen at all. The other photographs have the same sort of artificiality clinging to them. We must make allowance for the circumstance that when this traveller visited Thibet gelatine plates were in their infancy, and that probably he had all the drawbacks of the wet process to contend against. There was no such thing as snapshotting the natives, or the vultures, or anything else. But it is very different to-day, and possibly our expedition may bring home with it not only photographs illustrative of the manners and customs of the Thibetans, but also pictures of some of the skirmishes which have marked its progress towards the city of Lhasa.

RAYMENT'S Universal Lens Flange.—In our review of this useful addendum to the optical outfit of the photographer, published in the JOURNAL of August 5, we omitted to mention that it is obtainable of Mr. Jonathan Fallowfield, 146, Charing Cross Road, London, W.C.

THE SIMPLICITY OF THE CARBON PROCESS FOR PORTRAITURE.

At the present time there seems to be a taste for photographs in almost every colour except the old orthodox photographic colour, and, of course, enterprising portraitists cater for it, and often by troublesome methods, such as by toning bromides, for example. But, after all, this is a clumsy way when a simpler is at hand. Those who have undertaken to produce, say, a dozen prints by this means—all of the same tone—are fully aware of the difficulty they will meet with. Now, with the carbon process there is no such difficulty, because tissues of almost every colour of the rainbow are now on the market, and whichever one is selected all prints made upon it will be of exactly the same tint. It is thought by many that the carbon process by the double transfer method, by which the pictures are non-reversed, as regards right and left, is troublesome to work. But why work the double transfer method at all? Why not produce reversed negatives? Then the single transfer method, the simplest of all photographic processes, may be used. There are many ways by which reversed negatives may be made. One is by stripping the film from the glass and printing from the reverse side. This method is troublesome, and will not, we think, appeal to the general body of portraitists. The portrait may be taken with the aid of a prism, either before or behind the lens; but a prism of good quality, suitable for a good-sized portrait lens, is a somewhat costly affair. But reversing mirrors are by no means so, as they may be had at quite a moderate cost, and when kept in a good state of polish add very little indeed to the exposure.

There is yet another method, which entails no outlay whatever. It is simply to put the plate in the slide with the glass side toward the lens, of course, making allowance for the thickness of the glass in the focussing. As the glass now used for dry plates is so uniform in thickness there need be no difficulty from this source. There is no more difficulty in developing a plate exposed through the back than when it is exposed on the film side, but the appearance of the image must be watched for from the glass side, and not from the film side, density being, necessarily, judged in the ordinary way. It may, en passant, be mentioned that negatives made in this way are free from halation arising from reflection from the back of the glass. It goes without saying that the back of the plate must be carefully cleaned before it is put into the slide. Once our reversed negative is obtained—by whatever means—the production of carbon prints from it in any colour becomes the simplest of all photographic processes. All one has to do is to expose the tissue—which may be of any colour—mount it on single transfer paper, and simply develop with warm water, and fix it in a solution of alum, and then we have a picture of unquestionable permanence. There is one thing that may be mentioned in connection with the single transfer method, and its advantage over the double, which is that the prints may be made on the coarsest surfaced papers, which is not possible by double transfer. An objection may be made to the fact that reversed negatives cannot be used for ordinary printing unless we are content to have the image, as regards right and left, reversed. But why not, at the time of sitting, if ordinary prints are thought to be necessary, take two negatives—the one reversed and the other the right way about? All modern studio cameras are fitted with repeating backs and double dark slides, and what is easier than to put in one plate one way and the other the reverse?

AN OFTEN UNSUSPECTED CAUSE OF TROUBLE

PHOTOGRAPHERS, even experienced ones, sometimes with results that they are quite unable to account for. The abstract of the paper that we gave last week, Dr. W. J. Russell, F.R.S., recently read before the Society, will possibly throw a light upon some of them. Dr. Russell, it is well known, has for a long time been devoting a great deal of attention to the effect produced on gelatine plates by the emanations from different substances. His last paper is devoted to the action of different woods, and this is of special interest to all photographers, inasmuch as their cameras and dark slides are made of that material. It was pretty well known before the introduction of gelatine plates that dry plates of the then days, of the more sensitive kind, deteriorated when they were stored for long in deal boxes, and they did not do so—at least, to the same extent—as they were kept in mahogany ones. It is, or was, not a common thing for gelatine plates that have been kept in the dark slides for only a few days to, when developed, show a marked difference in density at that portion which was opposite the fabric forming the hinges.

A few days ago we were shown by a professional photographer who had been commissioned to reproduce a number of paintings in the North—of the 12 x 10 size—some negatives with this defect. The work was finished on the Friday night, and the last six plates exposed were left in the slides; the others had been replaced in boxes. The development was not commenced till the following Monday, and those plates that had been kept in the slides were marked with the hinges fabric, as were by the panels of the shutters, and, as a consequence, the journey of several hundred miles had to be made to rectify these six negatives. Those repacked in the boxes were perfect. Another case was this. A well-known camera maker had some few years before supplied an experimenter with a 15 x 12 camera, which had been used for outdoor work for a long time, giving every satisfaction. One day, however, one of the slides, containing a couple of plates exposed on a subject—a group—was left standing in the sun for a short time, and when the plate was developed the negative showed distinct marks of the panelling of the shutter, which, by the way, was of quite exceptional thinness. The slides were sent back to the maker, who doubted the fact. Some plates were procured by him, and put into the slides, which were then stood for a time in the light. When developed, there, sure enough, were marks of the panelling, but it was clear that, by reason of the thickness of the wood (Spanish mahogany), light could have passed through. Now the recent searches of Dr. Russell would seem to throw considerable light on the subject. Dr. Russell points out in his paper that the action of the wood is greatly increased after it has been exposed to a strong light. Most workers, when they are working out of doors, take the precaution to cover up the camera with the focussing cloth before they draw the shutter, but some who have full confidence in their slides do not; consequently the inside of the shutter is exposed to the light while the plate is being exposed, sometimes for a long time before the exposure is made. Again, with the pull quite out of the slide shutters, the shutter itself is almost always fully exposed to a strong light, often, when waiting for an opportunity to expose for a long time. Many of these draw-out shutters are made of millboard, which is really a wood pulp. The researches of Dr. Russell tend to show that the inside of all shutters should be exposed as little to the light as possible, or an unsuspected source of trouble may arise.

SEIDLITZ P.O.P.

There is no doubt that the photographic trade is in a bad way. Even with the better summer there has been no improvement—indeed, I know of cases where trade is even worse this season than the last. Manufacturers, dealers, and photographers all alike complain; they are heavily stocked, with sales to speak of. I fear there will be sad times for some time very shortly. Even now purchasers can get almost anything at their own price, and in many cases far below cost. The fact is patent that there are far too many of every class engaged in photography to meet the present requirements. Opinions are much divided as to the cause of this. My own idea is that the boom was created by the amateur, and that the amateur's indifference to photography and his falling out of the ranks is the cause of the slump. There can be no denying that the amateur created the dealer in his present form. Very much of this state of things has been brought about by the "push-the-button-and-we-do-the-rest" photography that has been upon us. It was very different in the old days—I am speaking of the time of the birth of the gelatine plate—when every amateur strove to outdo others, and was proud of his work. Now almost every house has quite a number of cameras (of a sort) and things photographic, which have descended to little small children, who, knowing nothing of photography, produce awful monstrosities, and disgust of photography in everyone who sees them. Then we have only to look at the reports of the meetings of the various photographic societies to see how hard pushed they are for subjects to talk about. Now is this? Another generation has sprung up. Is there so much amusement and pleasure to be got out of photography if properly pursued as of yore? I believe they only want to take up to action to make them as enthusiastic as ever. Regarding plates, they may well be left to the manufacturer, except to the seriously-earnest few who pursue colour photography, there is little left for improvement—that is, in their present form—and they are extremely cheap and uniform. But there is another article in universal use which offered a greater scope for investigation and ingenuity than plates—that is printing paper.

As my purpose in writing this article is to endeavour to stimulate the waning interest of the members of photographic societies, I have worked out a formula, the components of which are to be found in nearly all households, with the exception, of course, of nitrate of silver. It is not an ideal emulsion. It will not give every tone from red chalk to black without gold or platinum, but with toning you can get all that most people require, and it keeps well. In short, notwithstanding its somewhat bizarre title, it is as good as some of the papers in the market; but there is plenty of room for experiment.

STOCK SOLUTION.

One Seidlitz powder, B.P.

Sodium chloride (table salt)	100 grs.
Best vinegar (free from mineral acid).....	1 oz.
Citric Acid	300 grs.
Methylated spirit	1 oz.
(or 2 ozs. of whiskey).	
Pure carbolic acid	30 grs.
Water that has been boiled and cooled ...	16 ozs.

Put the Seidlitz powder in a quart jug and pour the water upon it slowly so that it does not froth over; put in the citric acid and stir till dissolved, then add the spirit, vinegar, and carbolic acid; bottle, and label it.

Now, in coming to the making of the emulsion, I am in a bit of a dilemma with regard to the gelatine. The gelatine plays an important part; moreover, the quantity needed will vary with the quality and make. What is required is a good, clear, tough gelatine, not too brittle. I may not here advertise any particular maker. You can get gelatine from grocers and

chemists from about 1s. 4d to something like 6s. per lb. It is not very good at the lowest figure; you need not pay the highest by a long way; you must make your own choice. If you look in the store cupboard you will probably find a packet of "Nelson's patent opaque gelatine." The women folk make curious things of it, and—I am assured—eat them. Annex some of this. I have made enquiries, and find that you can get this gelatine almost everywhere, so, for this reason only, simply as a guide to quantity, I adopt this for the formula. I expect it will be fairly uniform.

To make a small but workable quantity of emulsion, put into a bottle or jar 180 grs. of gelatine and 4 ozs. cold water; let it work for half an hour at least, then place the bottle or jar in a saucepan containing water about up to the contents of the bottle. Heat the contents of the bottle to 120 degs. to 125 degs. F., with occasional shake or stir; remove from the saucepan and let cool. When the temperature has fallen to 100 degs. F. pour into the dissolved gelatine 1 oz. of the stock bottle solution, and mix well with the gelatine, then add silver nitrate (crystals) 30 grs. Shake till dissolved, and a little longer, and your emulsion is made, only needing filtering through clean, well-washed swansdown, calico, flannel, flannel-ette, or other similar material. Now, nitrate of silver in the presence of organic matter is very sensitive to daylight, especially when warm, so that the addition of the silver to the other ingredients and the following operations must be made in subdued light; candle, coal-oil lamp, or naked gas-flame will not hurt; the gas mantle will print your paper and de-grade your emulsion if at all near.

I think, all things considered, the best coating will be done by the beginner by floating, just the same as he would float albuminised paper. I have made for myself a small machine for experimental purposes with which I can coat a sample with a single ounce of emulsion, and use nearly to the last. This, of course, needs very careful weighing, which is not advisable for a beginner; besides, the above is a very cheap formula, and five ounces of emulsion is much nicer to work with. The ordinary purchasable dishes are very wasteful—better make one. After determining the largest size you intend to coat, get a sheet of glass one inch larger each way, and fasten upon one of its surfaces, at the edges—with Prout's glue, shellac, marine glue, or any suitable cement—four strips of wood one-quarter inch high to form a tray. Three-sixteenths of an inch fretwood is very suitable for the purposes. My own tray for experiments is only 11 in. by 9 in. plate-glass, the wood being stuck down with a thick mixture of shellac and spirit used cold, after "drying," two coats—drying between—of the same solution were given over the wood, extending over the glass a little. This has stood a good deal of wear, and is quite as sound as ever.

Of course this has been got ready before the emulsion is made. When about to coat put your emulsion-tray at one corner of a flat table or bench fairly level—a kitchen table does very well. Level exactly with three small wedges of wood your coating-tray. Have a string stretched across the room, and your paper ready to hand; cut half an inch smaller each way than the inside of your tray; filter your emulsion and pour it carefully into the tray to avoid the making of bubbles—I filter mine directly into the tray. At this time of year the temperature of your emulsion will now have sunk to probably 90 degs. F. Between 80 degs. and 90 degs. F. will do fairly well for this emulsion, coated this way. In colder weather a warm tank, or some such contrivance, will be necessary to keep the emulsion between these temperatures, unless you coat only one or two sheets, or are extremely nimble. Skim the top of the emulsion with the edge of a narrow strip of paper slowly. The strip should be a little shorter than the width of the tray. Hold one end in each hand, the strip nearly upright, and skim the emulsion with the edge, just touching the top, from

side to side, thus leaving small bubbles at the edge of tray where they will do no harm. Do not omit to do this between each sheet, for there are sure to be bubbles which you can scarcely see, but they would show plainly enough when you print your paper. Take up a sheet of paper by the opposite (diagonal) corners, face downwards, and bring the hands close together to convex the surface; lower it till it touches the emulsion from corner to corner, then bring down the hands slowly till the sheet floats upon the emulsion; tap it lightly a few times upon the back with the finger-tips from centre to edges to expel any air-bells that may be there, and make attachment complete, just as we used to sensitise our albuminised paper years ago. Now, this sounds all very simple, and so it is, taking less time to do than to write; but I think you will, with gelatine emulsion, find sufficient difficulty in obtaining an even coating, free from blemish, to make the operation quite interesting. Let the paper rest upon the emulsion about forty seconds if of ordinary thickness, when it will lie flat. Now take hold of the two corners nearest to you, and lift the paper—not too rapidly—from the tray, and with a dexterous movement let it fall, face uppermost, upon the bench or table to set. The quicker you lift the paper the more emulsion you take up, and the thicker the coating. Two or three sheets will give sufficient experience. It greatly facilitates this removal, saves the fingers from stain, and prevents damage to the coated surface, if, before floating the paper, you turn up at right angles an eighth of an inch the two corners you purpose taking hold of for removal. Repeat the operations till you have filled your bench. By this time your earliest coated sheets will have set. Hang these over a stretched string; if you do so that an equal length hangs over each side, it will still rest upon the line when dry. If badly hung you will probably find them on the floor, for they straighten out in drying. A kitchen, or any room that has had a fire in it during the day is very suitable for coating. The paper will dry in from half an hour to two or three hours, according to the thickness of coating and hygroscopic conditions. I have been very explicit, so that an absolute beginner may follow the directions, and not only improve upon the formula, but the working thereof. I know that the older hands will view with forgiving eyes my prolixity. My end will be attained if the prescription offered acts as a stimulant upon some of the members of our numerous photographic societies, which would ultimately redound to the benefit of manufacturers.

A. J. BROWN.

OUT OF THE PAST.

OUR Scottish readers will no doubt be interested in the following reminiscences which our confrere Dr. John Nicol published in last number of the "American Amateur Photographer" apropos of the receipt of the Jubilee Number of the BRITISH JOURNAL OF PHOTOGRAPHY:—

The Jubilee Number of the BRITISH JOURNAL OF PHOTOGRAPHY has for me such an amount of personal interest that, however absurd the reason, I cannot resist the temptation to give it an article altogether to itself. Of the three dozen portraits reproduced I was more or less acquainted with at least a third, and the intercourse with a few of them, if I could get space to tell it, would be both amusing and interesting. The other two thirds I am glad to see, as of most of them much has been heard and it is always an advantage to be able to correct our previously formed impressions, even although the correction be sometimes disappointing.

During the early sixties (I write too far from home to look up dates), my laboratory at 21, Dundas Street, Edinburgh, was a kind of headquarters for those interested in photography, a class considerably different from the average amateur of to-day; and there came together such landmarks, if I may use the term, as Talbot, Brewster, Burnet, Ponton, Horatio Ross,

Wilson, Walker, Davies, Tunny, Davidson, Bow, Piazzi Smyth, Hallard, Marrick, Raven, etc., etc., all or most of them members of the Photographic Society of Scotland. And it was consequence of certain features of that society that the energetic Edinburgh Photographic Society was formed. A number of the members of the older society were also Fellows of the Royal Scottish Society of Arts or other like societies. I knew that the discussions that generally followed papers were read elicited more information than was generally given in the paper itself, and as, for some reason or other, such discussions rarely followed papers read before the old society there was considerable dissatisfaction. It was hinted that papers by such big-wigs as Brewster and others like him, one cared to start a discussion, the result being that nothing beyond a vote of thanks to the reader was ever thought of and some of us wanted something more.

The result was that at a meeting in the room behind J. Taylor's little watchmaker's shop on the South Bridge, Edinburgh Photographic Society was founded, the date being February 20, 1861. There were present about ten, what would be here called "charter members," including Taylor, Burnet, Slight, Davies, Ramage, Muir, Valentine (of Dundee), of whom, so far as I know, only Slight and myself remain. J. D. Marrick, then Edinburgh City Clerk, now Sir James, was late Glasgow City Clerk, was the first president, and the society started with a degree of energy that it has never lost, having always been, and still is, one of the most energetic in Britain.

THE BRITISH JOURNAL OF PHOTOGRAPHY became the organ of the society—for a time, indeed, said so on its title page—the members were supplied with it at a reduced rate.

With Taylor I kept up a close correspondence up to time of his death, and in view of the claims that have recently been made as to his having joined the ranks of the spiritualists it may be of interest to record an incident that occurred shortly after he left London for New York. About that time I was one of ten who were holding weekly meetings in a vain search for evidence of the truth of spiritualism, and although we were open-minded, and some anxious to believe, and have the help of several mediums, including Duguid, of Glasgow, the evidence did not eventuate. One of the "anxious believers," a friend on a visit from India, with wealth equal to his credulity, on reading in an American newspaper a glowing account of the success of an American photo-medium in getting into his pictures the departed spirits of his sitters' friends, started at once for New York in the hope of again seeing a recently-deceased wife. And he was not disappointed. In less than a month he returned with a poor photograph, carte size of himself, and looking over his shoulder an over-exposed figure of a woman, flat but full of detail, in which he instantly recognised his late wife, and almost quarrelled with his grown-up daughter because she could not see it.

And now comes the pith of the story. Within a few days after the return of our Indian friend, now a confirmed spiritualist, I received a letter from Taylor, who, with a friend, had visited the same photo-medium and got, not a deceased friend of either, but what the medium called "one of his controls" and which contained a copy of the said photograph; and even a cursory examination of the two, the print got by our Indian friend and that sent by Taylor, showed unmistakably that both "spirit photographs" had been printed from the same negative.

But this is aside from the Jubilee Number about which I meant to write. Well, nothing that I have seen for many years has given me so much pleasure. Many of the faces altered, ah! how much since I last saw them—recall incidents long forgotten, but delightful when recalled. To those who like myself, were deeply dabbling in photography when Taylor, "B. J.," under its baby name, had its birth, it is an epitome of its progress, and a reminder of difficulties surmounted;

as entered the lists in later years it should be a source of management, and to every photographer, and many non-photographers, its thirty-two pages should be instructive and

ng. here all, or so much, is good, it is difficult to select, but we thank T. C. Hepworth for, in his article on "Journalistic Photography," giving credit to American magazines for priority in the production of half-tone blocks. Everitt gives a useful information anent lenses; my old friend Henderson is of ceramic photography, but, as usual, fails to say just how produced his own, certainly the best that ever left muffle; Emerson, well, he is as egotistical as ever, but has "the sage of his opinion" to an extent that enables him to repeat mistake of speaking disrespectfully of "gum," and saying it is dead, while he knows right well that it is daily gaining popularity, and that in the rooms of the Royal, of which an office-bearer, there is while I write an excellent exhibit altogether given over it.

at the ointment is little the worse of the fly, and the "B. J." Number should be a precious possession to all interested photography.

ere is one thing more that I feel a desire to set right. Wall, in speaking of "camera evolution," says: "Then the Kinnear or conical bellows, made first, I believe, by gher in 1861," but if any name is to be given to that at time popular camera it should be Thompson.

me time in the late fifties, Tom McKinley, a young man Liverpool, on a visit to his parents at Trinity, called on in connection with photography, and my attention was ected to a rudely-constructed camera he carried; because as the first bellows I had seen. Although very unlike the, ter known, Kinnear's, the description I was able to give to my friend Alexander Thompson, late Principal of the chants' Company's School in George Square, but then er in Dr. Guthrie's ragged school, set him a thinking and ructing, the outcome being the original model of the ra in question, he and I being joint owners, I having found material and he the invention and construction. We used camera a good deal, and it had so many advantages over ous landscape cameras that Kinnear, then one of Edin- h's leading architects, desiring to have one like it, showed James Bryson, then one of Edinburgh's leading opticians instrument makers, who copied it, and in a most workman- manner. Kinnear showed it at a meeting of the Photo- ic Society of Scotland, and a second was made for the D. T. K. Drummond, who, I believe, in his own genial way, the first to name it the "Kinnear Camera." That Meagher wards turned out many such cameras, I know, but not they were well known in Scotland, at least five being larly used in Edinburgh.

rious problems in solar research are soon to be studied on a of International co-operation. A plan was recently initiated ne Washington National Academy of Sciences, this body having oted a committee on solar research charged to consider the e question, and to ascertain the views of the astronomers, spectro- ists, and physicists, who in divers parts of the world, devote al attention to sun investigations. The chairman is Prof. George ale, director of the Yerkes Observatory, Chicago. At the St. s Exposition next month a general meeting of those interested e scheme will be held, when some attempt is to be made to out the lines of future work. At this gathering Prof. H. H. er, F.R.S., Savilian Professor of Astronomy in the University of rd, and president of the Royal Astronomical Society, will be ent, and take part in the discussions.

THE MERCURY VAPOUR LAMP FOR PHOTOGRAPHIC WORK.

[*"Scientific American."*]

THE mercury vapour lamp, unlike its rivals in artificial illumination, derives its light from the vapour of mercury, which is raised to a high state of incandescence by the electric current passing through it. The light produced by all of the other forms of electric lamps depends on the incandescence of a solid, which is sometimes carbon and at other times other material in the form of rods or filaments, as in the arc lamp, the incandescent lamp, and the Nernst lamp.

The accompanying illustrations (Figs. 1 and 2) show the



Fig. 1.—The Cooper Hewitt Lamp in the Photographic Studio.

mercury vapour lamps as employed in the photographic studio of Mr. E. C. Pratt, at Aurora, Ill. The illustration, Fig. 1, shows the Cooper Hewitt lamps in position for making negatives, the mercury light being used as a perfect substitute for daylight, while the illustration, Fig. 2, shows the frame lowered to the floor and being used as a printing lamp. Mr. Pratt states that he has made sittings at night with this equipment in the astonishing space of one second. The prints are made with the same light in from $2\frac{1}{2}$ to 10 seconds, according to the density of the negative, and the light only barely heats the negative, but not enough to damage it in the least. These lamps are constructed of glass tubes having metal sealing-in wires at each end. These wires lead the current to the electrodes, one of which

is of mercury, and the tubes are exhausted to a high degree by means of a vacuum pump and sealed off, preventing any escape of the vapour which fills the tube.

It is claimed that these mercury vapour lamps produce the most efficient electric light known, the current consumption being about 0.4 watts per spherical candle and, under favourable circumstances, it is stated as low as 0.3 watts per candle-power. Three ordinary 32-candle-power incandescent lamps required as much current as a mercury vapour lamp of 750 candle-power and the efficiency is therefore more than seven times that of the incandescent lamp and about double that of the arc lamp.

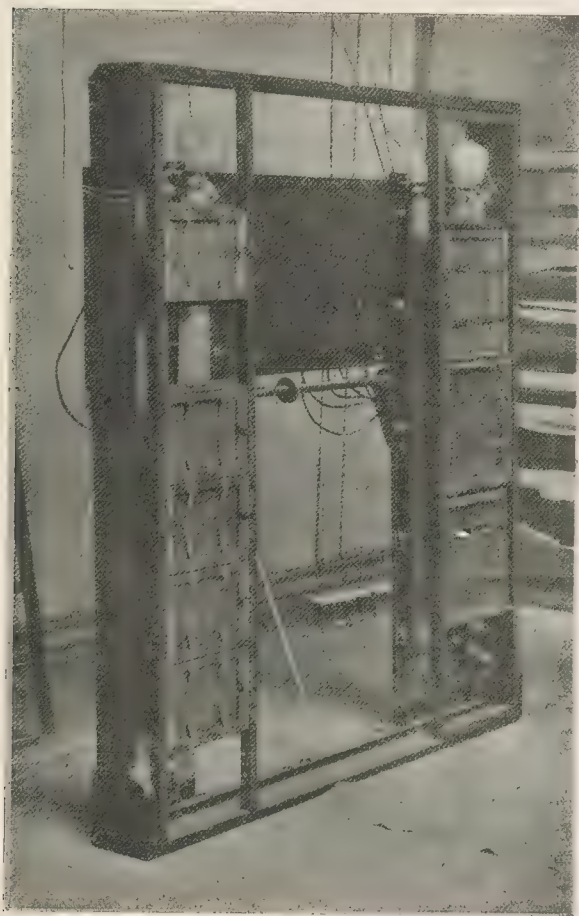


Fig. 2.—The Cooper Hewitt Lamp Used for Printing.

As the vapour is inclosed under a vacuum there is no consumption of the light-giving element and, therefore, this type of lamp requires no trimming.

The mercury vapour bath produces a light which is seemingly pure white, but is entirely lacking in red rays or nearly so, thus making it entirely unsuitable where the accurate determination of colour values is necessary. The mercury vapour lamp operates with absolute steadiness and without noise and is said to be the most desirable form of light for factories, machine shops, and work-rooms of architects and draftsmen, as well as for all classes of photographic work.

The light of this lamp is composed to a very large extent of

chemically active or actinic rays and is, therefore, a perfect substitute for daylight for all sorts of photographic processes. The use of this lamp the studio for portrait photography is located in any part of a building and the operator is independent of weather conditions. The photographer can devote his attention entirely to the artistic arrangement of light and shadows, as the time of exposure is constant at all times. The same equipment for the mercury-lamp skylight can be utilised for printing of all kinds with great satisfaction. The mercury lamp is of such shape that it is particularly well adapted for mechanical blue-printing with glass cylinders and revolving drums being, it is claimed, many times more efficient than a focussing arc lamp, while for photo-engraving work lamps of this type consuming eight amperes are said to do the work as quickly as arc lamps taking three times this amount of current.

FRANK C. PERKINS

A METHOD OF DETERMINING THE FOCAL LENGTH AND THE ABERRATIONS OF A PHOTOGRAPHIC OBJECTIVE.

[A Lecture given before the Royal Photographic Society.]

I.

I wish to show, in the first place, how the focal length of a compound lens—for instance, a photographic objective—can be measured, not only accurately, but also easily, and with a very simple apparatus, and at the same time to explain the rationale of the method. Secondly, I will show how the aberrations of an objective can be determined with the same apparatus. In connection with this I will suggest some aberration coefficients, which will give a numerical value to each. It seems to me that it will be of great advantage if the makers of lenses mark these coefficients on the lenses in the same way that they now mark the "numerical aperture" on the best microscope objectives. One frequently has to procure a lens for a special purpose for which freedom from certain aberrations is of great importance, while its behaviour in other respects is of comparatively small account. In landscape work, curvature of field is generally immaterial and may even be helpful by assisting in bringing the foreground into focus; in copying line drawings, on the other hand, a lens with a flat field is essential. For portraiture some amount of spherical aberration is frequently desired, but the lens should be well corrected for colour, and work at a large aperture. For process work it should not have a large aperture, as to obtain a correctly graduated dot it has to be stopped down to F.22, and at the larger aperture (used to close up the dots in the high lights) a slight loss of definition is unimportant. In this case the lens should be thin and have few surfaces in order that the loss from absorption and reflection may be reduced to a minimum. Many other instances will occur to everyone, and it is obvious that if the amount of the aberrations be known, it may be possible to substitute a cheaper lens, and still do work as good as or better than with a more expensive instrument.

FOCAL LENGTH.

There are certain very important fixed points in any optical system, lens, or mirror, after the man who first investigated them, Gauss points. These are the focal, principal, and nodal points. When light, from an infinitely distant point, passes through a lens along its axis, it converges to a point on its axis called the principal focus, or the first focal point. If the lens be reversed so that the light passes through it in the opposite direction, it converges to a point as before, called the second focal point.

For one position of the object, and only one, the image formed by the lens will be the same size and erect, then the object and image are situated respectively in the principal planes and these cut the axis of the lens in the principal points. The planes nearly coincide at about the diaphragm

the ordinary photographic lens, but are a long way off in the telephoto lens.

There are two other points which have a very curious property. When a ray of light falls on the lens, travelling in such a direction that if it had not been bent by the lens, it would pass through one of these points, then, after passing through the lens, it will emerge in such a direction that it seems to come from the other of these points. These are the *nodal points*. When the lens is working in air these will always coincide with the principal points. (The nodal points of a water or oil-immersion micro-objective do not coincide with the principal points.)

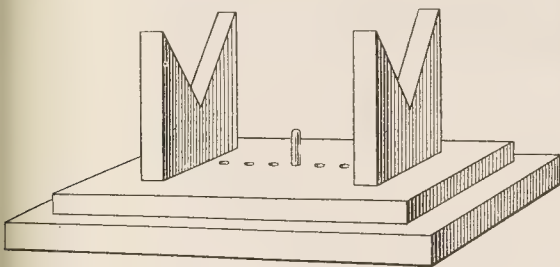


Fig. 1.—Home-made turn-table of wood. The upper board carrying the V's rotates upon the lower, round a pivot, which can be inserted in any of the holes.

I will now demonstrate this property of the nodal points. The light from a lamp at one end of the room is focussed by a large lens* upon a screen. The lens is mounted upon a board (Fig. 1) rotating upon a lower board, round a vertical axis, formed by inserting a pin through the two boards. There is a series of these holes in a line along the middle of the boards. When the pin is inserted in a hole at the end furthest from the screen, the image moves to and fro as the lens is rotated, going to the right when the lens is rotated clockwise. When the pin is transferred to the hole in the board nearest the screen, the image again moves when the lens is rotated, but in the opposite direction, namely, to the left, when the lens is rotated clockwise. Lastly, when the pin is placed in a certain hole near the middle of the board, the image remains stationary as the lens is rotated. This will be the nodal point, if the lamp used as the image is infinitely distant.

The explanation of these movements is clearly shown by means of a movable cardboard model. The *direction* of the ray from the distant lamp to the first nodal point, represented by a long stretched string An_1 (Figs. 2 and 3), is practically unaffected by the movement of the lens; so that the emergent ray

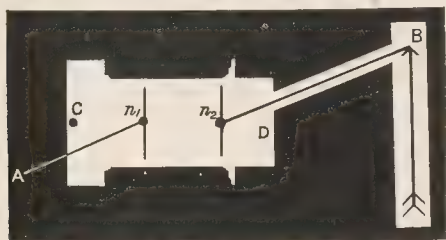


Fig. 2.—Cardboard Model of Lens. $n_1 n_2$ nodal points; C pivot; A n_1 incident ray; n_2 B emergent ray.

from the second nodal point n_2B , which, by the peculiar pro-

* A Berghem portrait lens of 6 inches aperture which was placed at the disposal of the lecturer by Mr. Dallmeyer, enabled these experiments to be made on a large scale, visible from all parts of the room.

perty of these points, remains *parallel* to the incident one An_1 , will move to and fro with the point n_2 . When therefore the lens is pivoted at a point C, the image will move to the right

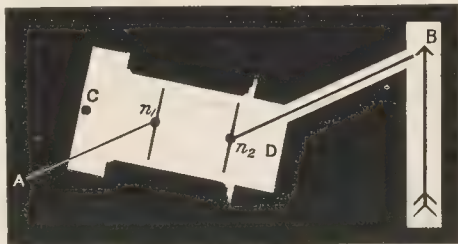


Fig. 3.—The model rotated about C clockwise. The ray $n_2 B$ has moved parallel to itself with n_2 , so therefore has the image B.

(as one faces the screen) when the lens is rotated clockwise. When the pivot is transferred to D, the image will move to the left. Lastly, if the pivot is at A (supposing the lamp to be sufficiently distant), the image will be unaffected by the rotation of the lens.

The distance from n_2 to the screen will then be the focal length of the lens if the incident light come from infinity.

As the focal point is the point to which parallel light will converge, it follows conversely that light starting from this point, and traversing the lens in the reverse direction, will emerge as a parallel beam. Let this beam of light fall normally upon a plane mirror M (Fig. 4); then it is obvious that each ray will be returned upon itself, and after passing a second time through the lens, will converge again to F.

I can show this by passing the light from an arc lamp S, through a small hole, furnished with cross-wires, in a screen

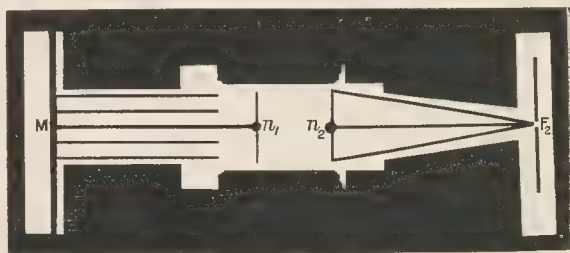


Fig. 4.—Light from principal focus F_2 , emerging as a parallel beam, reflected back by mirror M, and reconverged to F_2 .

at F_2 . The light, after passing through the lens, is reflected back by the mirror, and, by tilting the mirror a very little, the image is deflected to one side of the hole, and can thus be observed. The distance is adjusted until the image of the cross-wires is perfectly sharp, and then F_2 is exactly at the principal focus of the lens.

REG. S. CLAY, D.Sc.

IRISH Lithographic Artists' and Photo-Engravers' Association.—The members of this society held their annual excursion on Sunday last, the rendezvous selected being the far-famed Seven Churches and Glendalough, which was reached after an enjoyable drive from Rathdrum via the Vale of Clara. The "Churches" and the Upper Lake and St. Kevin's Bed were visited, and many photographs taken. After tea the company resolved itself into a social, and several songs were rendered, and impromptu speeches delivered, in the course of which a well-deserved compliment was paid to the untiring secretary of the Association, Mr. Robert O'Flannagan.

NOTES ON RADIO-ACTIVITY.

[Abstract of a Paper contributed to the British Pharmaceutical Conference.]

I.

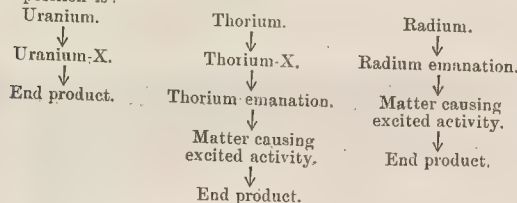
The property of radio-activity was in reality first discovered by Becquerel in 1896 for uranium-containing minerals and chemicals of every kind. The rays from uranium salts without the intervention of sunlight can be shown photographically to penetrate aluminium, bone, glass, black paper, etc., at a distance of several inches, and thorium nitrate (the constituent to the extent of 98 per cent. of Welsbach mantles) produces similar photographic effects.

Of late there has been much discussion as to the change that the radium atom is undergoing and the probability of uranium being its parent. Rutherford suggested that radium is analogous to the first bodies, designated uranium-X and thorium-X, resulting from the break up of uranium and thorium, and not to these elements themselves. I may here briefly outline the work on thorium. Thorium has long been known to be of a complex nature, and an American professor a little time ago caused some excitement by announcing that he had split it up into carolinium and berzelium. If ammonia be added to a solution of thorium nitrate the hydroxide is found on separation to have lost more than half its activity, whereas the filtrate from this hydroxide on evaporation to dryness possesses the bulk of the activity. This residue (the thorium-X soluble in NH_3) is minute, and weight for weight is 1,000 times as active as the original thorium nitrate. Now the precipitated thorium hydroxide regains its activity just as fast as the thorium-X loses it; furthermore, the activity of the precipitated hydroxide added to that of the thorium-X is always equal to that of the original thorium nitrate before the process.

Thorium-X loses its activity in a month. It produces an emanation, and this gas-like body changes into the matter producing the excited activity.

Similarly uranium yields a uranium-X, but this does not give rise to an emanation or to excited activity. As yet a radium-X is not known.

The position is:—



The amount of radium in pitchblende leads scientists to think that there is a direct relation between the amount of radium developed and the time taken to decay. It has been found that old uranium salts appear to contain more radium emanation than those freshly made. Many investigators are instituting experiments to watch the gradual development of radium in uranium salts and minerals. One worker calculates that the average life of the radium atom being 1,500 years (minimum), and the rate of break-up being in geometrical progression, $1\frac{1}{2}$ Mgm. ought to disintegrate per gramme in a year, or, if we take a maximum computation, 1/100 Mgm. would do so in this length of time. He proposes, therefore, to put on one side a few hundred grammes of freshly prepared uranium nitrate, and to examine for radio-activity in a few months.

Soddy² forestalled these results by finding the quantity was less than 10 — "Gm. in twelve months from 1 kilo. of uranium nitrate. Soddy and Ramsay (*ibid.*) showed that less than 1/1,000 part of radium changes per annum, and the rate of change of uranium may be assumed to be one million times slower, therefore 5×10^{-7} Gm. of uranium nitrate would change per year. Soddy concludes that less than 1/10,000 part of the theoretical quantity is formed in the first year, and inclines to the belief that uranium is not the parent of radium.

An American investigator³ found an agreement between the quantity of uranium and of radium present in certain ores. Joly⁴ inclines to the view that radium may be an atomic combination of radio-

active products with some of the heavy metals in pitchblende. He would therefore represent the synthesis rather than the disintegration of an element. He instituted experiments in July to test the yield, if any, of radium emanation by artificial chalcocite (uranium copper-phosphate). Simultaneously pure uranium nitrate and impure uranium nitrate (crystallised with small quantities of heavy metals) were put under observation. Strutt⁵ found the proportion of radium and uranium in minerals constant, e.g., copper uranite dissolved in sulphuric acid gives an amount of radium emanation about equal to that yielded by the same weight of Joachimsthal pitchblende; the percentage of uranium is also about the same.

Radium has undoubtedly been produced since the formation of the mineral; Ramsay and Soddy's determination of the rate of production of the emanation proved this, and Strutt claims that this proves that uranium must be the parent of radium.

In considering a few particles of radium we realise that most of the atoms behave as if they were permanent. None of them are, of course, really so, though only very few are breaking up from moment to moment.

A writer on the subject⁶ imagines one in every million billion atoms of thorium to throw out per second a fraction of its mass, i.e., the alpha-ray, the remainder of that atom, becomes the thorium-X—this again throws off another part of its mass, becoming the atom of the emanation—this changes into the matter producing excited activity, and so on. It would take at least a million years for 1/1,000 part of the mass of thorium or uranium to be changed. The activity of radium being 1,000,000 times greater than that of thorium, about the same proportion of this body changes as of thorium; in other words, according to this author, the life of radium is not more than 1,000 years.

In the case of radium it is suggested by Rutherford⁷ that after the emission of the alpha particle the rest of the radium atom is radium-X; this then disintegrates into an alpha particle, and the emanation, which latter in turn breaks up, expelling more alpha particles and changing into the matter which causes excited activity; the final product being perhaps polonium, the radium "atom" consisting, therefore, of the polonium atom and about six alpha particles, but these, when their charge is neutralised by a negative corpuscle, are believed to become helium atoms, with the result that the radium compound radical would have the formula PoHe . Polonium has, however, I believe, been obtained free from radium (spectroscopically).

Soddy⁸ states that 25 per cent. of the entire alpha radiation comes from the radium and the remainder from the emanation and the matter causing excited activity.

ATOMIC WEIGHT.

Madame Curie's figure of 225 may require confirming, the spectroscopic value being 257.8, but the former figure still has its supporters. A recent writer in "Nature"⁹ pointed out in detail certain defects in the spectroscopic calculations; his corrections place the theoretical value nearer 225 than 257. Madame Curie placed radium in the Mendeléeff Periodic Law after barium, with the alkaline earths in the row already containing uranium and thorium. Naturally there arose a great controversy among the various schools of chemical belief as to the position that radium should occupy. Mendeléeff for one¹⁰ was not inclined to the disintegration theory. In endeavouring to fit in argon and helium and the other new elements in his periodic system he came to the conclusion that the "ether" itself must be atomic, and be placed in the argon and helium group, and he offered the opinion that the energy of radium, its light and electrical properties, were simply due to the emission of the ether atoms.

RAYS.

The radio-active elements are by most scientists regarded as slowly breaking up, and at a definite uniform rate for each individual body. This takes place in stages, the emanation of radium and thorium and the active matter resulting from further change of the latter causing induced activity, are transitional forms between heavy and light

¹ Whetham, "Nature," May 5, 1904, p. 5.

² Soddy, "Nature," May 12, 1904, p. 30.

³ Boltwood, "Nature," May 26, 1904, p. 80.

⁴ Joly, "Nature," May 26, 1904, p. 80; also July 14, p. 246.

⁵ Strutt, "Nature," July 7, 1904, p. 222.

⁶ Bottone, "Radium and All About It."

⁷ Rutherford, "Nature," July 14, 241.

⁸ Soddy, "Nature," February 11, 1904, p. 348.

⁹ Sucherland, "Nature," April 28, 1904, p. 606.

¹⁰ "C. and D.," 1/1904, 579.

and have been called metabolons. On separating the meta- from the original matter the latter goes on accumulating the onal body. The amount of helium obtained by Ramsay and from radium was a mere bubble.

ALPHA-RAYS.

classified the various types of rays used in medicine :—

Rays.	Various Effects.	Various Sources.
ode rays.	Chemical.	Battery, continuous.
ys.	Photographic.	Coil, intermittent.
ys.	Electroscopic.	Dynamo, alternating.
ys.	Physiological.	Leyden jar shocks.
ys.	Bactericidal.	High frequency.
h discharge.	Therapeutic.	Tesla coil.
ant heat.	Inflammatory.	Static machine.
it.	Anatomical.	Arc lamp.
a-violet rays.	Illuminative.	Vacuum tube.
ys (?)	Fluorescent.	Radium, &c.

order of the above is of no particular moment, and they are ts to be read downwards. Every electrical current may be red a continuous stream of electro-negatively charged electrons. case of radium these electrons ionise the air and produce ally oxides of nitrogen and ozone; this is probably an im- hard" X-ray tubes the vacuum is very high and the electrons correspondingly enormous velocity, hence the greater sudden- the stoppage of the stream and the greater the penetrative produced. The α -rays (very slightly deviable in a magnetic constituting about 99 per cent. of the entire radiation) are cut o half value by passing through a sheet of aluminium, 0.0005 ick; the β -rays by passing through 0.05 Cm. of Al, and the y passing through 0.8 Cm. of Al.

ame Curie found that a singular law of absorption existed, , that the absorability of the rays increased with the thick- the matter to be traversed, i.e., between the limits 1 to 6 hat a screen of lead 1.8 Cm. thick transmits 2 per cent. of the on it receives, and a screen of 5.3 Cm. thick transmits 0.4 per of the radiation it receives. The alpha-rays are about 1,000 the mass of the cathode ray particle. They have a velocity th that of light, i.e., they travel at about 20,000 miles a

ral simple experiments can be shown to demonstrate the g power of these alpha particles by collision with the neutral les of a gas; they tear them asunder into ions. It is a very able thing that in the case of polonium we have alpha-rays t any beta-radiations; this is difficult to conceive. demonstrate the α -rays the zinc-sulphide screen is far the most ve.

BETA-RAYS.

be hundred million atoms would lie side by side in an inch, ectrons are one thousand million-million times smaller than the of hydrogen. These are the atoms of electricity, and they are ous with the cathode rays, but differ in that they are projected ace. Madame Curie states the intensity of the β -rays varies the thickness of the radium layer. The most powerful cer for this type of radiation is native zinc silicate, which is as willemite.

GAMMA-RAYS.

se are in all probability X-rays resulting from the bombard- of the radium substance by the β -electrons. They result directly the radium and not as a secondary effect. They are, it is ed, generated at the moment of expulsion of the α and s, and they are always proportional in amount to these. These as shown by Madame Curie, traverse several centimetres of

marked difference¹² has been observed, however, between the e conductivity of gases for the γ -radium rays and the X-Rays. e former Strutt showed that the conductivity varied directly

with the density, but in the case of the X-rays there is a marked divergence:—

	Density.	γ -Rays.	X-Rays.
Air	1.0	1.0	1.0
Carbonic acid	1.53	1.53	1.6
Sulphurous acid.....	2.19	2.13	7.97
Chloroform	4.32	4.88	31.9
Methyl iodide	5.05	4.8	72.0

Another investigator in "Nature" finds that these differences narrow down if the comparison is made with a "hard" X-ray tube, so that the difference seems to be one of degree rather than kind.

The γ -rays can be well shown with a large crystal of barium or lithium platincyranide.

A useful application of the ionising effects of radium has been devised by a worker¹³ at the botanical laboratory in Dublin, namely, to prevent the electrification of sections cut in paraffin, their adher- ing, curling up, etc., a tube of radium may be fixed on to the micro- tome knife with very satisfactory results. There are many applica- tions of this kind which will doubtless be developed as the material becomes more common.

THE EMANATION.

This gaseous body, which can be passed on from one vessel to another, and which can be condensed by low temperature into solid or liquid matter, was in the early days the subject of considerable confusion with the radiation. It is strongly radio-active, and as has already been described is unstable.

Rutherford claims that a cubic inch would probably melt a glass tube containing it, and as it possesses three-quarters of the power of radium a few pounds of it would drive a ship across the Atlantic. Seventy tons of radium would, however, be necessary to produce each pound of emanation.

Ramsay and Soddy found helium occluded in cleveite and other radio-active minerals. They watched the gradual development of the helium spectrum in a sealed tube, in which the radium emana- tion was originally condensed by the aid of liquid air. It has been suggested, but not yet conclusively proved, that the alpha particle is an atom of helium. These investigators¹⁴ conducted elaborate experi- ments with the object of ascertaining the volume of emanation emitted by radium, and also the amount of helium resulting from the change. One of their statements is to the effect that 50 Mgm. had produced 0.1 cubic Mm. of helium in sixty days; this quantity weighs 0.000018 Mgm., hence 1 Gm. of radium bromide should give 0.0022 Mgm. per annum. They also claim that only one atom of emanation can be produced by one atom of radium, and that only one α -particle is expelled at each disintegration.

Moss has recently conducted some experiments, the results of which indicate that helium probably exists in pitchblende in the free condition in minute cavities.

The mineral Kunzite is illuminated under the influence of emana- tion, but does not respond to α -rays. Soddy explains that this illu- minates that the emanation only gives α -rays, and that the β -rays are only produced when some of the emanation has changed into the matter causing the excited activity.

HEAT.

The heat energy from 1 Gm. of uranium oxide had been estimated in 1901 as at least 0.03 calorie per gramme per annum. However, when multiplied out by one million this does not accord with the present estimate of the heat emitted by radium, which is at the rate of 100 Gm. calories per gramme per hour. More than two-thirds of the heating effect is not due to the radium at all, but to its emana- tion, and to the product of this latter body. Another statement of the theory is that the heat is due to the radio-active substance being bombarded by its own α -rays. It is possible that by combining these disintegration products at a high temperature the synthesis of radium may yet be achieved.

W. HARRISON MARTINDALE.

¹² Lodge, "Series of Lectures to Med. Practitioners on Physics Applied to Med. Elect. and Radiology." March, 1904.
¹³ Nature, March 10, 1904, p. 436.

¹⁴ Dixon, Nature, June 30, 1903.

¹⁵ Chem. News, May 27, 1904, p. 255.

THE FRANKLIN INSTITUTE AND THE "KODAK" DEVELOPING MACHINE.

[Abstracted from the "Journal of the Franklin Institute,"]

THE Franklin Institute, acting through its Committee on Science and the Arts, investigating the invention of Arthur W. McCurdy, of Toronto, Canada, reports as follows:—

The awkward tendency of photographic roll-films to curl up in the process of development, the consequent handling required and undue exposure to the dark-room light, have led the manufacturers of this product, the Eastman Kodak Company, of Rochester, N.Y., to place on the market a device with which development can be carried on without the aid of a dark room and without any handling of the film whatever until it is developed and fixed.

The apparatus is adapted to treat what is known as "daylight film," that is, film covered in the back, its full length, with a strip of black paper before reeling to enable it to be inverted in the camera and removed from it in daylight without injury.

The most obvious method of reducing the amount of handling required to develop each separate picture is to develop the entire film at one operation—a practice of no very recent date among professional operators. A simple apparatus for doing this would consist of a cylindrical roller placed at the bottom of the developer recipient under which the film, face outward, could be drawn back and forth. Enlarge the roller until its circumference is equal in length to the film to be developed, provide means for attaching it thereto, at the same time keeping it tightly drawn against the surface, add a crank for rotating the cylinder and a light-tight cover, and we have the Kodak developing machine in its most elementary form.

A cylinder large enough to hold a film of the usual length would be inconveniently large, and in the perfected machines it is replaced by a flexible strip of celluloid somewhat larger than the film with a strip of corrugated rubber along the full length of each edge. When this is rolled up it forms a spiral with a space between the adjacent coils equal to the thickness of the rubber edging. If the film is rolled along with it, face outward, it occupies the same relative position with respect to the spiral surface as it did in the previous case with respect to the cylinder. This may be mounted on a mandrel and submerged in the developer which finds its way through the corrugated edging between the convolutions of the spiral to the film surface.

After describing the machine the report goes on to observe:—It may be questioned whether treating exposures made under widely varying conditions in the same developer for the same time would not result in many failures. "The manufacturers claim that by using the developer they recommend, pyrogallie acid, great latitude in exposure is allowable.

"Three six-exposure films, exposed by the Kodak Co. were developed according to their printed directions. The subjects are outdoor views taken, probably, under one condition of lighting. The excellence of the resulting negatives, submitted herewith, demonstrates without doubt the capabilities of the device for normal exposure.

"To further test the machine with varying exposures, three indoor exposures of the same subject were made of five, ten, and twenty seconds on a film containing 'snapshot' outdoor exposures. The results were perfectly satisfactory and leave little doubt that great latitude in exposure is allowable.

"For the excellent performance and certainty of action of the machine and the ingenuity shown in devising the simple and efficient means leading thereto, the Institute recommends the award of the John Scott Premium and Medal to the inventor, Arthur J. McCurdy."

THE INTERNATIONAL SOCIETY OF PICTORIAL PHOTOGRAPHERS.

We learn from "The Photographer" (New York) of the formation recently of an International Society of Pictorial Photographers, somewhat on the lines of the well-known Photo-Secession organisation of America, but with several minor differences. Craig Annan, of Glasgow, Scotland, is the president, Alfred Stieglitz first vice-president, Kuehn of Austria second vice-president, while on the board will be Demachy of Paris, Keiley and Steichen of New York, Henneburg of Vienna, Juhl and the Hofmeisters of Hamburg, Hinton, Evans and Craigie of London and a few others of equal prominence. The society will hold an international show in New York in 1905, which will be managed locally by the Photo-Secession.

RAYS OF LIGHT FROM THE HUMAN BODY

RECENTLY photographs have been made in an absolutely dark room of rays from the human body. Not man alone, but all matter, has proved to be constantly engaged in a process of absorbing waves of varying lengths and of giving out waves of a definite length. These emanating waves are characteristic of the matter that emits them.

These waves or rays were discovered and photographed made a discovery in the laboratory of Professor Arthur W. Goodspeed, Randal Morgan Laboratory of Physics of the University of Pennsylvania. Professor Goodspeed, who discovered them, gave the results of his researches to the scientific world in a paper read by him before the American Philosophical Society on the night of May 15.

While only the threshold of the discovery has been passed, suggestions have come from many scientists concerning the practical application of this discovery. Of these suggestions, the one most frequent is that physico-radiographs of the rays from individuals may show the physical condition of the subject.

The experiment that directed Professor Goodspeed's attention to a new line of investigation, and that resulted in the discovery of the new ray, was made on April 6 of this year.

He was photographing with X-rays on that day, and used for support for his photographic plate an iron-tripod stand with the plate at its top. The plate rested in its box on this ring, with the film face upward. The rays were directed downward upon the plate. Professor Goodspeed developed the plate he was astonished to find that the action of the X-rays had been influenced by the ring.

He next placed a wide bronze ring between the rays and the plate, retaining the iron ring as a support. This radiograph, when developed, showed a darker shadow just above the iron ring and a lighter shadow where the bronze overlapped.

Numerous experiments with other metals and with the rays in various positions followed. Each metal was found to have a characteristic effect. It was also seen that the effect of the radiant influences from the several metals was to reach around the shadows of objects impervious to the X-rays. The influence was directed in a direction opposite to that of the rays from the tube.

After a number of experiments in which the rays from the Crookes tube were directed downward, and were intercepted by impervious substances before reaching the photographic plate below, Professor Goodspeed devised the apparatus with which he has made all his recent startling experiments.

Upon the light-proof black box containing the Crookes focus tube in operation, he placed a pile of lead plates. The X-rays were directed upward. The lead plates, being impervious to the rays, reflected them so that they passed out from the bottom and the sides of the box.

Upon the heap of lead was now placed a light-proof box containing a photographic plate with the film side upward. This was capped by a brass cylinder having neither top nor bottom. A small aperture was in the cylinder's side.

When all things were in readiness for the experiment, the focus tube, ring, and a piece of aluminium were placed on the lid of the box containing the film, and the top of the cylinder was closed by a heavy piece of zinc. Professor Goodspeed then stood about 2 ft. from the box containing the Crookes tube, and held his hand over the aperture in the brass cylinder, and about 3 in. from it, maintaining this position for three minutes the plate was developed and was found to show remarkably clear radiographs of the objects that had rested upon the lid of the box.

The focus tube is a glass globe from which the air has been exhausted. A concave receiver within the globe collects the rays that are generated by an electrical apparatus, and casts them against a platinum plate. This transforms them into X-rays.

The rays passed out through the box into the body of the subject, and were transformed within the body into the characteristic human ray. Passing out of the body, they were directed upon the box containing the photographic plate, and influenced the film. In another experiment two apertures were cut in the cylinder. Before one of these Professor Goodspeed held his hand for several minutes. The other opening was unobstructed. Development of the plate showed a broad, brilliant band of light flowing from the tube that had been opposite the hand, while a faint, brush-like mark marked where the unobstructed opening had been. It was

probable that the faint light was caused by rays coming from Professor Goodspeed's clothed body.

In a third experiment one of the apertures was closed with a tiny piece of glass and the other left unobstructed. The rays from the one and passed with comparative difficulty through the glass. A fourth experiment showed that aluminium was more translucent.

"Is it possible that these rays may be so intensified by a Crookes tube or other apparatus that they may be seen by the human eye?" Professor Goodspeed was asked.

"That question must be answered by future experiments. It is altogether probable that to the sharp eyes of certain animals man is made visible in a dark room by the rays from his own body. This may explain how some of the animals see in the dark.

"I made another discovery in the course of my experiments that will be of especial interest to scientists. That is the cause of X-ray burns the human body.

"While experimenting with X-rays about a year ago I kept the Crookes tube in operation almost constantly for a week. I not only worked in the room by day, but slept in it at night. About the third day an attack of conjunctivitis developed in my eyes, and gave me so much trouble that I could scarcely work.

"While at work on these later experiments, I again worked day and night in the laboratory, and again I was attacked by the mysterious affections of the eye and throat membranes. With the knowledge that I had as to the result of the radiographs made by the rays from my body, I concluded that the absorption and transformation of the X-rays by the body caused the trouble. The symptoms in both experiences were identical."

Commercial & Legal Intelligence

THE Brooks-Watson Daylight Camera Co. advise us that it is their intention to make their London Offices 119, High Holborn, W.C. (corner of Southampton Row), the chief centre of business on and after September 1. All communications respecting the business of the firm should be sent to that address on and after this date.

REMOVAL of the Optical Branch of Houghtons, Ltd.—This branch of the business of Houghtons, Ltd., has been removed from the old premises formerly occupied by Messrs. Joseph Levi and Co. (97, Hatton Garden), to more convenient premises close by. The new show rooms are now ready, and all letters for the Optical Department should be sent to the new address in future, No. 95, Hatton Garden, E.C.

A TRAVELLER named William B. Williams employed by Mr. Charles Hood, of St. Martin's Lane, was last week fined £10, with the alternative of a month's imprisonment, on a charge of embezzling £5 8s.; belonging to his employers. Williams was said to have obtained orders from Miss Vesta Victoria, the variety actress, for photos and posters, the account being £13 8s. Without disclosing the extent of the business done with Miss Victoria, he paid two sums, £5 and £3, to his employer "on account," representing the account to be £12 12s. He then disappeared for a week, arriving at the office again on August 6, when he was told that it had been ascertained that the account was fully paid.

MESSRS. R. AND J. BECK, LTD., of 68, Cornhill, London, E.C., have instituted a novel and at the same time efficient coupon system by which the owners of Beck Symmetrical or Beck Double Aplanatic lenses can obtain by a well thought out plan of exchange, plus cash, one of the new Beck-Steinheil Unofocal Lenses, to fit their cameras. The system offers the double advantage that the possessor of the cheaper lens can get practically full value for it, which he would hardly expect in the ordinary course of sale, and is at the same time enabled to obtain for his camera one of the best modern Anastigmats with but a reasonable outlay of cash to the difference. Full particulars of the scheme will be supplied on application to the above address.

Exhibitions.

THE FALMOUTH EXHIBITION.

THE Royal Cornwall Polytechnic Society, of which the headquarters are at Falmouth, is one of the oldest of the provincial scientific societies in the Kingdom, and it has done a great deal of good work in encouraging invention, scientific development, arts and crafts, the fine arts, and photography. Last week there was held the sixty-ninth exhibition. These were annual until a few years ago, and are now held biennially. The photographic section has always been a strong and popular one, both with exhibitors and visitors, and in the later years has kept well in line, though so far removed from metropolitan influences, with the more important exhibitions elsewhere. For many years this section has been under the care of Mr. Wm. Brookes, but these duties have on the present occasion been undertaken by Mr. H. W. Bennett, well known as a photographic worker.

For many years the number of pictures at Falmouth have been too many for the space available—that is, to do the subjects justice and to permit of any degree of scope in hanging and arrangement. Of course the management desire, and the public may like, a big show. The present is smaller in number than usual, and perhaps on the whole smaller also in average size of each individual exhibit; but the quality throughout is excellent, and the collection is a very enjoyable one.

The schedule, we understand, is somewhat complex and greatly divided, but the exhibition perhaps differs from all others—or most—in that the walls show no indication whatever of classes or divisions. This has been so for many years, and therefore this is no new departure in this case. But it gives the public no idea whatever what the competition was like nor how the awards compare with each other. Such comparisons will always arise, and of course here there is no evidence but that the pictures were judged as they are grouped on the walls. The exhibition is simplicity itself—in the walls and in the catalogue; in the latter there is simply evidence of professional and amateur work. We venture to submit that in future the distinctions that are missing from the walls and the catalogue be made actual, and that there be no classification at all. Awards could still be made for good work and artistic excellence. The management of the section has not, apparently, been able to get over the trouble that has existed at Falmouth for many years, the scattered hanging (as compared with the works of an exhibitor and the numbering of the frames) which makes it extremely difficult, if not impossible, to find the whole of an exhibitor's work and to do him justice in one writing. In the catalogue his numbers usually follow consecutively; in the room his prints are exasperatingly widely apart. This has always been so at Falmouth, and we cannot understand why there might not be an attempt towards grouping, in a limited degree, at any rate. It might be understood when the hanging is in the care of persons of conservative tendency, with traditions of "our way is the best," but this year the whole section is in new hands, in touch with modern ways. It is, of course, not always easy to do the most desirable thing, especially if circumstances do not readily lend themselves to it. People go to an exhibition and buy a catalogue, largely with the hope of being able to pick out and readily find a man's work. By the system of hanging adopted there are necessarily innumerable hunts to find what is wanted. We have again and again drawn attention to the way the pictures are arranged at this exhibition—trying to the ordinary person, but doubly so to the pressman who wants to do the thing properly—and we hope that at the next exhibition a better state of things will be found. There is, after all, nothing but congratulation for the arrangement and taste exhibited in hanging; but this could also have been secured with a better attempt to serve convenience.

So far as the catalogue is concerned, as we have pointed out, there are two classes only; but so far as the exhibition is concerned there is confusion of the most pronounced sort. We are by no means sticklers for close classification, or, for the matter of that, of any classification at all if there is a good standard, but in an exhibition that is classified the exhibits in each class should surely be under separate heads, and, when looked for, be findable under that head.

It would be far better for the executive to throw overboard (the harbour at Falmouth is a big one, and no harm would be done) the pretended classification, and have none, for as it stands, so far as the public can see there is no differentiation between the professional work and the amateur. The exhibits are all lumped, and we cannot therefore deal with the classes in a proper way, nor with each person's exhibits together, because life is not long enough to find them and put them together mentally for comparison, and get through the job in the time at command. It may be said that, so far as may be judged, there is no wide disparity between the work of the professional and the amateur. In the matter of total the latter has the best of it. There are a number of small prints, and the tints are mostly of brown. The exhibits being fewer than usual, the exhibition is much more comfortable and enjoyable, and the hanging really has had a chance, as it has not had for some years. It is true that formerly the walls were well covered, and were not so much a disturbing element as they are now. The room is not beau ideal for a photographic exhibition, but it is the only one available, and tradition has to some extent set it aside for the work.

We think the best way will be for us to take the exhibits as they came on the walls and comment as we go, and if mention is made of the same worker more than once, the reason will be understood.

Wm. Norrie contributes an interesting series of prints taken on a scientific cruise in the yacht "Day Dream" in the Faroe Islands (824), depicting whaling scenes, villages, and some landscapes, which are very valuable and interesting as showing the geological conditions of a very striking coast. The work is very well done. Wm. Lidgley secures a first silver medal for a fine bit of flower photography, "Roses" (enlargement), in which is fine rendering of half-tone and good gradation. The pictorial quality of the subject might have been increased by the elimination of the very thorny and unsightly branch which, while quite true to nature, seems redundant. Mrs. Annie Blamey, under the absurd (even if literal) title of "Two Enlargements" (881), shows a couple of interesting studies of ponies with a small boy in attendance, who is occupied in looking at the operator. The work is good. W. G. Garland's "A Bite" (810) depicts three boys of a seaboard parish who stand on the edge of a rough quay, one of whom has cast his line into the waters below. The arrangement of the figures is excellent, and there is no suggestion of pose or stiffness. Gertrude Boyns may be congratulated upon a very fine subject in "Carting Seaweed during a Gale, Bigbury Bay" (807) but the exposure was, apparently, too short, resulting, in this (enlarged) print of too strong colour. The pictorial quality is, however, highly commendable. D. W. Kyle's "Pæonies" (816) is in every way, selection and technique, a very fine bit of work, worth, it might be supposed, the second silver medal it has secured, or even more. But the pronounced grain of the oak mount is a bit too strong for the print, and it has paid the penalty. Evan Griffiths has contributed what is really a very uncommon incident, "Shooting Wild Duck" (885), in which the sportsman, the wild duck, and the dog are in proper relation, and go to make up a very interesting photograph, in which the arrangement is by no means bad. F. W. Beken's "Lee Rail Awash" (828), a very clever yachting study, full of go and very pictorial, has very deservedly won a first bronze medal, and might well have had something better, considering the difficulty of the subject and the good technique. A fine study of yachting in a gentler breeze, by the same hand, is "Close Hauled" (829). W. L. F. Wastell's "The Toilers" (888) is a ploughing scene, with an accurate suggestion of movement, and a sense of good arrangement. The same exhibitor's "The Pavement Artist" (895) is a clever piece of work, children watching the artist, and all unconscious of the presence of the photographer. There is much pictorial quality in two little scenes, "Ploughing study" (899) and "On the Thames" (893)—the latter very reminiscent of W. Thomas's work—by the same exhibitor.

D. W. Kyle's "Begonias" (815), while excellent in many respects, is hardly equal to his "Pæonies." M. G. Garland's "Evening—Low Tide" (811) is somewhat pictorial, but would have gained greatly by cutting down and a somewhat subdued foreground, the wet mud being stronger than the glow in the western sky. E. Seymour's "Interior of St. Alban's Abbey" (823) is a very creditable study of

interior architecture. C. H. Dymond's "An Anxious Moment" (9) a study of boys engaged in a game of marbles, is perhaps the best of his contributions, and its quality suggests an award. His "In Roar of the Sea" (802) is a really fine pictorial snap of tumbling, heaving sea breaking in a rocky cover. It would gain by being presented in much larger size. Wm. Lidgley's "Daffodils" (917), while untrue to Nature and good technical photography, just wants a touch of poetry. A. G. Kimber's "A Priory Stairway" (806) is a very clever architectural study, soft and delicate, and of just the right colour, but is somewhat marred and the general repose disturbed by the strong lighting of the stair-rail. G. Hepworth's "Door of South Transept" (957) is a very interesting bit of work but rather lacking in interest and gradation, which is a little strong lighting would alter. More pleasing and enjoyable is his "Entrance Porch, Newburgh Priory" (958), which is admirably chosen as the work of fine technical excellence. Harry Case wins a second silver medal with "A Study" (900), a very fine example of at-home portraiture, a lady seated on a carved bench near a mullioned window, the lighting admirably done and the textures of fine quality; posing is altogether natural. For "Crypt, Winchester" (955), W. Clarke has secured a first silver medal. It is true there were great difficulties (and a very long exposure involved, probably), but we can hardly see the reason for this award. His "Ely" (953) a "Across the Choir, Ely" (954) are, either of them, surely, quite deserving. It may be rank heresy to say so, but the delightful little quarter-plate landscape that hangs below it, "A Woodland Stream" (892), W. L. F. Wastell, is equally deserving. It is altogether charming and enjoyable. John H. Gear's "Rigoleur" (80) a jovial monk laughing, is certainly a good thing, natural and easy in pose, and, as may be supposed, of good technique, but we cannot quite find reason for the award of a first silver medal which it has secured. E. Seymour's flower studies are very good; probably the best of them is that of pelargoniums, "Flower Study" (820). "White Rufus Sleeps" (956), sombre in tone, as befits the title, by W. Clarke, is a clever study of a cathedral interior. R. Burley Mosley's "End of the Day" (913), a farm team going home, is good photography, and with pictorial quality. B. Ward Thompson's "Mile Hills" (944) is unhappily titled, surely. It is a mass of hills and a study of such and a big lake, but the elements are disturbing and do not make for agreeableness. It is rather a painter's subject, and is not a success as it stands, though it certainly is, in a way, commanding. E. J. Jarvis's "The Light of Peace" (963) is a fine study of a modern man-of-war (is the title ironic?), almost in silhouette, with a strong sky and brilliant glint of water. It is a downright good thing, of fine technique, has much pictorial excellence, and might well have had a high award. The same exhibitor's "After toil, a friendly port" (964) is a study of small craft in an open harbour, and very interesting. B. Ward Thompson's "Surface dappled o'er with shadows" (937) is a charming river landscape, perhaps a little flat in treatment, but attractive as a subject. W. Morley Martin is a specialist who is doing some exceedingly useful and high-class work in radiography and is awarded a first silver medal for a splendid series illustrating "The Evolution of the Common Frog" (945). This is work which is deserving the fullest recognition by such a society as the "Royal Cornwall Polytechnic." He is also represented by a series of twenty-one prints illustrating "The Embryology of a Chicken" (946), and a series showing the "Radio-activity of Cornish Pitchblende," from which the best radium is made. F. Martin Duncan is represented by a sea-water aquarium subject. "Duel à la mort" (818), a fight between an octopus and a crab, and one of the cleverest and most instructive things in the exhibition. Of course, it has not an award as difficult as was the subject to handle. He also shows "Studies of a Chameleon" (819), work of the best quality. F. W. Beken's "Doorway, Romsey Abbey" (830) is a very excellent presentation of fine Norman work, of fine technical quality. Mrs. Annie Blamey contributes in one frame six very fine examples of "Hand-camera work" (883), two of which, shipping and a pacht, have much artistic merit. S. G. Kimber's "A Woodland Pathway" (905) has considerable charm, but the mid-distance becomes too suddenly diffused, which tends to mar the rather charming foreground effect. B. Ward Thompson's photographs of "Old English Lustrous Ware" (931, 932, 933), are exceedingly meritorious, for the photo-

y of glossy pottery is a very difficult subject, and not easily red. J. W. Smith has a rather good lot of "Architectural ings" (867), some of them greatly marred by unsuitable mount- Rectangular and oval mounts in the same frame, with archi- tal subjects, is one of the best possible ways of doing such ings in justice. G. Hepworth's "Entrance Porch, Farnley Hall" is a very fine subject splendidly handled. B. Ward Thompson two very fine waterlily subjects in "Here rushing down the ing rocks" (934) and "Down the valley rushing" (940). W. H. e has secured a first bronze medal for "Softly falls the golden (927), a quiet, reposeful, and clever study of a cathedral or h interior, the difficulties of which have been well surmounted. South Porch, Truro Cathedral" (926) is impressive, and work e highest technical excellence. "Twilight" (887), by W. L. F. ell, is a river study, a barge on a beam wind, with considerable uted movement in the water and a soft grey evening tone. A enjoyable print, to which a second silver medal has been ed. John H. Gear's "Fenland" (801) is an evening study, low e, and of good technique.

e arrangement and management of the section was in the hands r. H. W. Bennett, who must be complimented upon having done all under the difficult circumstances of the case. He also acted ge, and in this was associated with Mr. J. H. Coath and Mr. Taylor Carne.

r. J. H. Coath sent a fine lot of prints, which were not entered competition, and which do him justice as a good photographer as one having a great command over children and animals. ing the works deserving of mention are "Study of a Lady" (835), "Study of Cats" (844), which is very fine; and a "Study of Ducks" . If Mr. Coath's work had been in competition, he would ably have scored very thoroughly.

FORTHCOMING EXHIBITIONS.

September 14-15.—Cambridge Photographic Society. Hon. Sec., Scowdon, "Sunny Side," Guest Road, Cambridge.

September 16 to November 5.—Photographic Salon, Dudley Gallery, St. Martin Hall, Piccadilly. Hon. Secretary, Reginald Craigie, Photographic Salon, 1904, Dudley Gallery, Piccadilly, London, W.

September 20-28.—Newbury Photographic Society. Hon. Secretary, J. Forster, Guildhall Club, Newbury.

September 22 to October 29.—Royal Photographic Society's Forty-ninth Exhibition, New Gallery, Regent Street, London. Secretary, W. W. Bartlett, 66, Russell Square, London, W.C.

October 15-29.—Coatbridge Photographic Association. Hon. Sec., W. Campbell, Ailsa Cottage, Coatbridge, N.B.

October 18, 19, 20.—Kettering Church Institute Photographic Exhibition. Hon. Secretary, E. Claypole, 112, Hawthorn Road, Kettering.

October 19-22.—Rotherham Photographic Society. Hon. Sec., H. Hemmingway, Tooker Road, Rotherham.

November, 1904.—Ilford and District Photographic Society. Hon. Sec., W. N. Beal, 155, Thorold Road, Ilford.

November 2, 3, 4, 5.—Newark Photographic Exhibition. Secretary, C. B. Appleby, Barnbygate House, Newark.

November 2-23.—Plymouth. Hon. Sec. Photographic Section, J. R. Rowe, 2, Walnut Villas, Cockington, Torquay.

November 3.—Frome M.I. Photographic Society. Hon. Secretary, J. Mitchell, 3, Willow Vale, Frome.

November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Sec., James Dunlop, Myrtlebank, Motherwell.

November 9.—Hackney Photographic Society. Hon. Secretary, Walter Selfe, 70, Paragon Road, Hackney, London, N.E.

November 15-19.—Sunderland Camera Club. Hon. Sec., Selby-Ord, Frederick Street, Sunderland.

November 17-18.—Braintree and Bocking Camera Club. Hon. Sec., W. H. Tilston, 81, High Street, Braintree, Essex.

November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Valé Road, Sheffield.

November 22-23.—Ipswich Camera Club. Hon. Secretary, R. H. Sutton, 37, Henley Road, Ipswich.

November 23-26.—Hove Camera Club. Hon. Secretary, A. R. Sargeant, 55, The Drive, Hove.

November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., G. W. Simmers, Aberdeen House, Ramsgate.

December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.

December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104, West 101st Street, New York.

December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.

December 13-20.—Southampton Camera Club. Hon. Secretary, S. G. Kimber, Oakdene, Highfield, Southampton.

December 28-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 138, Glasgow Road, Wishaw.

January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.

January 20-21, 1905.—South Essex Camera Club. Hon. Secretary, T. Michell, 180, Browning Road, Manor Park, E.

January 28-February 12, 1905.—Photographic Society of Marseilles. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.

February 6-11, 1905.—Blairgowrie and District Photographic Association. Hon. Secretary, Wm. D. M. Falconer, James Street Cottage, Blairgowrie.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

June, 1905.—Northern Photographic Exhibition. Secretary, F. G. Issott, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

September 30.—"Photographic News." Quarterly Competition. "Photographic News," 9, Cecil Court, Charing Cross Road, London, W.C.

October 1.—Thornton-Pickard. £100 cash prizes for pictures taken with Thornton-Pickard cameras and shutters. Thornton-Pickard Manufacturing Co., Altrincham.

October 10.—Luna paper. £240 cash prizes for prints on Luna paper. Lucien Allegre and Co., 59a, New Oxford Street, London, W.C.

October 15.—Belgian Association Lantern Slide Stereogram Competition. Secretary, M. Vanderkindere, 97, Avenue Brugmann, Brussels.

October 31.—Coxin. 68 prizes for users of Coxin. Judging twelve pictures. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.

November 1.—The "Graphic." £50 in cash prizes. Manager, Photo Competition, the "Graphic," Tallis Street, Whitefriars, London, E.C.

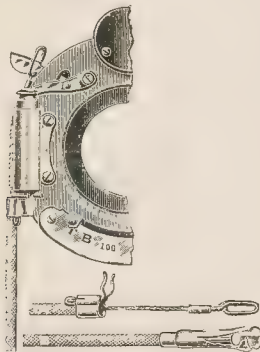
December 31.—Barnet. Nineteen classes. Prizes valued at £500 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

March 15, 1905.—Ilford. £750 in cash prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

New Apparatus, &c.

Watson's Patent "Antinous" Shutter Release. Sold by W. Watson and Sons, 315, High Holborn, London, W.C.

A new pattern of this excellent substitute for the familiar ball and tube release for photographic shutters has been put on the market by the patentees, Messrs. Watson and Sons. This pattern differs from its predecessors in the method in which the release is applied. It is adaptable to practically any shutter or camera where the release is effected by downward pressure of a trigger. For instance, it can be fitted to one of the Bausch and Lomb automatic shutters, or to one of the various forms of magazine hand cameras the shutter of which is worked as above mentioned. This new pattern of release is also available for the shutters of cartridge kodaks and



other small hand cameras, for which Messrs. Watson propose to supply it with a reduced length of 9 in. instead of the ordinary length, so that it may be more easily accommodated inside the camera when closed. The inner wire of Antinous Releases will in future be coated with a deposit of copper to render it quite rust-proof. It may not be without interest to users of the release to note that the breaking strain of the wire is considerably over 112 lb.

Some New Christmas Mounts. Manufactured and sold by Messrs. Marion and Co., Ltd., 22 and 23, Soho Square, London, W.

It may seem early to speak of Christmas mounts, but an excellent series for 1904 just submitted to us by Messrs. Marion speak not only too eloquently of the rapid passage of time and the proximity of autumn and winter again, but also of the enterprise of those firms who recognise the necessity of being first in the field with materials, etc., for the approaching busy season. We understand that consignments of these mounts are now speeding on their way to various foreign ports, but it is not only for export, however, that such early delivery is necessary. The view publishers at home who have to get ready their Christmas wares many months in advance are now securing Christmas mounts to suit the pictures and views they have had in preparation since the spring. The amateur photographer as well as the professional, it is needless to say, is also keenly alive to the utility of the Christmas mount, and uses no mean number. As the sizes in the collection we have seen range from the popular stamp midget to the cabinet size, with a vast choice in the matter of colour, motto, shape, and price, no amateur need be disappointed, whatever the size of his camera. For those who wish to avoid the trouble of pasting on their prints there is plenty of choice in the "slip-in" series. Perhaps the most notable feature in the 1904 collection is the series of folding cards, with view or seascape in colour on front page (facsimile of choice water-colour drawings by modern artists). The pictorial postcard is everywhere, and has been well provided for in this series. Naturally, those designed for this shape are all "slip-in" mounts. They are a means of transforming in a moment a "cheap"-looking article into a handsome Christmas card. The series we have seen contains no less than 235 patterns. This number, we venture to think, ought to supply something to suit the taste of everybody. A postcard to Messrs. Marion will procure full lists.

New Book.

"Advanced Hand-Camera Work," by Walter Kilbey. 96 p. Price 1s. Published by Dawbarn and Ward, 6, Farringdon Avenue, London, E.C.

This little volume deals in a practical manner with the ambitious efforts of the hand-camera worker, as distinguished from the mere snap-shotter. It concerns itself primarily with the work achieved by the focal-plane camera work—work that Mr. Kilbey made so particularly his own, and the information conveyed is in advance of that given by this author's previous work on "Hand-Camera Photography." The book is divided into five sections which treat exhaustively of types of shutter and apparatus, the practical work, plates and developers, and lastly, telephotography, stereoscopy, and orthochromatics applied to hand-camera work. The book is embellished with numerous illustrations in the text, while many excellent reproductions of Mr. Kilbey's high-speed work are printed on art paper, are also introduced. As a little book of reference on this popular subject, it should be in the hands of all photographers. Of particular interest to the amateur will be the chapter on plates and development of extremely short exposures. Under-exposure seems to be the bugbear of the focal-plane worker, and Mr. Kilbey's practical advice on the subject ought to be carefully read and digested. On the question of exposure the author writes himself remarkably clear, and the following short extract from the chapter on the subject will doubtless prove of interest to our readers: "One of the most difficult questions for one unaccustomed to high-speed shutter work is how fast he *must*, or how slow he *may*, work his shutter to get a sharp picture. Two speeds have to be taken into consideration, viz., angular velocity and actual velocity. The shutter will need to be driven three times as fast for a subject taken by the side on as would be allowed for the same subject if taken 'end-on.' That is, when coming towards, or receding from, the camera. The following formula is laid down in the text-books to assist the operator to find the correct exposure. Exposure in fractions of a second = Distance of object from camera in inches, speed in yards per hour, focus of lens in inches. For example, supposing the object is 50 yds. from the camera, and the focus of the lens is 6 inches, while the movement of the object is at the rate of 12 miles an hour, we get—

$$\begin{aligned} \text{Exposure} &= \frac{50 \text{ (feet)} \times 12 \text{ (reduce to inches)}}{12 \text{ (mils.)} \times 1,760 \text{ (yds. in a mile)} \times 6 \text{ (in. focus)}} \\ &= \frac{600}{126,720} = \frac{1}{211} \text{ (if a second about).} \end{aligned}$$

This is no doubt all very well in its way, but it always appears to me that, by the time one has worked out the answer, the subject will be miles away. I have therefore included the following table, which I would suggest be cut out and placed in some convenient place where it could be referred to at a moment's notice.—

	Right angles.	Towards Camera
Cycle racing, horses galloping...	1200	1000
Athletics, men running, &c. ...	600	300
Fast trotting	500	100
Driving	400	150
Pony and trap trotting	300	100
Yachts	200	100
Water polo and football	100	100

The table is made out for a 6 in. lens at 25 feet, a 7 in. at 29 ft., 8 in. at 34 feet, etc. A rule is, if you halve the distance, you divide the exposure by two; or if you double the distance, then double the length of the exposure."

News and Notes.

THE Academy of Science, Paris, has decided to award the Leconte Prize of 10,000 francs to M. Blondlot for his researches on the rays.

THE Braintree and Bocking Camera Club announces that their annual exhibition will take place on November 17 and 18. There will be open classes. Entry forms may be had from the Hon. Sec., H. Tilston, 81, High Street, Braintree, Essex.

WE have received a useful little booklet from Frank Gould and Co., advertising contractors, of 54, New Oxford Street, W.C., titled, "Some Notes on Advertising and Press Publicity." It contains some useful hints to advertisers, and a list of the principal London and provincial papers. A copy will be sent free of charge on application.

THE Rotherham Photographic Society's Fifteenth Annual Exhibition, to be held from October 19th to 22nd, will have six open classes, in which silver and bronze medals will be placed at the disposal of the judges. There are no entrance fees except in one class, and entry forms may now be obtained from the hon. sec., C. C. Hemmingway, Tooker Road, Rotherham. The judges will be Messrs. C. Barrow Keene and T. A. Scotton.

A PRINCESS Photographer.—Princess Christian and her daughter, Princess Victoria of Schleswig-Holstein, have left England for South Africa on board the "Walmer Castle." They have intimated their desire to visit the principal battlefields and the grave of Prince Christian Victor at Pretoria. Princess Victoria is taking her camera with her, though not the large collection of cameras and photographic material with which she is credited.

WIMBLEDON and District Camera Club.—The list of officers for 1905 has been sent us by the Hon. Sec. of this club. They are:—President, Peter Keary, Esq.; vice-presidents, W. Dowson, Esq.; S.C.C.; Gerald Craigie, Esq.; W. B. Marr, Esq. Committee: Messrs. Catcher (chairman), Russell, Magnus, Lyon, Knight, Packer, Reiner, and Wallis. Treasurer: E. Deacon, jun. Esq. Hon. Sec.: J. Munro, 96, Richmond Road, Wimbledon, S.W. Assistant Hon. Sec.: Miss Hatch, 71, Queen's Road, Wimbledon, S.W.

BIRMINGHAM Photographic Society.—On Tuesday, September 27, a conversational resume of "Some of my Experiences with Regard to Photography in Birmingham for the Last Half-Century—With References to Old Birmingham," illustrated by lantern slides, will be given by Mr. W. B. Osborn. Mr. Osborn was hon. secretary to the Birmingham Society of 1854. It is doubtful if any photographic society in the kingdom is possessed of a member with so long a membership.

No. 63 of "The Photo Miniature," just published, deals with a little-known phase of applied photography, i.e., "Photography in Advertising." The book contains many surprises, and, dealing as it does with the employment of photographic prints in the making of advertising designs and posters, opens up an almost untrodden field of activity that will doubtless be eagerly followed by many enterprising camerists in search of an outlet for their superfluous energy and talent.

THE Hull Society last Saturday paid their annual visit to Beverley Priory, and being favoured with a bright afternoon, much work was done in and around this fine old building. There appears to be always something fresh here for the camera and the enthusiastic worker. The attendance was excellent, and the stately columns, Percy shrine, statues, and choir stalls demanded the most attention: The outing proved most successful, which is very gratifying to the officers of the society, who have all along introduced so much enthusiasm into their excursions, and who look forward to good results and more all during the coming winter session.

SOME Distinguished Amateur Photographers.—The fact that the Queen has been busy with her camera at Cowes and secured an excellent snapshot of the King reminds one that there are many distinguished women in Society who are excellent amateur photographers, observes London Opinion. Her Majesty never exhibits any of her work, but lately some very good photographs taken by the Princess Victoria have been published. The Duchess of Bedford is another lady who

makes a hobby of photography, often spending a whole day in the park at Woburn Abbey, patiently waiting to get a good snapshot of some of her many pets. The Marchioness of Ormonde and her two beautiful daughters, Lady Beatrice Pole-Carew and Lady Constance Butler, are also well-known camera experts, and have several interesting studies of Irish peasantry taken at Kilkenny Castle.

HOVE Camera Club.—We learn that the Committee of this Association, acting on a resolution passed at their last annual general meeting, have acquired the first floor of No. 55, Western Road, Hove (over the shop occupied by Messrs. Sanders and Crowhurst) as permanent rooms for the club. The rooms were opened by the President (Alderman J. Colman, J.P.) on Thursday evening, August 25th. A lantern slide exhibition followed the opening ceremony. Now that this flourishing Southern society has acquired a home which it may regard with more satisfaction than its late periodic occupancy of rooms in the Hove Town Hall, we look to it to move with even more energy and distinction in the van of progress, as regards the furtherance of photographic activities in the South of England, than it had the opportunity of doing in the past.

THE ubiquitous photographer has more than once formed the subject of comment in the daily Press. The following incident, however, which has been reported in several recent morning papers as occurring at the siege of Port Arthur, deserves attention:—"Part of the Russian battalion advanced up the bed of the stream, and a number were shot as they emerged into the roadway. One wounded soldier had crawled back to the brook for water, and died with his face in the stream, and his canteen beside his hand, as though he had tried to fill it. In the road a young Japanese bent over a massive Slav with an arm under his head, holding a water-bottle to his lips. An enterprising photographer rushed up. 'Hold on there! Hold on there!' he shouted, enthusiastically, brandishing his tripod. 'That's just what I want.' He posed the wounded men more effectively, faced the Japanese about toward the camera, and hurried off for other pictures." "Brandishing his tripod," is good!

RESULT of the "Ensign" Film Competition for July.—This competition, we hear, has proved extremely successful. The first prize, £10, goes to Mr. William Elliott Brown, 1, Albany Street, Oban; and the second prize, £5, to Mr. J. Daly, 244, Brecknock Road, Tuffnell Park, N. The five consolation prizes of £1 each are awarded to Mr. W. Bulmer, 64, Musgrave Road, Bolton, Lancs.; Mr. W. Scott, 3, Montrose Terrace, High Street, Chard; Mr. Ernest Latter, 10, St. Mary's Street, Wallingford, Berks; Mrs. Walker, Grange Mount, Cloughton, Birkenhead; Mr. E. Staley, 115, Station Road, Burton-on-Trent. The consolation prizes were very closely contested, and Messrs. Bulmer and Scott only missed the second prize by one and three marks respectively. In connection with this competition Houghtons' Ltd., say they have had quite a lot of curious inquiries from would-be competitors, but the palm must be awarded to the lady who wrote ingenuously asking if they could send her the bottoms of any "Ensign" film boxes which were not required, as she wished to enter for the competition! The postage would be paid, she added. This is what comes of advising the competitors to "beg, borrow, or buy 'Ensign' film boxes."

THE Plymouth Exhibition, 1904.—The preparations for this exhibition, which will be held in the Drill Hall from November 2 to November 23 next, are already in a forward state. One of the leading features will be the photographic exhibition, the prospectus of which has already been issued. There are nine classes, including professional, amateur, open, and juvenile classes, and in each will be given as prizes gold, silver, and bronze medals and diplomas of merit, and a diploma of honour will be given for the best photograph in the exhibition. The judges are Messrs. Thomas Bedding, editor of the BRITISH JOURNAL OF PHOTOGRAPHY, and Walter D. Finch, head master of the Teignmouth School of Art. All entries must be made on or before Saturday, October 15, and exhibits must be delivered not later than Wednesday, October 26. The photographic section of the exhibition will be under the management of Mr. Chas. R. Rowe. The exhibition is under the patronage of the Earls of Morley, Mount Edgumbe, and St. Germans, Lords St. Levan and Auckland, the county and borough members for the Three Towns, the Mayors of Plymouth and Devonport, and the chairman of Stonehouse District Council, etc., Mr. Alfred D. Breeze again occupying the post of secretary and general

manager, the duties of which he discharged last year with such signal success.

"PRINTED in Prussia" are the significant words which appear on coloured picture postcards bearing reproduced photographic views of scenes not a hundred miles from Southport, says the "Liverpool Courier." The Prussians did not send over their camera men to obtain the views. The photographs were taken on behalf of the local publisher, who then cast about for the best and cheapest place for reproduction. As a result of his inquiries he had to seek help in Prussia, whence he obtained the pictures printed in artistic fashion at 18s. 6d. per thousand, while English art printers would not do the work for less than two guineas per thousand, or considerably over twice the Prussian price. What is indicated by these facts—and they are facts and not merely figments of the imagination? Britons are continually being invited to take their cue from the Germans, who are said to be at the top of the educational tree; while in other respects they are setting examples to John Bull, who used to consider himself a very superior person. Do the low prices above quoted indicate that the Prussians are superior to the British? Or do they give evidence of long working hours and lower wages among the Kaiser's subjects? There must be some explanation as to how the Prussians can supply at 18s. 6d. per thousand pictorial postcards which the British cannot produce for less than £2 2s. per thousand.

WAR Cinematography.—With the up-to-date war correspondent the camera may be said to have superseded the pen. Mr. G. H. Rogers, who has just returned from Manchuria, carried the equipment of the war correspondent a stage further by accompanying the Russian army with a cinematograph machine, and he has brought back with him to England some exceedingly interesting films. His most remarkable experience was cinematographing an execution of Hunhuses by the Chinese authorities at Mukden. (The Hunhuses, or Chunchuses, are Chinese brigands, mainly Manchurians.) To a representative of the "Daily Chronicle" Mr. Rogers recounted some of his experiences, and showed him the war pictures. "These films," said Mr. Rogers, "were not taken for exhibition in public; but as I had the opportunity, I thought I would take it. I can assure you it was an experience I never wish to have again. The execution itself is not the worst thing in China; it is the preliminaries that would correspond to our police court proceedings that are so terrible. According to the Chinese law, no criminal can be executed until he has confessed his crime. If the prisoner will not acquiesce in the sentence, they take steps to make him by applying torture, and it is beyond the Western mind to comprehend the appalling details of cruelty that the Chinese nature can sink to."

Patent News.

The following applications for patents were made between August 8 and August 15, 1904.

Developing Apparatus. No. 17,244. "Improvements in photographic developing apparatus." James Wyndham Meek.

Cameras. No. 17,367. "Improvements in or connected with photographic cameras." (Emil Becker and Otto Palmer, Germany) Eugen Emck.

Cameras.—No. 17,408. "Improvements in or relating to photographic cameras." Houghton's, Limited, William Albert Edwards and Herbert Holmes.

Pigment Processes.—No. 17,610. "Improvements relating to pigment photographic processes." Complete specification. Hans Schmidt.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

August.	Name of Society.	Subject.
30	Nelson Photographic Society.....	Gum Bichromate Process. Mr. T. Hudson.
Sept.		
1	Hull Photographic Society	General Meeting.
2	Watford Photographic Society	Informal Meeting.

Correspondence.

- Correspondents should never write on both sides of the paper, notice is taken of communications unless the names and addresses of the writers are given.
- We do not undertake responsibility for the opinions expressed by our correspondents.

THE PHOTOGRAPHIC LABOUR MARKET.

To the Editors.

Gentlemen,—Like "Hornsey," I also have been interested in reading the various articles on the above, and your concluding note to Hornsey seems to me to hit the right nail on the head; the case can be summed up in that one word "inability." There are places waiting for men who are "highly skilled photographers."

To use a simile, there are fence-menders who call themselves carpenters, and there are carpenters who can fit up a mansion; the former may want a job, although they may call themselves "highly skilled"; the latter never want a job, because they are skilled. "highly skilled photographer" is not made out of any stuff, brain being as necessary as in any other business, in spite of "rapid development plates," and the various "push the button" appliances. It is difficult to appreciate what "highly skilled" means, without a thorough knowledge of the routine of the best houses, which necessitates experience therein. The man who learns his business in a slipshod fashion or picks it up anyhow (with a guinea hand-camera it may be) is at a terrible discount, and can soon be read by the experienced employer. I say experienced advisedly, because some employers have never learned the business themselves, and consequently take a man very much at his own estimation. These are the men, doubtless, who think they get a hundred applications from "highly skilled photographers" for one situation. These conclusions are forced upon me by thirty years' experience in the best portrait and commercial houses.—Yours truly,

August 17, 1904.

OVER FORTY (but not too old).

THE R.P.S. EXHIBITION.

To the Editors

Gentlemen,—I shall be glad if you will remind your readers that exhibits for the Royal Photographic Society's Exhibition sent by carrier must be delivered at the New Gallery, 121, Regent Street on or before Thursday, September 8, and those delivered by hand unpacked on Friday, September 9. —Yours faithfully,

A. W. W. BARTLETT.

66, Russell Square, London, W.C.,
August 20, 1904.

Secretary.

PSYCHIC PHOTOGRAPHY.

To the Editors.

Gentlemen.—In view of the light which has been recently thrown upon this subject by the discovery of "N" rays by Dr. Blondelo of Nancy, which, by the way, are probably identical with the "Odic" rays of Baron von Reichenback, discovered by him many years ago, no doubt photographers will modify their views regarding the possibility or otherwise of obtaining photographs without the aid of visible light.

As bearing on this subject, I enclose "cutting" dealing with the experiments of Professor Goodspeed, of the University of Pennsylvania, which, as it fully explains his method of working, should be most useful to those who are exploring this new branch of photography. If X-rays are not available, I would suggest the substitution of radium or the rays of the sun.—I am, yours, etc.,

R. STEWART.

Melbourne. July 12th, 1904.

[The cutting referred to is reprinted on p. 752.—Eds., "B.J.P."]

To the Editors.

Gentlemen,—As very little appears to be known about this subject, take the liberty of offering a few remarks. Psychic photography is

of which there are many, of psychic phenomena, for particulars which I refer you to the writings of Sir O. Lodge, Professor Crookes, Sir W. Crookes, Camille Flammarion, and others.

The medium is simply an instrument in the hands of spirits (I use the word as it conveys what is generally understood). Of their method of working nothing is known. All that is known is that certain electrical conditions of the atmosphere are unfavourable; so also is the presence of persons of strong will, and who are antagonistic to the medium. Will power directed against the medium produces much the same effect as does the will power of the hypnotist on his subject.

Notice that some of your correspondents are puzzled over the double lighting of some of the photographs, and seem to think it is a proof of fraud, but it is reasonable to suppose that any photographer would cause suspicion by double lighting when it is quite as easy to light from one direction only? As a matter of fact, light, as it is commonly known, plays no part in the production of these pictures, and is only necessary for the lighting of the material. The psychic photograph is made direct on to the plate, and consequently the camera and lens are unnecessary, a dark slide being convenient. I have recently noticed that many of the photographs are undoubtedly crude mental impressions, and the question whether all are not so.

As far as the only theory that fits in with my experience is the dualistic one, and I shall have to hold on to it until a better is found.

The great difficulty that lies in the way of investigators is the uncertainty of getting results, and this applies not only to spirit photography but also to all the other phases of psychic phenomena. I think this will remain with us until our scientists have mastered higher laws which are falsely named supernatural. In my own case I have not for many months past been able to get any results, and on two occasions have I been successful when sitting with friends. Mr. Blackwell to accept Mr. Henderson's challenge, under the conditions named, would be to court certain failure. The scientist is a man to investigate (it is a scientific subject) and not those who are not competent. On this subject Mr. Henderson hints that your late friend, Mr. Taylor, changed his views shortly before he died; but is it surprising with death staring him in the face and his physical, and especially his mental, faculties failing him?—I am, yours, etc., X.

The correspondence on this subject was definitely closed many months ago, so that the insertion of the above letters, one from a considerable distance, and the other from a gentleman who had no opportunity of joining in at the time, must not be taken to indicate, in any part, any desire to have the matter further discussed in these columns at present.—Eds. B.J.P.]

Mr. PERCY PHILLIPS, a war correspondent sent out by the "Daily News," who has recently returned from the seat of war, has brought back about 900 films taken with the No. 3a folding pocket Kodak. All of these were developed in the Kodak daylight development machine, and some sixty-five reproductions from these negatives have already appeared in the "Illustrated London News." Prints are now being made from the rest of the negatives by Kodak, Limited, and a fine collection of reproductions of the stirring scenes of the war of the few months will result from them.

NOTICE TO ADVERTISERS.—Blocks and copy are received subject to the approval of the Publishers, and advertisements are inserted subject to the usual conditions, expressed or implied, as to what appears in the portion of the paper.

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Answers to Correspondents.

* * All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.

* * Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.

* * Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.

* * For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

- M. H. Grocock, 1, Ainslie Street, Ulverston. Photograph of Fan Bellows.
J. E. Reeves, 48 and 50, Hermit Road, Canning Town, London. Photograph of West Ham United Football Team, 1904-1905.
F. Deakin, 121, Snargate Street, Dover. Photograph of J. A. Weidman.
J. Mack, Alexander Terrace, Coleraine, North Ireland. Two Photographs of Visitation of Hon. Irish Society to Coleraine.
J. G. Charlton, 14, Mercery Lane, Canterbury. Photograph of Central Tower of Canterbury Cathedral with scaffolding.
R. Thirlwell, 21, Bridge Road, Stockton-on-Tees. Photograph of Stockton Cricke Team, First Eleven.

HENRY LEACH.—If you refer to the advertisement columns you will see that Messrs. Wellington and Ward and the Rotary Photographic Co. also make a non-curling film.

"WILKINS."—Your question is not quite clear, but we presume you wish to know what we consider a reasonable remuneration in the circumstances: anything between £3 3s. 0d. and £8 8s. 0d. per week for a business of the nature indicated.

SEPIA ENLARGEMENTS.—KARL KLIEMECK says: "I should be greatly obliged if you can give me a good formula for sepia enlargements. I am using bromide paper and metol-hydroquinone developer." In reply: We refer our correspondent to our reply to "Salisbury," p. 760. The method for obtaining sepia tones in the Hypo-Alum bath there given is quite reliable.

COLOURS FOR PHOTOGRAPHS.—MABEL asks: "Could you tell me if there are any special kind of colours used for tinting small photos like the one enclosed, or if they require to be prepared before?" In reply: Transparent colours for the purpose are supplied by all the large stock dealers, such as Houghtons, Fallowfields, Marions, or Butchers.

COPYRIGHT.—G. P. asks: "(1) Can a foreign artist obtain registration of copyright of his work in England. (2) If so, and supposing the copyright is assigned to a firm of English publishers, does this copyright expire seven years after the artist's death, or when? In reply: (1) Yes. (2) The copyright endures during the life of the author and for seven years after his death.

PINHOLES.—REGULAR READER asks: "Can you kindly give me any advice on the following: I have developed a quantity of negatives (which have been good) and during the drying they have got a number of pinholes in the film?" In reply: If there are holes in the film the only thing that seems to us to be done is to spot them out in the negatives.

FAULTY PRINTS.—P. C. AND SON ask: "Can you tell me what is wrong with enclosed print; in two days I have had all my work destroyed and cannot account for it?" In reply: As no particulars whatever are given it is impossible to say by merely looking at a print from what cause the trouble proceeds. Probably the toning solution was out of order. Correspondents are not replied to by post.

BOOKS WANTED.—T. C. GODDARD says: "Would you kindly send me a list of good books on retouching, posing, lighting, developing of plates, and other books on photography?" In reply: A list of the books desired would take up more space than is at our disposal in this column. Therefore we refer our correspondent to pp. 974-6 of the "Almanac." He will

there find a list of the principal text books relating to photography. We do not reply to correspondents by post.

REDUCER WANTED.—J. C. WINDRUM asks: "Will you, please, give me a formula for a cheap reducer for negatives, one solution, which will keep indefinitely and may be used and returned to the bottle?" In reply: Belitzski's is the most satisfactory; it will keep indefinitely in the dark, and can be repeatedly used:—Potassium ferric oxalate, 20 grs.; sodium sulphite, 200 grs.; water, 5 ozs. Dissolve and add oxalic acid (crystals), 75 grs. When the solution is a deep green, pour off from any undissolved acid, and add hypo, 2½ ozs.; water to 10 ozs.

BLACK AND WHITE TONES ON ARISTO S.-T. PAPER.—"H." asks for a formula for a toning bath which will give black and white effects on Aristo S.-T. paper. In reply: We suggest the following bath as likely to give what you require:—A. Gold chloride, 1 gr.; sodium acetate, 30 grs.; water, 40 ozs. B. Potass. chloroplatinite, 1 gr.; phosphoric acid, 2½ oz.; water, 40 ozs. Tone in A. until prints are purple; wash well and complete toning in B. Then fix and wash as usual. (2). There is no paper on the market with all the qualifications you mention.

PHOTOGRAPHY ABROAD.—J. B. says: "I am anxious to know if there is much of an opening for photographers abroad. I am an amateur and am anxious to go abroad and study under some firm and eventually start on my own. Could you give me an idea of the best place to go to and how I could communicate with a likely firm at that place?" In reply: We know of no place abroad that is not at the present time well supplied with photographers. We should think your best way would be to advertise your wants in the photographic journals of the country you have a preference for.

STAND DEVELOPMENT.—T. W. BARRIE asks: "Will you kindly give me a formula for making a reliable developer for stand development for a number of plates—one that can also be used at times to develop single plates in the ordinary way, and for bromide papers?" In reply: Any developer that will keep well can be used for stand development if diluted. The following should answer your purpose:—Metol, 16 grs.; hydroquinone, 24 grs.; soda sulphite, 200 grs.; pot. bromide, 2 grs.; pot. carbonate, 400 grs.; water, 10 ozs. For use as stand developer dilute 1 part of above with 60 parts of water. For bromide papers dilute with equal quantity of water, or for ordinary development use as given.

QUICK PROOFS FROM WET NEGATIVES.—N. D. ACKERSON says: "I have been told it is possible to obtain prints from the wet negative as soon as developed. I shall be glad if you can inform me of this method." In reply: With a little ordinary care this can be easily done without in any way injuring the plate. After fixing, the negative is submitted to a slight washing for a few minutes under a tap. While this is in progress a piece of bromide paper is soaked in water, face down, in the dark room, of course. The wet negative can now be slipped under the paper as it lies in the bath flat and limp, and, avoiding air bubbles, they are removed and any water on the glass-side of the plate wiped off. Exposure can now be made by either holding the negative and paper before an ordinary artificial illuminant, or standing the same on a drying rack. The bromide is then developed in the ordinary way, and the negative receives its complete washing.

COPYRIGHT, GELATINE.—IGNORANT asks: "(1) Will you kindly let me know if it be possible to copyright photographs of some old prints of this town? A friend has offered me some for postcards but am afraid, as they are very many years old, they will be copied and reproduced as blocks if not registered? (2) Can you also give me a preservative for gelatine, such as would be used for chrysotelem, one that would not hurt albumenized paper; I want to mount photos on glass for colouring with transparent colours at back; I thought boracic acid but am afraid to use it without your opinion, which I should esteem greatly; if that would do, will you say what quantity boracic to the ounce of solid gelatine?" In reply: (1) If you make your reproductions copyright it will be illegal for anyone to copy them. But it will not prevent anyone from copying the original prints. (2) We should prefer to use carbolic acid,

say, one or two drops to each ounce of the solution, with that we should recommend the solution to be used a day or two of its preparation.

BLACKENING BRASS.—J. M. C. B. asks for a formula for blackening some brass-work that he is fixing to a home-made camera. In reply: The following procedure will answer this purpose. Dissolve copper wire in strong nitric acid until no more dissolves. The brass to be blackened is then made fairly hot in a Bunsen flame or spirit lamp, and is then plunged into the solution, after which it is reheated in Bunsen flame until it turns black. Or, as another worker gives it:—Nitric acid, 4 oz.; copper wire, ¼ oz. When dissolved, add ¼ oz. of water. The object must be first cleaned, then heated and immersed in the mixture. Take out, and brush all the green off until the article goes black. Can be polished with a blacklead. Another method:—Take 2 grs. of lampblack, place it on a slab, and grind it down to a smooth paste with the addition of two or three drops of gold size. When rubbed up quite smooth, add 10 drops of turpentine. Apply it at once, thinly, with a camel's-hair brush in the work. Hang up by a wire. And yet another:—Make a solution of 1 part of carbon dioxide ammonia in 20 parts of liquid ammonia. Suspend the brass to be blackened, which must have been previously polished, in the mixture, and leave it until it has become perfectly black. Remove and dry. This latter will bear polishing.

DRYING POSTCARDS FLAT, ETC.—"MANAGER" says: "I turn out a great many bromide postcards, but at quite a loss to keep them flat, as they have a great tendency to curl up. Will you kindly answer the following questions:—(1) Is there any remedy to prevent curling? (2) Can you recommend a work on the manufacture of bromide paper, and (3) a book on bromide printing?" In reply: (1) The following has been recommended for making postcards dry flat:—pieces of wood are tacked on a piece of board four inches square (preferably putting a sheet of blotting paper under, so that it absorbs the water that drains from the postcards). When the postcards are washed, take them out of the final water, place them one by one between the two pieces of wood, in a curved way, film upwards. Allow them to stay so until thoroughly dry, then take them off, when they will after a while flatten themselves. If they are wanted quickly, then under some weight, say between two books. (2) Dr. Eder's "Handbuch der Photographie," Abney's "Photography with Emulsions," and "A Treatise on Photography," are all good. (3) Just's "Bromide Paper." (3) The foregoing works, and Lambert's "Bromide Printing," "Photo Miniature No. 16," and "Practical Photographer, New Series, No. 1," and all the books of general photography.

HYPOTONING-BATH FOR BROMIDES.—"SALISBURY" says: "I find a formula for bromide prints with hypo and alum. All the instructions I have carefully carried out, but I have not succeeded in getting any other but the ordinary black tone. As I have seen obtained with a similar formula, there is obviously something wrong with my mode of working." In reply: When the alum bath is to be employed, the print, after development, should be thoroughly fixed in the ordinary hypo bath composed of 4 ozs. hypo in 20 ozs. of water. It should then be transferred to an alum bath (saturated solution) for ten minutes, and well rinsed and dried. When dry it is ready for toning in a hypo-alum hot bath, which should be made as follows:—Sulphuric acid, 10 ozs.; alum, 1 oz.; boiling water, 7 ozs. Dissolve the hypo in the water first, then add the alum. When all is dissolved the solution should be milk white. This solution should not be filtered, and it works better as it comes a little old; it may be strengthened from time to time with a little fresh solution. Never throw the bath away entirely, but replenish it in the manner stated. The results are obtained by keeping the bath hot, or as warm as an emulsion will stand, say 100deg to 120deg. Fabr. In the prints will tone in thirty to forty minutes. A new bath should be used to reduce the prints rather more than old. When the prints may be placed in a tepid solution of water, 70 deg. Fahr., alum, 2 ozs. Then wash thoroughly.

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THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1905.

Edited by THOMAS BEDDING, F.R.P.S.

The forty-fourth annual issue of THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC will be published on December 1. This year's ALMANAC reached a total of 1,604 pages, and the entire edition of 25,000 copies was sold out before publication. Of no other photographic book ever issued two such unique facts be recorded. The edition for 1905 will also consist of 25,000 copies.

The striking favour with which past ALMANACS have been received is the surest proof that the lines upon which the publication is produced meet the requirements of its readers and supporters. Upon such lines we propose continuing the volume for 1905. At the same time, we shall be pleased to receive and consider suggestions for increasing the value of the ALMANAC in directions which may occur to readers as susceptible of improvement.

The ALMANAC for 1905 will appeal to photographers all world over as a daily reference guide in practical work. The standard matter and formulae will be revised and added to where necessary, the year's advances in theory and practice will be recorded, and wherever practicable features of an informative nature will be added.

IMPORTANT NOTICE.—The attention of advertisers is specially directed to the announcement that this year's entire edition of the ALMANAC (25,000 copies) will be placed in the hands of dealers and the trade on December 1—next—a fortnight earlier than usual, so as to be well advanced of the Christmas publication season.

EX CATHEDRA.

Nature Lectures.

We have been glad to receive from Mr. F. Martin Duncan, the well-known natural history photographer, the syllabus of a series of nature lectures, which he proposes to deliver during the coming autumn and winter months. The photographic illustrations are both cinematograph and lantern slides; and the subjects treated of are "Pond Life," "Denizens of the Deep," "Devil Fish and Kraken," "Flesh-feeding Plants," and "With Microscope and Camera." Thus the lecturer's repertoire covers a wide and fascinating field. Mr. Duncan, whose address is 39, Bradley Gardens, West Ealing, London, W., has justly earned great renown for the interesting manner in which he lectures on popular science themes, and as the accompanying photographs exhibit a very high degree of technical skill indeed, the executives of photographic, literary, or other societies that engage Mr. Duncan's services may rely upon having a unique and instructive evening's entertainment.

The Genesis of "Punch."

A very interesting booklet has recently come under our notice. Its title page bears the inscription, "Mr. Punch; his Origin and Career," with a facsimile of his original prospectus in the handwriting of Mark Lemon. It bears no date, but there is internal evidence that it was published in 1870, when "Punch" was thirty years old. Its retrospect of these thirty years contains a reference to photography, but it would have needed a prophetic eye to note how useful the camera would some day be in preparing pictures for the "London Charivari." "Photography," we read, "was still in its infancy, and was generally called daguerreotype. Cartes de visite were entirely unknown; the features of your friends were shadowed upon a metallic surface, and you had to coquette with them a great deal in the light before they would let you see them, and even then only in a slanting kind of way." This, we think, is an admirable description of a daguerreotype portrait, and those who own such things know well how they have to "coquette with them" at all angles before the particular one which is right comes along. But beyond this reference to the early days of camera work, there are many things in this book which will repay perusal, and notably one with regard to the conception of the "Illustrated London News"—the first of our pictorial journals—if we omit consideration of the spasmodic attempts at producing journalistic pictures which preceded its appearance. "Punch" was born at No. 3, Crane Court, Fleet Street, at the printing office of Mr. J. W. Last. In the same house there was carried on the business of "Parr's Life Pills," by Mr. Herbert Ingram. Mr. Last was one of the earliest promoters of cheap illustrated literature, and also one of the first to execute the finer kinds of printing with a cylinder machine. This

machine was successfully applied to the production of "Punch," and this, it is suggested, gave Mr. Ingram the suggestion of "The Illustrated London News." In this way "Punch" led the way for the more serious periodicals, and a quack medicine—if we may say so without offence—was the means of finding the sinews of war for one of the most successful newspaper speculations ever undertaken. Those who have not followed the history of "Punch" would be perhaps surprised to learn how many eminent writers and artists have been associated with it since it first saw the light. Among the former we note the names of Douglas Jerrold, Tom Hood (his famous "Song of the Shirt" first appeared in "Punch"), Tom Taylor, Thackeray, and Tennyson. And among the artists were, besides the well-known names of Leech, Chas. Keene, and Du Maurier, those of Birket Foster, and John Gilbert. The artists and writers for the merry periodical seem to have been always a rather exclusive set, jealous of the intrusion of outsiders. Of course, outsiders have always been anxious to get into the charmed circle, and the contributions they send in are as remarkable for their number as for their generally feeble character. But an exception was found in one missive which came to "Punch" anonymously, the author of which, at least up to the time of the publication of this brochure, remained unknown. This was the famous "Advice to Those About to Marry—Don't." We may suppose that this dictum has been more quoted than any other of the same age, and its value to "Punch" as an advertisement which cost it nothing, must have been enormous.

* * *

Art Critics.

The season for the autumn exhibitions is again approaching, and we look forward as usual to the critiques which appear so regularly in the minor journals. Generally written by those who know little about photography and less about art. It seems to be forgotten that criticism is an art in itself, which requires training before it can be exercised with any good result to anybody. How many of the young ladies and young gentlemen whom we see busily marking their catalogues on press days at the picture galleries have had this training? Very few, we think. We would advise them while it is yet time, and before they essay to spill any more ink, to look up Ruskin's notes of the principal pictures of the Royal Academy and other exhibitions, which were published between the years 1855 and 1859. Ruskin devoted his life to the study of Art, and was a highly competent critic, knowing how to praise a work of merit, and how to condemn one in no measured terms when it deserved censure. These notes are not only valuable to the aspiring art critic, but are most interesting to all lovers of pictures because of their candour, and their references to works which have lived. There is no beating about the bush whatever may be the reputation of the artist under consideration. Here, for instance, is a good rap over the knuckles for Maclise: "Mr. Maclise is supposed to draw well and realise minute features accurately. Now, the fact is, that this work has every fault usually attributed to the pre-Raphaelites, without one of their excellencies. The details are all so sharp and hard that the patterns of the dresses force the eye away from the faces, and the leaves on the boughs call to us to count them. But not only are they all drawn distinctly, they are all drawn wrong." Then, alluding to a landscape by no less a painter than T. Creswick, he writes: "Nothing is really done. The cows have imperfect horns and hides; the trees have imperfect leaves; the sky imperfect clouds; the water imperfect waves. The colour, of a heavy yellow with dun green, is worse than imperfect." Of one of Frith's pictures he notes that "It is not a kind of painting which will ever bring great fame, or deserve it; but it is better than spurious

'high art.'" The next extract which we select from the criticisms is a gem which reminds us of some of the things which have lately been said of the Royal Academy in connection with the Chantry Bequest report. Ruskin referring to a picture by David Roberts, and he suggests that if he had "painted more, instead of less from Nature he might by this time have been a serviceable painter. Is it too late to warn him that he is fast becoming nothing more than an Academician?" One more quotation we will make, and it is worth noting, for the words apply equally well to a photograph as they do to a painting or drawing. Referring to some studies of Nature, Ruskin says of them that they are "Very good in their way; rather things to be kept in the artists' folios, for their use, than to be exhibited." Some may think that a few of these trenchant remarks are unkind, and must have given pain to those whose works are so mercilessly criticised, but even at the risk of giving offence to those who cannot bear reproof, is it not well that that reproof should be administered when it is deserved? All photographers who have given any consideration to the subject know well that there are many whose works are hung upon the walls of photographic exhibitions who would have benefited more by a little timely castigation instead of the adulation which they have received from irresponsible and ignorant critics. If Maclise, Creswick, Frith, and other well-known artists deserved censure, what do some of our perpetrators of exhibited monstrosities not deserve?

* * *

Municipal Photographs.

London has long had the reputation of being one of the healthiest places in the world, and those unfortunate enough to be unable to spend an autumn holiday comfort themselves with the reflection that if they lack the benefit of fresh air the atmosphere of the big village is not to be despised. But according to recent reports from the Medical Officers of Health for the larger area called "Greater London," there is vast room for improvement all round. These gentlemen are ever on the watch for the weak places of our municipal administration where disease is likely to obtain a foothold, and we all of us owe more to their persistent care than we are apt to give them credit for. One Medical Officer, who has the health of Battersea under his care, has made a startling innovation of illustrating his report with a photograph. This course we hope will be followed by other officers, for there is no gainsaying the fact that a health report, be it of the most painstaking and authoritative kind, is rather dry reading, and is apt to be passed over by the many and pigeon-holed by the few. But if it is illustrated by pictures, pictures which are true to life and which make the citizens acquainted with the realities of existence as experienced by their poorer neighbours, it will not be ignored, or thrown away. People want to know what the pictures mean, and will refer to the text and perhaps come to see how much they are, or are not, interested in the condition of things described. The picture in this instance represents an underground bakehouse. We were under the delusion that these maddening dungeons for preparing the staff of life were things of the past, but it seems that we were wrong. Here is the photograph, and its evidence is indisputable. One photograph, taken in one out of the twenty-eight boroughs into which London is divided, is not much. But it is a pioneer picture which we trust, by the time that the next report is issued, will have many followers. And there is a wide field for photography here. There are, for example, the underground kitchens of the restaurants which for some unexplained reason are not placed on the same footing as the bakehouses. There has long been a suspicion that some of our gorgeously-appointed diners

es have kitchens which it would not be desirable for diners to see. We want photographs of these places in order to know what they are like. One of the reports speaks of a sausage shop where the meat is chopped in a cellar in which a horse was stabled. The horse's duty is to turn the chopping machine, and the only way he can be got out of his underground prison is up "an incline plane down from the shop floor." We need not hazard a guess as to what becomes of the poor animal when his life's work is done, but it would be interesting to see a photograph of that cellar. Then there are the ice cream parlours of the Italian quarter, which would need a lens of the shortest focus. Other pictures are wanted to throw light upon the inner working of London's huge milk industry. According to one Medical Officer the deaths in London are caused from the use of unclean and polluted milk number many thousands "annually. It is here that photomicrographs would usefully supplement ordinary camera pictures. It is an astonishing thing that in spite of sanitary laws, and laws against adulteration, the things reported by these medical gentlemen should be allowed to go on almost unchecked. If photography can help, as we believe it can, in ventilating evils fraught with such danger to the community, it has surely never been applied to a better purpose.

"MORE Light for the Dark Room" is the title of a handbook dealing with the "Geka" Flexoid filters, prepared by Dr. G. Krebs, Offenbach-on-Main, for which Messrs. A. E. Staley and Co., of Davies Inn, London, E.C., are the agents. The filters, which have a flexible support, are designed for dark room and orthochromatic exposures, and are made according to formulae supplied by Dr. Miethe. Messrs. Staley and Co. will send a copy of the handbook free on application.

THE Royal Academy intends at an early date to revive the degree "Associate Engraver," writes the Art Critic of the "Morning Post," to which no one has been elected for many years. The possibility of such a revival was hinted at in this column some months ago, when a prominent landscape painter Academician took the first step in the matter by proposing that the Royal Academy should elect one Associate Engraver. The Royal Academy regarded the proposal with favour, so much so indeed that it has been agreed that two Associate Engravers shall be elected, and it is probable that one at least of the elections will take place early in 1905. Of the old Associate Engravers of the Royal Academy only one survives, and he has long been on the retired list. This is Mr. Frederic Stacpoole, R.A., an artist who in his time engraved many well-known pictures, among them Mr. Holman Hunt's "Shadow of the Cross," Mr. J. M. W. Turner's "Rain, Steam, and Great Bridge," and Lady Butler's "Calling the Roll after the Engagement, Crimea." The elections should be interesting, but it is idle to speculate on the probable identity of the new Associates without some idea of the way in which the Royal Academy proposes to interpret the term "engraver." Of late years a new school of etching engravers has sprung up, and from the ranks of these—among whom are included men of much ability—the Royal Academy may make its selections exclusively. On the other hand, the Royal Academy may take a broader view of the term "engraver," and confer one of their associateships on an etcher, a step that would be welcomed by the majority of artists. Of course, the Royal Academy already contains several etchers of eminence, but these artists were elected solely on their qualifications as painters. Though there seems to be a chance that the etcher may receive Academic recognition, the artist in black and white remains as far off as ever from the A.R.A. Charles Keene's name was long on the list of candidates for associateship, and so was that of Du Maurier, but it is doubtful whether either ever received a single vote. Phil May's name was never placed on the list, but on it may be found those of several of the eminent black and white artists of to-day. Among these candidates are the veteran Sir John Tenniel, Mr. Linley Sambourne, Mr. William Small, Sir William Rothenstein, Mr. Maurice Greiffenhagen, and Mr. Caton Woodville, but, except as a painter, none of them is regarded as having a chance of election.

OFFICIAL RECOGNITION OF PHOTOGRAPHY.

INITIATED abroad, the post-card mania has at last taken firm root in our conservative old country, and now constitutes an enormous industry. Although a certain proportion of these popular picture cards are from drawings, the major part are photographs pure and simple, and many know to their cost the way in which this cheaper form of print has killed the trade in ordinary views.

It is in holiday times that the sale of post-cards reaches its maximum. At Douglas, Isle of Man, it is said that in the course of a single day last season the output was over one hundred thousand. At Llandudno the same number passed through the post-office weekly, while at Ilfracombe one firm alone sold a thousand cards per day. Blackpool is credited with sending away ten thousand cards in a month, and doubtless other holiday resorts could boast of a similar trade in cards; for a rough general estimate gives 25 per cent. as being the amount which pictorial post-cards bears to the letters in the average outgoing mail.

Hitherto this huge trade in post-cards has been confined to private enterprise, but now an important change is foreshadowed. The official mind has grasped the idea that the illustrated post-card may be turned to good account, and the Postmaster-General of the Australian Commonwealth must be credited with being the first to realise its utility. It must not be thought that the Government is bent upon entering into competition with the private trader with a view to benefiting the revenue, for this is not the case. The idea is that by the issue of sets of post-cards, each set representative of one particular State, the cause of emigration may be greatly furthered. One State will be able to advertise its scenic glories, another its pastoral advantages, another will show its gold mines, doubtless with huge nuggets lying about ready for the expectant stranger to grasp; still another will show its sugar plantations, and so on. With this end in view the Postmaster-General is inviting competitive designs, and will offer first, second, and third prizes for the best pictures sent in from each State. There seems to be no restriction as to the sort of pictures desired, so that artists in oil, water, or crayon, as well as photographers, will be all entering into rivalry with one another in their endeavour to carry off the rewards.

This idea of picturing a country or district in order to entice visitors to its hospitality is an old one, but it has not been carried out before in such an effective manner. It has been done by posters, by pictures in guide books, in railway carriages, and by way of illustrations for inspired articles in various journals. But all such methods point to a limited circulation. With the post-card it is different, for such pictures are, as a rule, not destroyed; some people, indeed, collect them, just as they collect postage stamps, and hoard them as if they were gems; and there is a method in such madness, for certain stamps will to-day fetch far more than their weight in the most precious of precious stones. It is doubtful if any pictorial post-card will ever command a fancy price, but it is certain that one of good design will have an enormous circulation.

And there is no kind of doubt that a picture will appeal to the ordinary man and woman as no written description will. In spite of three decades of Board School education we have constant evidence that a very large class in this country never troubles itself with any literature at all. It vegetates. To this class from which a large number of emigrants is drawn, a picture is attractive, something which they can understand at a glance. And, of course, the pictures are all of the most roseate hue. To look at some of the illustrations, say in one of

the emigration handbooks issued by the Great Dominion of Canada, one would think that that country was a kind of Garden of Eden, where the sun was ever shining, and where there was no such thing as 40 deg. below zero—a land flowing with milk, honey, and all sorts of other good things, where a farm of 160 acres can be had almost for the asking. Of course, the Canadians will at once take on the post-card notion, and repeat these smiling pictures in that convenient form.

And it is not only Canada and Australia which will start these travelling picture galleries. We shall not be surprised if, before many months have passed, all our other colonies advocate their claims to notice in the same way. The stamp-collecting mania has been the means of spreading a knowledge of geography which no books have ever done so effectually, and probably the pictorial post-card is destined to do more in this way even than the stamp. We can, in fact, almost look forward to the time when books about our colonies will not be needed at all, and when all knowledge will be disseminated through the medium of the post-office in union with the camera.

But there is another kind of official publication which, in one instance, is illustrated by photographs. It is a blue-book which has just been issued by Messrs. Eyre and Spottiswoods entitled, "General Descriptive Report on the Bahama Islands, in which is included the annual report for 1902." It is admitted on all hands that yellow-backed novels find far more readers than do the blue-books issued under Government direction. Of course, this state of things is very sad, for while the blue-books deal with matters of more or less vital importance to the community at large, and comprises pages of statistics relating to the expenditure of public money, the yellow-backed volumes contain ephemeral fiction which can only appeal to the frivolous mind. The compilers of these cerulean official documents have evidently long seen that they have many rival publications to compete with, and they have at length hit upon a method of securing attention from the multitude. They have followed the lead of certain of our cheapest journals, and have enclosed between the two covers of the Bahamas Report a quantity of photographs; yes, real half-tone blocks printed upon good surfaced paper in order to give them every chance of appearing effectively in printing ink.

In case any of our readers should so far forget their school exercises as to be unable to call to mind at once what the Bahamas are, we may mention that they are a group of islands belonging to Britain on the coast of North America. They are of particular interest as representing the land first discovered by Columbus in his voyage to the New World.

The photographs appear to be quite subsidiary to the general purpose of the blue-book, and are placed at the end of the volume as pictorial addenda. They are thirty-two in number and comprise views of Government House, pictures illustrative of the sponge fishery—which is the most important industry in the Islands—and various views illustrative of the general scenery. Quite half of them seem to have been taken with some form of panoramic camera, for their measurement is 11 by 3 inches. They are of fair quality and, of course, give a much better idea of the Bahamas than any written description could afford. With such a hopeful beginning we may look forward to the time when other blue-books will be illustrated in this manner.

It is true that many of these official volumes deal with subjects of such a nature that pictorial illustration would be impossible. A photographer would find it difficult, for example, to illustrate a report on the metric system.

But what zest would be given to the blue-books relating, say, to the war in the Transvaal if they had been illustrated by photography. At present people are deterred from consulting these authoritative volumes in their desire of being bored by ponderous statistics and uninteresting details, and they will argue about matters which they do not understand until they are black in the face, when all the time these blue-books, which contain very information that is wanted, lie unconsulted upon the shelves of the public library. When the volumes could be illustrated, like this one upon the Bahamas, they would be considered interesting enough to assume the status of works of reference, and will become as dog-eared and thumb-marked as the postal directory of the same establishment. So we welcome the pictorial blue-book both in its own sake, and because it finds fresh employment for the photographer.

STORING NEGATIVES.

DISCUSSING, with a well-known member of the profession the question of the various modes of storing negatives adopted by professional photographers, we were not a little surprised to hear him say that he did not think that the storage, at any rate of portrait negatives, was worth the trouble and expense involved, the public taste being so capricious that negatives were, save those of public characters, rarely needed for replicas, except in the case of a death, and that it was a poor game to keep thousands of negatives on the chance of some one or two of the originals dying within the next dozen years, and their friends ordering half a dozen copies. This view, of course, could only be founded on personal experience, and to formulate a general rule from a particular instance would in the present case be rather illogical and unwisely. Further, it is obvious that, even granting the existence of a capricious public, the demand, or the absence of demand, for repetitions must be largely influenced by the character of the clientèle. A business which relies mainly on chance sitters does not require anything to be given to the storage question, while, contrariwise, one made up entirely by connection may find the gradually increasing store of negatives to be a very valuable property.

Speaking generally, however, there seems to be a consensus of opinion that the business of the portrait photographer has gradually been undergoing a radical change. Since the time when the production of a negative, from being an operation of some moment, became an affair of mechanical simplicity—as the production of the dry-plate has caused it to be. A sitter, then, was satisfied with a single proof, or he paid extra for further choice, now, he wants them by the half-dozen with retakes gratis, even for the comparatively limited number which we are told are usually printed for a single order. Hence, the negative is cheapened, in a sense, and its storage more costly, and the accommodation required more ample. Granting, however, for the nonce the need—or shall we say the desire?—to save negatives from which prints have been issued, it becomes a matter of some moment to decide how the storage can be best and most economically carried out. For this to be efficiently done it will be necessary that any particular plate required can be most readily found and handled with the least expenditure of time and labour before putting in the printing frame. It would not be possible to describe every method we have seen in use, but a brief reference to what have appeared to us most popular and desirable may be useful.

At the outset a word of warning must be given, as a case which occurred in the provinces some time ago showed

desirable. New up-to-date premises were being erected, including an upper storey for an accumulation of negatives. The building was not constructed satisfactorily, the walls were new, the negatives numerous and heavy, the result, collapse of the walls through the weight being concentrated in the most unsuitable spot. For twelve thousand negatives is not a large number for a business worked at "popular prices"; but they would weigh a ton. Fifty thousand would therefore weigh at five tons, and before such a weight was placed upon the floor whatever, an architect should be consulted. It is not a question of what a floor ought to bear so much as what it is likely to be able to bear that has to be considered. We have in our mind an instance that we have come across, where the most had to be made of a small room on the first floor. The negatives are ranged from floor to ceiling, the walls being entirely hidden, door and window being the only uncovered portions. Here a set of three-inch planks was placed on the floor all round against the wall, and the racks for the negatives were erected upon them, first, with the object of distributing the weight, and, next, to prevent the racks becoming legal fixtures, to effect which they were simply kept in place by being wedged against the ceiling rafters. Then, in the room below his negative room, and without cellarage, a similar line of planks was placed, and on them were erected other planks, as pillars supporting still others pressed against the ceiling rafters. Thus the whole weight of the negatives rested upon the solid earth, and, being put in a perfectly perpendicular arrangement of weight, there was virtually no tendency to side-thrust to endanger the walls. All these precautions were considered on account of the studio proper being, as often happens, an added storey to what, at the outset, was a two-storey building.

To complete our description we should add that there is a similarly supported beam placed under the middle of the room and reaching from side to side to receive the weight of a central erection in the negative room, and which contained a large number of plates.

We have felt justified in describing this particular sample at length, and in laying stress upon the necessity of precautions being taken to ensure the stability of premises where a large number of plates may probably accumulate, from a feeling that the matter is one that may readily lose sight of in the growth of a business, and, further, that the result of want of foresight might bring about pecuniary disaster, or, what would be infinitely worse, danger to human life in the case of a collapse similar to the one we referred to. We will complete our survey of the subject in a future number.

There died last week at Northampton Workhouse, Mr. Charles Monson, a former prominent tradesman of the town. In the fifties of the last century he was a drawing-master and photographer on Leicester Road. In 1858 he removed to No. 40, Newland. His advertisement of that period, in the quaint type of the time, calls him "Professor of Writing, Artist, Photographer, Drawing Master, &c.," and states, "Pupils systematically instructed in different styles of Writing, Book-keeping, Oil Painting, Free Sketching, Perspective Drawing, and Photography." In 1865 he was summoned to Althorp to photograph the present King who, then Prince of Wales, was visiting Earl Spencer. In the sixties he removed to 12, Bridge Street, and was for a long time established as one of the leading photographers of the town at the studio now Mr. C. Law's. Mrs. Monson died, and with her Mr. Monson lost his business hand. In 1873 he sold the business to Mr. Law, who has been there now over thirty years, and removed to Leicester. He returned, poor and old, a year or so, and went into the workhouse to end his days.

WANTED—A BENEVOLENT FUND FOR PHOTOGRAPHERS.

Our confrère Mr. H. Snowden Ward, F.R.P.S., in the September number of "The Photogram," devotes an article to a plea for the establishment of some kind of agency for the pecuniary relief of distressed professional photographers, and thus succinctly tells the story of defunct institutions which have already been formed for that purpose, and have unfortunately "died the death."

"The attitude of photographers to their benevolent associations has been very curious. The earliest charitable fund which was started by the craft was on the lines of a benefit society by which regular and relatively large subscriptions were demanded, and to which members only might apply for relief in time of sickness or distress. It gradually dawned upon those most interested that the photographers willing to subscribe to such a fund were very few in number; and, further, that those who did so subscribe were exactly the kind of photographers least likely to ever make claim upon the funds. (In after years, however, more than one of these original thrifty members came down in the world, received help which he greatly valued from the 'Benevolent,' and fully reinstated himself in a successful position.) After some years the attempt to run a benefit society was felt to be hopeless, and, after various schemes had been considered, it was decided to convert the concern into a benevolent fund, which all photographers were asked to support, and on which all photographers, their wives, and children, should have a general claim if they fell into poverty. At the time of the conversion the accumulated funds, which eventually amounted to some £300, were set aside as a nucleus for a pension fund, and this proved a most disastrous decision, for the accumulated fund, always standing in the books, too small to be used for pension purposes, yet very large in comparison with the funds actually received and distributed for the general purposes of the 'Benevolent,' proved a difficulty in the way of people asked to subscribe. For years the 'Benevolent' was carried on by a very small but very hard-working committee. Eventually the objection to subscribing further funds became so great that it was resolved to take all possible steps to secure the conversion of the pension fund to the general purposes of the association. So intricate were the difficulties under the Friendly Societies Act that in spite of having hard-working and self-denying honorary solicitors, quite two years were consumed in the freeing of this fund; but not a great while elapsed before the whole of it had been spent, and spent very judiciously according to the best belief of the committee, when once the money was released. Eventually the whole funds were exhausted. May I suggest," concludes Mr. Ward, "that the Royal Photographic Society or the Professional Photographers' Association, or, still better, both, might move in this matter? I am well aware of the legal difficulties in the way of the R.P.S. undertaking benevolent work, but I think there is nothing to prevent that society joining with another or with others in calling a meeting to consider the question, or in establishing a joint committee for the administration of a fund."

We have much pleasure in giving publicity to Mr. Ward's suggestion and according it our acquiescence and support. Several prominent members of the Professional Photographers' Association have, we know, had the matter under consideration for some years past, and now that summer is drawing to a close, and the time for the resumption of the autumn meetings approaches, we shall look to some active steps being taken to give effect to Mr. Ward's admirable idea. But the initiative must be taken by professional photographers themselves. For a long series of years we gave the old Benevolent a great deal of personal and journalistic support only to receive in return the studied neglect of those in whose interests we were working. This state of things must not recur. Found your

Benevolent Fund by all means—alas! we know with Mr. Snowden Ward that it is only too urgently needed in many quarters!—yet, *let it be first of all stipulated that the idea secures the immediate practical support of those on whose behalf it is to be exploited*, professional photographers and their assistants, and we shall be only too pleased, as hitherto, to form one of a band of willing workers pledged to carry on the administration of the Fund. But we wish it clearly understood that in the absence of strong and influential professional support we shall not feel justified in devoting either time or space to the matter. Who will come forward to help?

THE REVERSAL OF THE WET-PLATE IMAGE.

Most photographers have had some experience of the results obtained on the gelatino-bromide film when the plate has been unreasonably over-exposed, and in consequence the image develops as a more or less foggy positive. The exposure required to reverse the image is, of course, so prolonged that this result can be obtained unintentionally only by the merest tyro.



Fig. 1.—Print from Normally Exposed Negative. Dry Plate, $\frac{1}{2}$ sec., f. 22. Wet Plate, 1 sec., f. 8. June Midday, Sunshine.

While making experiments in reversal some time ago with dry plates it occurred to the writer that an interesting comparison might be made of the behaviour of the wet collodion with the gelatino-bromide films. The prolonged exposure required for wet plates obviates any chance of obtaining a reversed image by accident, and, as events proved, it is by no means an easy matter to solarise the wet collodion image even under the most favourable conditions. The difference in speed between a gelatino-bromide plate of medium rapidity and the wet collodion film varies from ten to forty times in favour of the former; it is impossible, however, to give any exact figures, as the rapidity of the wet collodion film is affected by stale iodised collodion, cold weather, etc., etc.

The exposures were made in June in full mid-day sunshine. A dry plate of medium rapidity was first exposed for half a second, with the lens stopped down to F. 22. Development showed this exposure to be correct for the subject in hand. Three exposures of five, ten, and twenty minutes respectively were then made for the purpose of obtaining a solarised image.

The plate exposed for ten minutes developed into a very positive (a print from this is shown in Fig. 2). The exposure given for the dry plate in order to obtain a positive in



Fig. 2.—Print from Dry Plate, Showing Total Reversal of Image. Exposure, 10 min. Stop, f. 22.

was consequently about a thousand times that required for correctly-exposed negative.

The wet collodion negative was then taken, and an exposure

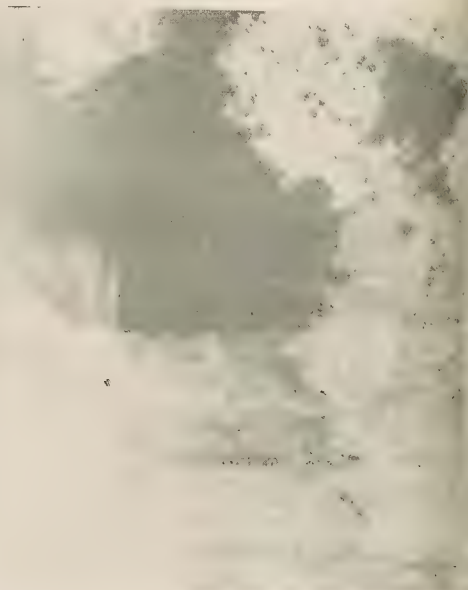


Fig. 3.—Print from Wet Plate, Showing Partial Reversal of Image. Exposure, 20 min. Stop, f. 8.

of one second, with the lens working at F. 8, produced a good negative. This was about fifteen times the exposure given

the dry-plate negative; there was little to choose between the two plates, as the greater brilliancy of wet collodion compensated for the use of a large stop. As the two correctly-exposed wet and dry negatives gave practically the same results, only one reproduction (Fig. 1) of correct exposure is given here. The wet collodion plate was exposed for ten minutes, but on development the image showed practically no signs of reversal, and the film was covered with a dense deposit. Another plate was exposed for twenty minutes, of course with the stop at F.8. At this time the result was a partial success, and the image developed as a very feeble, or rather, very foggy positive. As will be seen from the reproduction of a print from this positive, the reversal was anything but complete, and probably the exposure would have to be trebled to obtain a positive equal to that produced from the dry plate. Exposures, however, beyond twenty minutes are practically useless with wet plates, as, after that period the sensitiveness of the film is greatly diminished, and there is also the difficulty of keeping the plates from drying, especially in hot weather. The foregoing experiments prove that though the wet collodion image is subject to reversal in the same manner as a gelatino-bromide plate, an exposure of over a thousand times longer than would be required for a correctly-exposed negative is quite insufficient to produce complete reversal. Several experiments were subsequently made to produce a genuine positive with a wet plate, but none of them were successful, although the conditions of sunshine, subject, time of day, and fresh collodion were all in favour of the attempt.

Prints from a correctly-exposed negative, and from the solarised dry and wet plates, are given here. The extent of reversal in the wet plate can be seen in Fig. 3. J. I. Pigg, F.R.P.S.

A METHOD OF DETERMINING THE FOCAL LENGTH AND THE ABERRATIONS OF A PHOTOGRAPHIC OBJECTIVE.

II.

The accuracy with which the adjustment can be made when ascertaining the focal point (dealt with last week) is at least twice as great as it will be when a distant object is used. For, supposing the screen be moved to S_1 (Fig. 5), a short distance in front of F_2 , then the emergent rays will be slightly diverging, and after reflection at M will fall upon the lens as a diverging beam (Fig. 6), and will be focussed by the lens at a point S_2 behind F_2 . It can easily be shown that if the displacement be small, S_2 is about the same distance behind F_2 , that S_1 is in front of F_2 . Thus the image will be out of focus on the screen (which is now at S_1) by the distance from S_1 to S_2 , that is, by twice the amount the screen has been displaced.

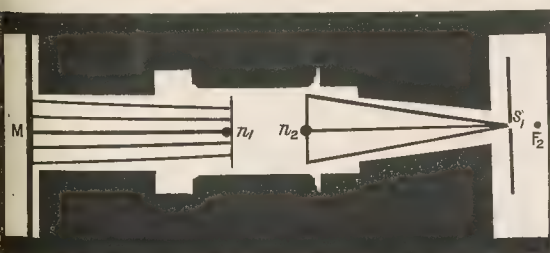


Fig. 5.—Course of Rays incident upon the Mirror M when the Aperture S is nearer the Lens than its principal focus F_2 . The emergent rays are divergent.

Returning to the cardboard model, it will be seen that, with the mirror in position, a rotation of the lens about any other point than n_2 will displace the image: and that in this

case, also, the displacement will be twice as great as when using a distant object, and therefore the position of n_2 can be found with twice the accuracy.

For when the lens is rotated about a point other than n_2 , such as C (Figs. 7 and 8) the ray F_2n_2 is altered in direction by

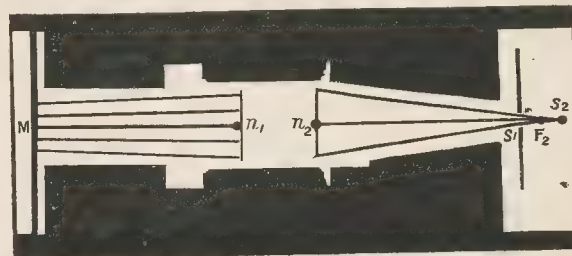


Fig. 6.—Course of Rays after Reflection in the Mirror M . The divergent bundle has been reflected as a divergent one, and this focusses at S_2 behind the principal focus F_2 .

the motion of n_2 , and therefore the emergent parallel bundle is altered in direction. This bundle, after reflection, will again enter the lens, inclined at the same angle to the normal, and

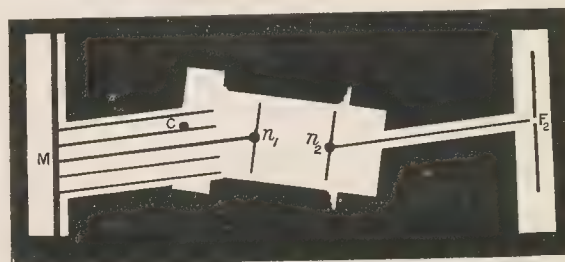


Fig. 7.—Course of Rays from F_2 to the Mirror M , when the Lens has been rotated about C .

will emerge from n_2 along a parallel line n_2P . Thus, F_2n_2P is practically an isosceles triangle, and F_2P is double the distance which n_2 has been displaced.

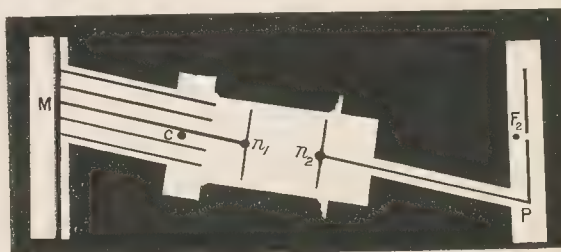


Fig. 8.—Direction of Rays after Reflection in the Mirror M . The image of F_2 is at P . The displacement, F_2P , is twice the displacement of n_2 .

But when the rotation takes place about n_2 , as the direction of the ray F_2n_2 is unchanged, the parallel bundle strikes M normally, for all positions of the lens, and returns without deviation, so that the image is fixed.

By measuring the distance from n_2 (the pivot) to F_2 (the screen), the focal length is at once found.

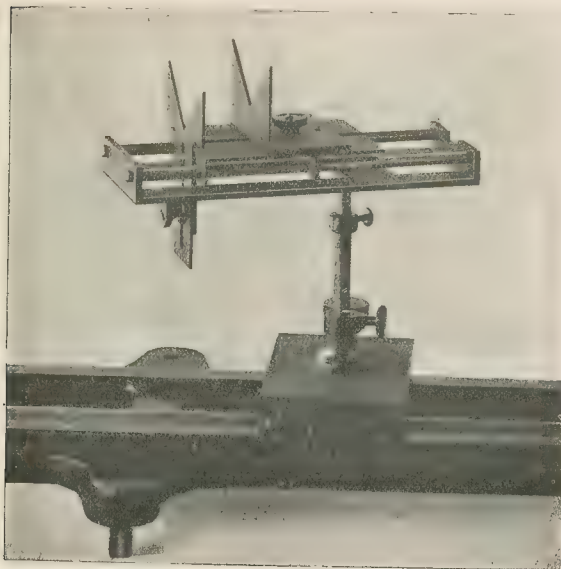
This can be demonstrated by means of the large lens, which

having adjusted the distances to obtain a distinct and stationary image, shows a focal length of 31.15-16 inches.

THE ABERRATIONS OF LENSES.

Spherical Aberration.—I will now show how the apparatus may be used, in a very simple manner, to measure the spherical aberration of a lens. When a beam of parallel light passes through a lens, the tendency of the lens is to focus those rays which enter the lens near its periphery, at a shorter distance than it focusses the axial rays. This defect is termed "spherical aberration."

I insert a small stop and focus the crosswires. The stop is then removed, a circular black card, of which the diameter is a little less than that of the emergent beam, is placed over the mirror and the screen is again focussed. The difference in focal length (i.e., the distance between the two positions of the screen), in the case of the lens before us is $\frac{1}{4}$ in. That is the measure of the aberration of this particular lens at this particular aperture (F.4).



Turntable to take any lens. The lens rests on two V's, adjusted horizontally and vertically respectively. The V's are attached to a carriage, which slides on two steel bars of a cradle; the latter rotates about a vertical axis.

Petzval showed that the aberration varies with the square of the aperture, and with the focal length. Thus the aplanatic coefficient can be defined by $A = \frac{s n^2}{f}$; where s is the above difference between the focal lengths of axial and marginal rays, and n is the "f number." As this lens is of nearly 32 inches focus and is working at $f/4$,

$$A = \frac{\frac{1}{4} 4^2}{32} = \frac{1}{8} = .125$$

The coefficient, as defined above, will be the same for lenses with varying focal length, and working at any intensity, if they are equally well corrected.

Astigmatism.—When light passes very obliquely through a lens, radial and transverse lines are focussed at different distances. This effect is called "astigmatism." Having explained the error by means of a diagram, I will show that it can easily be measured with this apparatus. A piece of thin zinc, in which

horizontal and vertical slits have been cut, is substituted for the slanting crosswires. The lens is turned through a large angle so that its axis produced would meet the screen at the point distant r from the slits. The screen is adjusted until the image of the vertical slit is sharply focussed and its position noted. It is then adjusted until the horizontal slit is sharp. The distance t , between the two positions of the screen, measures the astigmatism of the lens, at that particular obliquity. The astigmatism varies as the square of the obliquity, and directly as the focal length. Thus, to define the coefficient put

$$\text{Astigmatic coefficient} = T = \frac{t}{r^2}$$

In this case t is $\frac{1}{4}$ inch, and r is 10 inches. Thus T is

$$\frac{32 \times \frac{1}{4}}{10^2} = \frac{8}{100} = .08.$$

T , thus defined, is a true coefficient, for it has no "dimensions" and will, for instance, be the same for a series of lenses accurately constructed to the same formula, but of different focal lengths. It will be the same if the measurements are in inches or in centimetres (they must all be in inches, or all in centimetres, of course).

Curvature of Field.—Placing the lens once more with its axis normal to the screen and focussing the crosswires, a rotation of the mirror causes the image to travel across the screen. As the light falling on the mirror, and, therefore, also the light returned by it, is parallel, the image is always that of an infinitely distant object. Thus, if the lens have a flat field, the image should remain sharply in focus right across the field. It does not remain, however, sharply in focus, and at a certain distance r from the centre, the screen has to be moved $\frac{3}{8}$ in. before it comes into focus (the crosswires being at 45 deg. with the horizon, not horizontal and vertical, to avoid difficulties due to astigmatism). Let the distance the screen is moved be k , was measured and found to be 8 in. Then the curvature coefficient can be defined thus—

$$\text{Curvature coefficient} = K = \frac{f k}{r^2}$$

$$\text{In this case } K \text{ is } \frac{32 \times \frac{3}{8}}{8^2} = \frac{3}{16} = .18.$$

I would point out, however, that as flatness of field is only of importance in copying, it will be fairer to the lens to measure the coefficient for "copying the same size" than for parallel light.

Chromatic Coefficient.—By inserting behind the aperture in the screen coloured solutions (iron sulpho-cyanide and ammoniacal copper sulphate, for red and blue respectively) the chromatic aberration can be measured. The coefficient is $C = \frac{\Delta}{f}$ where Δ is the difference in focal length for the two colours.

REG. S. CLAY, D.Sc.

A VIKING Magnifying Glass.—At the recent visit of the German Society of Anthropologists to Stockholm (according to the "Standard's" Berlin correspondent), the theory was put forward, for whatever it may be worth, that an object in the Historical Museum may have been used by the ancient Vikings as a magnifying glass. On the German men of science being shown some beautiful gold and silver filigree work, Professor von Förster, an oculist, expressed the opinion that the fixing of the little grains could not have been performed with the naked eye. This led to the Museum authorities producing an exhibit belonging to a Gothic discovery at Wisby in 1877. On close examination this proved to be a piece of rock crystal about two inches in diameter, half-spherical in shape, the side underneath being slightly convex, which was capable of magnifying objects to twice their size. The glass was found with two small folding scales and a set of weights, such as were used in the time of the Vikings for weighing gold and silver.

NEW ORDNANCE SURVEY MAPS.

REPORT of the Ordnance Survey to March 31 last was issued the day last week as a Blue-book. From it we see that a great advance in small-scale work of the department has been made, and several small-scale maps have been completed; also that good progress has been made in the revision and re-survey of the 25 in. and 6 in. scale maps. The last of the 1 in. outline maps of Ireland has been published, thus completing the revision of the United Kingdom and making available for the public a 1 in. map of the United Kingdom on one uniform system. What will probably more interest tourists, photographers, and cyclists is the issue of small-scale maps folded in covers, and printed either on thin, tough paper, or on thin paper mounted on linen, has been considerably extended. We are pleased to learn that a new method of folding in covers has been introduced which enables the map to be referred to without the trouble of opening it fully. This is a great convenience when on tour.

It may not be known to many of our readers that the maps issued by the Ordnance Survey Office are produced by photography, which, as the work shows, has been brought to a very high state of perfection at Southampton. The maps are first drawn on a large scale—towns, we think, on the scale of something like ten feet to the mile, small towns and villages on a smaller scale. These large maps are then reduced by photography to the smaller scales. But a little consideration will show that when the large maps are much reduced, the roads, lanes, footpaths, and the like, together with the names, will become so small as to be almost indistinguishable. Therefore in the smaller maps these have to be emphasised, the roads, lanes, paths, etc., made wider, while their relative widths must be preserved, and the names made larger. For example, a lane or path and its name which, if it remained as the reduction would make it, would be too small to be of much real value. This is remedied in a very ingenious manner at Southampton by what is there known as the "blue process." This process, it may be mentioned, is in no way related to the blue (ferrocyanide) process so generally employed by engineers and the like.

The Southampton blue method is this:—An impression from the zincographic map plate to be reduced is printed in a pale blue (actinic) ink which shows all the detail. Then the lines are traced over with a strong black ink, keeping outside them to the necessary extent; the same with lanes, paths, etc. In doing this the relative widths of them are carefully preserved, and instead of forests and woods, which, in the large-scale maps are represented by a large number of trees, only a few are put in according to the acreage. The lettering is also done on a larger scale so as to be readable, which would not be possible in the reduction. This work has been reduced to such a system in the Ordnance Survey Office that it is almost mechanical. When all this work is completed, the blue print with its black lines is photographed to the scale desired. In the copying, photography ignores completely—by reason of the actinic quality to the pale blue ink—the original blue print, and only reproduces the black lines in the negative. This process, if more generally known, might sometimes commend itself in other directions where reductions are necessary from large originals of line subjects—say, plans, and the like.

ISLE OF WIGHT Photographic Society.—The second photographic exhibition of this society will be held in the Medina Hall, Newport, I.W., on October 19 and 20. There will be six open classes, in which silver and bronze medals will be placed at the disposal of the judges, who are Messrs. F. C. Lambert, T. Perkins, and Colonel R. V. Malden. A gold medal will be awarded to the best picture in the open classes. Entry forms, etc., can now be obtained from the hon. secretary, J. Howard Burgess, 55, Pyle Street, Newport, I.W.

AMERICAN NEWS AND NOTES.

A DEMONSTRATION OF PHOTOGRAPHY IN COLOURS.—What is said to have been the finest demonstration of photographs in natural colours ever given in St. Louis took place recently in the German Pavilion at the World's Fair, when a representative of the Royal Polytechnical School of Charlottenburg gave an exhibition in the organ gallery. The demonstration was the same as that given before Emperor William of Germany.

EASTMAN KODAK COMPANY OF NEW JERSEY.—The usual quarterly dividends of $1\frac{1}{2}$ per cent. (being at the rate of 6 per cent. per annum (upon the outstanding Preferred stock, and of $2\frac{1}{2}$ per cent. (being at the rate of 10 per cent. per annum) upon the outstanding Common stock, have been declared by the Eastman Kodak Company of New Jersey, payable on October 1, 1904, to stockholders of record at the close of business on August 31, 1904.

MILTON WAIDE, the well-known "One Man Method" photographer of 164, Fifth Avenue, New York City, is about to launch a perfected system of teaching by use of mail and express companies. His method is intended both for professional and home window portraiture for amateurs. He believes his system of teaching will be practicable and thorough, and price of tuition will be within the reach of every one. The prospectus is now ready, and will be sent to any one on application. It contains valuable suggestions and half-tone illustrations of his novel print and mount effects. Mr. Waide uses exclusively artificial light developing papers.

PHOTOGRAPHY IN THE U.S. ARMY.—One of the recent developments that marks the growing importance of photography is its recognition by the U.S. Army, in which a corps of photographers has been established. "Wilson's Magazine" for August says: "Photography has for a number of years played an important part in connection with the movements of the army, but has only lately been officially recognised. Its importance in providing data for the engineers in mapping out a plan of campaign, or in laying out a line of march through hostile countries, can hardly be over-estimated. It is more than probable that one of the early developments in this kind of photography will be the introduction of the kite or balloon in conjunction with the camera. The field presented in the army manoeuvres for the practical use of the camera is boundless, and it is only a matter of surprise that it has not long ago been recognised as one of the necessary adjuncts to a campaigning army."

PHOTOGRAPHING A SHOP WINDOW.—I watched a man photograph a shop window the other evening, and his method interested me greatly (observes a writer in the "St. Louis and Canadian Photographer"). He first went inside, and with some tissue paper and a few rubber bands, gave each of the incandescent lights a jacket that reduced their intensity greatly, while cutting off but little of the light. An exposure was then made of several minutes' duration. The lens was capped, an assistant left to guard the camera while the tissue paper covers were removed, and then a second but much shorter exposure given. I went around and asked the proprietor to let me see one of the pictures, and they were simply fine. The method certainly looks very practical, and a few experiments should enable one to secure most pleasing results. A still better plan would be to secure the required number of ground glass lamps, but this would mean quite an outlay on account of the varying form of sockets and voltage of the currents.

A SIMPLE EXPERIMENT.—An amateur came to me recently with a negative he had been spotting, and on which he had

made a rather mussy job, writes Fayette J. Clute in "Camera Craft." He had been using his colour in too liquid a form. The first thing to do was to remove his work, which was done by soaking the negative in a tray of clear water, and occasionally passing a tuft of cotton over the surface. By the time his spotting was all removed the film was thoroughly softened. Noticing that the negative was on the weak side, and also wishing to save time, I blotted off all surface water by placing it between the folds of a towel, and then held it pretty close to the gas-jet to dry—in fact, so close that it became pretty warm. My friends protested that I would melt the film—he had tried the same thing with disastrous results. The film did not melt. The truth of the matter is, that a negative once dried and again softened in water will stand during the second drying an enormous amount of heat. What is also interesting is the fact that a negative so treated improves in contrast much as does one subjected to the regular methods of intensification. This is not so much due to the second wetting as to the drying of the negative so rapidly. Try the experiment with a waster by thoroughly wetting one end only, and then drying it rapidly. A print from the entire negative will tell the story. I believe a repetition of the treatment will still further improve a flat negative. The same rule holds good with the original drying of our negatives.

THE CAMERA AS AN AID TO WRITERS.—In these days of the illustrated magazine, a camera is almost invaluable to the writer, remarks Campbell B. Caesar in "The Photographer." The illustrations will oft-times sell an article, even when the text is not up to the mark. Good photographs always hold the editor's attention. This statement holds good not only with illustrated articles, but in fiction as well. In what way can a story be more realistically illustrated than with photographs? Another market for the amateur photographer may be found in the many photographic contests which are frequently announced in the principal pictorial magazines and newspapers. The prizes, in some instances, run as high as one hundred dollars or more; and even if your contribution fails of winning the offered premiums, if it is good it will probably be purchased at a fair price. Again, an editor often accepts a manuscript on condition that the author secure illustrations. The result is that, lacking a camera, he must spend half a day seeking a competent newspaper photographer, and must pay him a considerable part of his profits on the story for taking the photographs. The cost of illustrating a single article in this manner is sometimes more than large enough to cover the cost of a good camera. The size of camera most useful for practical work in this line is the 4 by 5 or 5 by 7, preferably the latter. The cost, anywhere from a few dollars to two or three hundred. Two weeks' time, together with a fair amount of intelligence, will give one the necessary skill in using the instrument. Until all the minor details of photography, such as developing, printing, and so on are mastered, the local photographer will develop and print the work for the modest sum of from six to ten cents each. Excepting the typewriter, surely the camera is the most useful mechanical appliance the writer can have.

HOW AFRICAN ABORIGINES AT THE ST. LOUIS FAIR TREAT PHOTOGRAPHERS.—There was uprising of the African pigmies at the Fair last week, and bloodshed was narrowly averted, says the "Photographer" (New York). They attacked a photographer who had taken a picture of them. One of them drew a knife, and several picked up rocks. They were driven back into their kraal by the Rev. S. P. Verner, who brought them to the Fair. Bert Underwood, president of a stereoscopic view company in New York, negotiated with the pigmies for a photograph, through Bogobo, their interpreter, and they agreed to pose for

a nickel apiece. As there were seven, that meant thirty cents. Mr. Underwood paid the price, and got ready to take the picture, but they balked, and made him pay them another thirty-five cents. Mr. Underwood then took the picture, and his assistant picked up the camera and a short ladder which he had used, and started away. Before they had gone twenty feet the pigmies decided that they had been too easily headed by Bogobo, they went, yelling, after the photographer. Overtaking him east of the Trading Post, they seized the camera and ladder and tried to tear off his coat and take everything they could lay their hands on, all the while clamouring for more money. When the money was not forthcoming Archibald, the little cannibal, drew a dangerous-looking knife and some of the others picked up stones. Mr. Underwood broke away from the band of howling Africans, and turned back toward the kraal, looking for somebody who had control of them, and could protect him from them. He found Mr. Verner who had been a witness to the compact, and appealed to him. Mr. Verner said the agreement had been that they would be photographed for five cents apiece, and he compelled the pigmies to go back to their enclosure. Mr. Underwood says the savages were instigated and led by Bogobo, the educated African, who acts as their interpreter. There have been several similar outbreaks, in which the Africans have used knives and stones to intimidate photographers into giving them money. Complaints have been made against their conduct, and promises have been made that a guard would be stationed at their kraal to protect visitors from them. It is feared that unless they are restrained they will sooner or later attack a white man who will fight, and blood will be shed.

TREATMENT OF THE NEGATIVE BEFORE PRINTING.—A great deal may be accomplished by working on the back of the negative, and there are several ways of doing this. In "The Camera" for August various methods are suggested. A varnish or collodion containing a very little yellow colouring matter (for instance, alcoholic tincture of turmeric) may be poured over the back of the plate if there are large portions of the image too weak to print well, while those corresponding to the denser parts of the plate are scraped away so that they may not print chalky white. Another method, and perhaps a preferable one, is to cover the back of the negative with tracing paper—"papier minéral,"—or onion skin. This paper has a non-uniform structure, different from the ordinary tissue paper. It is cut into pieces the size of the negative, and slightly dampened on both sides with a clean sponge. A narrow edge of paste, say $\frac{1}{4}$ in. wide, is to be applied to the borders of the glass side of the negative, and the wet tracing paper brought down so that it will adhere by its edges only. Care must be taken not to smear the paste either on the negative or on the paper, as it would render the parts touched unequally transparent. The paper, too, must be laid down evenly, and not drawn too tight, otherwise when dry it will be puckered. If well done the paper, when dry, will be perfectly smooth and tight, and will be in just the right condition to be worked upon with an artist's stump. Let us suppose that we have a landscape negative to deal with, which presented a foreground with good though weak, detail, distance perfect, and sky entirely too dense to give effect of atmosphere. After getting the paper on we would fill the small end of the stump by rolling it in the powdered crayon, obtained by scratching down a soft black crayon with a knife. We should now apply the stump with its heavy charge of black dust first to the sky, so as to make it entirely non-actinic, and to prepare it for subsequent introduction of printed-in clouds. As the tracing paper receives the lead best at the first touch, we should follow the distance with great care, and renew the crayon powder whenever the stump refuses to give a good black mark. The rest of the sky should be filled in without any great caution, save that

making it perfectly dense. The stump, which we will suppose exhausted, or very nearly so, might now be very slightly tied to the paper over the weak, thin parts of the foreground, and the work equalised either with a ball of cotton on the tips of the fingers. It must be remembered that, over the parts of the negative, such as the half-tones, and the transparent parts in general, the stump-work has great draining power, and will appear prominently in the print unless properly managed. Beginners would do well to have a piece of sensitised paper ready to try the effect before setting the negative aside as finished.

NOTES ON RADIO-ACTIVITY.

II.

ESTIMATION OF ACTIVITY.

The time occupied by uranium to discharge an electro-negatively charged electroscope is noted by a watch and is designated "unity," a telescope and micrometer scale are necessary for the purpose. The instrument is simple and reliable, avoiding an elaborate and costly mechanism. It consists, as you observe, of a wooden framework, with glass back and front, one side being ground glass. In the centre is a simple, improvised electroscope. A positive charge is recorded the leaf by the aid of a camel's-hair brush. We now note how long this charge will remain; usually it will do so for a day or more. Markings are made on the ground glass at certain intervals, on bringing a known weight of pure radium bromide, preferably in a metal box, to within a distance of a yard, we note the time taken for the leaves to fall. Then if a pure sample causes the drop in sixty seconds it follows that the same weight of another specimen doing the same work in 120 seconds is only 50 per cent. pure, and so on. By this method the β and γ -rays are not measured directly (the γ -rays do not come in at all, as they do not penetrate the metal box). What is measured is the ionisation of the air produced by this 1 per cent. of the total radiation.

Either the impact of the negatively charged corpuscles or β rays (electrons) or the sustained agitation resulting from the γ -rays (ether vibrations) render the air electrically conducting, and thus the charge leaks away in proportion to the rays producing the ionisation.

POLONIUM.

Soddy claims that Markwald's radio-tellurium is identical with polonium. Markwald obtained, he says, only 4 Mgm. of his radio-tellurium from eight tons of pitchblende, and he says this body does not decay. I think Soddy has vindicated his position; Markwald should have done better not to rename Madame Curie's polonium. Madame Curie states in her thesis that a specimen of bismuth-nitrate containing polonium lost half its activity in eleven months. Its radiation is propagated only 4 to 6 Cm. in air.



SCINTILLOSCOPE.

By employing a glass screen of zinc sulphide, as suggested by Rutherford, the scintillations from this α -radiation produce a good effect on a black ground. There is no diffuse lighting, as in the case of a spintharoscope. It is possible to view the actual bombardment on pitchblende itself. Very thin films of gold, silver, of mica and celluloid allow these rays to pass. By using this screen and a revolving wheel, Glew found the duration of a scintillation to be less than 1/50,000th of a second. These polonium discs may be coated with a celluloid film to protect them, which is washable and sterile, e.g., in therapeutic use.

¹⁸ Gw., P.J., 1/1904, p. 440.

¹⁹ Archives Roentgen Soc. ety., June, 1904.

BLONDIOT'S RATS.

In abstracting all the recent work on this subject I have come to the conclusion that the effects described are in all probability subjective or due to warmth, or to the changing activity of the eye in the dark, or to the natural decay of the sensitive calcium sulphide.

RADIO-ACTIVITY OF THE AIR.

It has been demonstrated that the ground air is often radio-active, the supposition is that substances producing a radio-active emanation similar to that of radium are distributed among the constituents of the soil in question. It may be mentioned that a large boiler full of ordinary atmospheric air was kept closed for six weeks; the air was then examined without any activity being found to have developed, confirming the view that it probably comes from the soil in all cases.

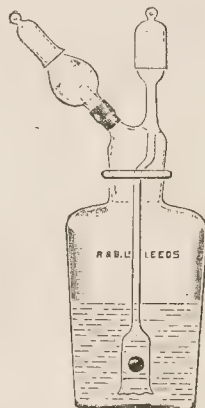
RADIO-ACTIVITY OF MINERAL WATERS AND MINERALS

The activity of the gas collected from the source of Buxton water was found to fall to half value in about three and a half days (the corresponding time for the radium emanation being 3.7 days, Rutherford). It has been suggested that the gas thus collected might be employed therapeutically.

Strutt¹⁸ read a paper before the Royal Society dealing with this matter, and the examination of minerals for radio-activity. His method for the latter is simply to heat the mineral in a crucible and to examine the rate of decay of the emanation evolved. The results he claims are definite, and can be obtained by working on small quantities. A mineral called monazite, from Norway, though containing no radium, yielded helium in fair quantity.

Bath water contains a large proportion of sulphates; radium sulphate is probably soluble only to the extent of about 1 in several hundred thousand parts of water. It follows, therefore, that the radium is found here chiefly in the deposit and not in the water. It was calculated roughly that 0.5 Gm. of radium is deposited per annum, the total deposit of mud, etc., being about 500 (500) kilos. per annum. The volume of gas yielded is about 100 cubic feet per diem. This had been previously found to contain helium to the extent of 1/1,000th of its volume, i.e., 3 litres per diem or 1,000 litres per annum. It is concluded that the proportion of this "end product" to radium is about of the same magnitude as in the radio-active minerals. The spring probably draws its supply from minerals of this nature. Droitwich brine¹⁹ on boiling yielded a radio-active gas, and Russian mud baths possess²⁰ radio-activity, and have an inhibitory action on bacterial growth.

A new radio-active mineral from Ceylon was examined by Dunstan, and independently by Ramsay, and the latter found it very rich in helium.



THORIUM EMANATION INHALER.

¹⁷ Elster and Geitel, *Nature*, December 17, 1903, p. 154; March 10, 1904, p. 441.

¹⁸ Strutt, *Nature*, March 17, 1904, p. 473.

¹⁹ L., 1/1904, 1010.

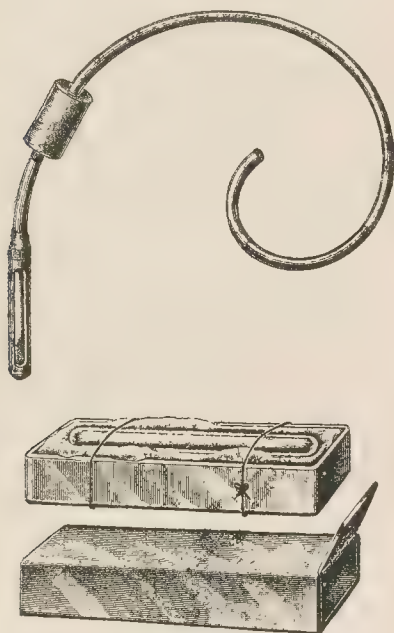
²⁰ L., 1/1904, 675.

THERAPEUTIC USE.

The fact that radium rays penetrate both bone and flesh to an equal extent has up to the present prevented its use for skiagraphic purposes, and there is, in addition, the difficulty of the irritation which may be produced on the part or the body during such process.

The β -radiation has an inhibitory action on many organisms, e.g., that of typhoid, anthrax, diphtheria, *B. coli*, and many others. Bacterial colonies exposed three days to the β - and γ -rays emitted by 10 Mgm. of radium bromide, and removed to a photographic plate, affected the plate even through a double layer of lead foil.²¹ The extraneous micro-organisms in vaccine lymph may be killed off by the aid of the radiation.

Sir Oliver Lodge inclines to the opinion that radium for medical purposes will replace almost every other source of radiation. He believes the beneficial action on rodent ulcer is due to the oxidising power of air ionised or ozonised by the rays; this, he concludes, is the reason why deep-seated cancer has not as yet been benefited. What is necessary is potent oxygen, produced, for example, by injecting hydrogen peroxide and rendering the latter active by penetrating rays. The oxygen must be in an unstable form such as



RADIUM APPLICATORS (McLEOD)

exists in arterialised blood. If this is not the healing factor it remains to be found out what is the actual cause, and to introduce this factor as near as possible to the diseased part.

You will be aware that the thorium emanation²² has been tried in phthisis, and it appears that this has bactericidal properties, and some satisfactory results are recorded.

McLeod²³ has tried radium in lupus vulgaris, both the nodular and verrucose varieties, rodent ulcer, epithelioma, and in two cases of cancer of the cervix uteri. Reports of these last two important cases are still pending. He is convinced the β -rays have the inhibitory effect on bacteria, and, readily passing through glass, have the chief therapeutic value in addition.

It would appear that the rays, like the X-rays, are cumulative in effect, causing a cellular degeneration of weakly resistant diseased cells, and this, having reached a certain degree, an inflammatory reaction is secondarily produced, and as this occurs in impaired tissue an indolent ulcer is the result.

In rodent ulcers radium acts like a charm—it has been found a valuable adjuvant to the Finsen light and X-rays, and on account of its small bulk it is useful in positions difficult to get at, such as the eyelids and the mucous membrane of the nose. Other workers have used radium in psoriasis, epithelioma of the orbit, orbital neuritis, acute iritis (relieving pain), and in superficial malignant diseases, disappearance of growth, and in cancer of the breast with relief of pain.

MacIntyre²⁴ has reviewed the recent work on X-rays and radium and is of opinion that polonium may have importance therapeutically. He tried radium in a sarcoma of the neck by introducing it in quantities to the interior of the deeply-seated diseased tissue.

Reginald Morton²⁵ confirms the therapeutic utility of radium. Two cases of cancerous throat are stated by Walsh and Morton to have greatly improved under the rays. The glass tubes, as suggested by Mackenzie Davidson, are undoubtedly the most satisfactory, as they obviate the moistening resulting with mica screens; applications are made for half an hour every second or third day according to the activity of the radium.

THE RADIUM ELECTROSCOPE.

I have here an ingenious little mechanism showing radium work. This instrument, a modified form of that devised by Stieglitz, has a tube of radium supported *in vacuo*. The electro-negative rays penetrate the glass, thus leaving a plus charge behind which causes the attached aluminium leaves to diverge. When the leaf touches the side of the vessel which is connected to earth it lapses and commences to charge up again.

It has been arranged by Glew²⁶ to ring an electric bell at contact—a coherer, as used in wireless telegraphy, is actuated each discharge as you have heard. A description of the coherer and other parts of the instrument may be found in the "Photographer's Journal" and in "Nature" for July 14 last.

W. HARRISON MARTINDALE

THE FAILURE OF AMERICAN PHOTOGRAPHY AT THE ST. LOUIS EXPOSITION.

[On August 19th we promised Mr. Alfred Stieglitz, who writes on the subject, that we would reprint his projected reply to an article from "The Photographer," of New York, that was reproduced in these pages, dealing with the causes of the American photographic fiasco at St. Louis. We append Mr. Stieglitz's reply to Colonel Ockerson. The matter, however, is not one that can further be pursued in these columns.—Eds. "B.J.P."]

COLONEL OCKERSON'S statement regarding his correspondence with me does not exactly fit my recollection of that correspondence. Were I not 4,000 miles away from home, seeking rest and recuperation, I would gladly send you copies of the entire correspondence in order that your readers and the photographic world at large might have the opportunity to judge for themselves what Alfred Stieglitz, director of the Photo-Secession, actually demanded when approached by the managers of the Liberal Arts Department to lend a helping hand in making the pictorial photographic section at the St. Louis Fair a success. Could not Colonel Ockerson produce this correspondence in view of my absence? I shall give you the substance of the request made by me in reply to letters received asking me to help the photographic section. It must be remembered that before I had been approached directly a year had elapsed, during which the photographic press and various photographic organisations had helped to make a seeming mess of things, that Mr. Caffin had in the "International Studio," a year before, warned the St. Louis authorities that the best American pictorial photographers would not accept the terms as originally proposed by the St. Louis management, and would stand aloof, etc. That all history to those photographers who are really interested in the matter and have followed the course of events. In reply to Colonel Ockerson's letter calling on the Photo-Secession to participate in the Liberal Arts Department exhibition, I wrote fully to him explaining the aims of the Secession and what it had accomplished.

²¹ P.J., 1/1904, 722.²² L., 1/1904, 1121.²³ L., 1/1904, 1336.²⁴ B.M.J., 1/1904, 933.²⁵ B.M.J., 1/1904, 941.²⁶ Glew, Nature, July 14, 1904, 246.²⁷ Photo. J., 1899, p. 179.

ad, and that in order to remain true to itself it would have assist that the St. Louis authorities invite it as a body to send collection, such collection to be submitted to the National Jury artists; and that such photographs as might pass that august be hung in the Fine Arts Building and the balance in the al Arts. Further, that some photographer be added to the of artists for the purpose, and, realising as I did that some of painter-jurors might construe this as an insult, and not wishing seem uncompromising or to throw unnecessary obstacles in the of those whose road I knew was obstructed with all sorts of acles, I suggested that either Mr. Steichen or Mr. Eugene, both ters of repute, and both first-class photographers of fame, would satisfactory. At this time I had no idea that Mr. Steichen, a later, would be invited to send two of his paintings for exhibi- at St. Louis in the Fine Art Department *without submission any jury whatever*. Here you have proof positive that not anything had to go before a jury, even if the United States Steel acquiesced—in theory. Naturally, and as I expected, my test was not accepted. The declination was couched in very illiatory terms. I was assured that all that was possible would done for pictorial photography; that for this reason and that, demands could not be acquiesced in; but that I should, never- less, do my utmost to help along. Being more than desirous to American photography well represented at St. Louis if that could accomplished without loss of self-respect and entirely giving the principles for which the Secession stood, I then wrote to nel Ockerson and asked that a written guarantee be given that east one picture be hung in the Fine Arts Building. Being of aspicuous nature—a child, having burnt its finger, is wary of I wanted the assurance in writing. In reply I received a munication assuring that there would be more than one photo- h—many, in fact—in the Fine Arts Building. As this com- ication did not come from Professor Ives, but from Colonel erson, I still was not satisfied. That my attitude was correct roven by what ultimately happened. And please remember I also assured Colonel Ockerson that I was simply talking for Secessionists; that the photographers at large apparently did believe in my principles nor in my methods; and especially in mind the fact that I did not insist that the one picture was e a Secessionist one, but *any* satisfactory to the National Arts y; and that if given proper guarantee I would even at that date assure the Liberal Arts Department of a large Photo- sion collection that could be hung wherever the management of Fair desired! At the same time I positively refused to have thing to do with any secondary jury of photographers, as that too childish and undignified to consider. This is the gist of correspondence, not the exact words, as I have not the letters h me. It must also not be forgotten that I took a similar tion in regard to the World's Fair in Chicago, 1893, and Paris, 0, in connection with which exhibitions I had been approached arrange collections of American pictorial photographs. My fight been for the recognition of pictorial photography, and I have n fighting for twenty-two years and have not swerved an inch. I designated me, in your valuable columns, as "dictatorial." hom have I dictated? To those few who have voluntarily here about me? And have not the photographic organisations, n—the one thousand and one—and the photographers—the 00,000—supported the St. Louis Exhibition? Surely they were subject to my dictation. Why is it, I would like to ask, that just here seems to be a tendency on the part of certain elements in photographic world to lay every failure at my door? I might e add that for the very causes that made St. Louis what it is, Secession will stand aloof from supporting the Salon announced New York this winter. Enthusiasm and ignorance combined dangerous foes to that recognition for which we are battling— friends, unconsciously sham, are its bitterest enemies. And for the English Collection, permit me to call your attention to fact that the *British Government* appointed three "Linked ng" members to arrange it—sent one of these men to hang the ibition; that the British Government has appointed a fourth "Linked Ring" member as International Juror; that the whole ense is borne by the Government. Also remember that Great ain has hundreds of well-organised, active photographic societies amongst these the Royal—yet that it has not demanded that h organisation appoint a judge and that the general body select

the pictures. None of that sort of red tape and playing to the gallery, so as not to tread on any one's toes! And because the British Government handled the question in a dignified manner, the results are dignified and the collection what it is. And how much mud-slinging has there been at the "Linked Ring" for having undertaken the thankless job? Practically none! Imagine the case transplanted to the United States! And also note that in this "Linked Ring," this select body of photographers, some fourteen Secessionists are enrolled.

If it is thought that St. Louis is conclusive proof that the United States plays a secondary role as compared to Great Britain, it might be well to address Messrs. Annan, Evans, Davison, Warburg, Cadby, of England; Demachy, of Paris; Henneberg, Spitzer, and Kuhn, of Austria; Juhl, Matthies-Masuren, of Germany; all authorities upon this question."

SIMPLICITY.

THERE is a peculiarly strong charm attached to the simple. What it is due to it is hard to say. Probably not to one characteristic, but to several. One may lie in the fact that the simple, being the exceptional, acts as a foil and contrast to the major amount of the involved and complicated in life. This appears to be borne out by the simple being more particularly appreciated by those of higher mental powers and social position, who ordinarily have more to do with the intricate, the many-sided and detailed. On the other hand they whose every-day problems are simple, and not complicated by side issues and qualifying considerations, are attracted rather by the involved and complicated. The character of the arrangement of a workman's house, for instance, is very different to that of his master's, if the latter be a man of taste and education. In the former there is an excess of detail. Admiration of the complicated and involved is shown in the pattern of the wallpaper, the abundance of detail and variety of colour in the pictures upon the walls, in the minute elaboration of their moulded or fretwork frames, and in the clustered ornaments upon the chest-of-drawers. It is very conceivable that a man who has spent his day engaged in one monotonous kind of work, watching the uniform travelling of a self-acting planing machine, a drill piercing the same-sized holes in a plate of metal, or turning out by hand the same portion of a boot over and over again, may find pleasure and rest in turning his eyes when the day's work is done upon something involved and intricate. It balances the mind, as it were. For the same reason, he whose day's work has been amidst the involved calculations of the engineer's or stockbroker's office, or who has had to attend to the multiplicity of varied demands in the management of a works or factory, would probably crave for the balancing effects of contrasted simplicity. His front lawn is a restful expanse of plain grass, and not split up into fragmentary flower beds bordered by oyster shells, the walls of his rooms are papered or painted in one plain and subdued colour, and the pictures do not compel immediate attention by vividness of colour, assertion of detail, or elaborateness of frame. In short, a wise simplicity prevails.

Applying these considerations particularly to photographic pictures, those loaded with detail please the one order of liking, pictures with restful lowering of detail and suggestive spacing please the other. One is of the lower, and the other of the higher order of taste and intelligence. A ready and fair test of taste—generally, although not invariably a matter of education, conscious or unconscious—can be gained by noting the amount of accessories, and character of background that the subject elects to have in the picture when being photographed himself. One will have as much, and the other as little as possible. There is no reason why the sitter should not have all he wants. It does not cost a scrap more to anybody. The professional wisely recognising the line of least resistance to the amplest amount of business, gives, as a matter of fact, as much as he reasonably can. He does not keep his studio open to teach high canons of taste, but to increase his banking account. The non-professional worker, however, is not bound down by such considerations, and has the opportunity of following a higher line. In doing so, it will be found that it is in meeting the unconscious craving felt by those of higher mental calibre and taste for certain broad qualities that the success will be gained which stamps a picture with highest merit. This goes far above mere kind of work, and can give character to all kinds. Simplicity is one such quality. It may be expressed in por-

traiture, landscape, seascape, 'architectural' work, animal studies—anything in short. Wherever expressed it elevates result. It requires something beyond a knowledge of photography to do this. Indeed, it is questionable whether over attention to the photographic side does not tend to cripple effort. It is so much easier to take a photographic picture than not to. The charm of the sparkle of the picture upon the screen is oftentimes irresistible. It overcomes thought of deeper purpose, and even of consideration of how much of its glittering quality it is possible to catch. It cannot be caught we find when too late. The river does not flow in the print, nor the wave break. The glowing sand becomes mud, and even the sunshine is only a flare of white. The result is a slight feeling of disgust at the limits of photography. This would be less marked, and give greater stability to effort, if work were less emotional and more marked by purpose and thought.

The inability to express fully also applies to the picture with lowered detail in the effort after simplicity. Photographic limitation has to be accepted, but the less the detail, the less room for technical fettering. If the quality of simplicity be aimed at, there should be careful selection for the special purpose. The charms of the merely pretty that tempt photographic workers so powerfully should be particularly avoided—for this special purpose, that is, for nothing is said against pretty things, but everything for them, in their place. But to appreciate the comparative worth of broad natural simplicity and mere prettiness, let the reader think for a moment which of the two types has made the deeper impressions upon him in life. Is it the pretty fairy glen, containing the crushed up wealth of pebbly brook and overhanging tree, of rock half-concealed by fern, and rustic bridge; or the plain expanse of moor, with the road soon lost in its suggestive breadth, spite of its first bold strike forward in the foreground? When the mind of a man gets into its half-thoughtful, half-dreamy state, does it dwell upon the former or the latter? Upon the pretty rose-covered cottage, or the simple and rugged mountain side? Upon the polish, glitter, and varnish of the assembled yachts on a summer's day in a picturesque home cove, or upon the rough, plain trading brig on a distant and solitary sea? To fill up the measure of the argument, which is the more truly and lastingly attractive, and which wears the better, a pretty wife or one gifted with some of those broad qualities that confer the adornment of true simplicity? It is not contended that many other important factors do not figure in determining liking in such cases as those instanced. But whatever the emotions, if they are strong, they are certain to be characterised by simplicity. Deep emotions respond most readily to simple means. The stately simplicity of biblical language is a ready instance to the point. The same applies to pictures, whether produced by the brush or the camera. One great advantage of the brush over the camera is that it can express less—in other words, be more simple. The contention would thus be that the effort should be to express as little as possible, but of the right kind. The best means is, naturally, by selecting carefully the subject, and, in the case of portraiture, by giving as little accessory, and as plain a background as possible. Material further aid might probably be gained by such manipulation as that referred to in a recent article in the JOURNAL, under the title of "Mental Equipment," in which the possibilities were put forward of blotting out undesired detail in a print by the use of Chinese white, strengthening desired strong features, and then rephotographing the worked-up print—the process of the block-maker, in short, used by him who took the first negative, and who, presumably, had the truest conception of and feeling for the subject.

A CINEMATOGRAPH Mischief.—The second "house" at the Gaiety Palace, Birmingham, ended most unfortunately on Monday night. As a rule the programme concludes with an exhibition of cinematograph pictures, and on Monday night, just at the outset of this exhibition, the apparatus caught fire. There was a sudden flare up and a buzzing sound, and, as may be expected, these unusual occurrences caused much excitement among the members of the audience. The specially erected box which contains the apparatus is situated at the back of the pit beneath the gallery, and the occupants of the pit were the first to realise what had happened. There was a hurried rush to get outside the theatre, and some one foolishly cried "Fire," which spread the excitement to other portions of the house very quickly. Fortunately the result was not so serious as might have been the case. It is a tribute to the excellence of the Gaiety exits that the pit was cleared in about two minutes.

New Book.

"Three Colour Photography." By A. F. Von Hübl. Translated by H. O. Klein. 148 pp., illustrated. Published by A. W. Preece and Co., 109, Farringdon Road, London, E.C. Price 3s.

The introduction to this valuable book takes the form of a review of the principal methods of colour photography that have been introduced since the time of Becquerel, Seebach, and Poitevin. In reference to the trichromatic system of reproducing colour the conclusion is arrived at that "the problem of colour decomposition by photographic means can be considered as solved, as by employing different sensitisers and light filters the conditions of sensitivity can easily be regulated, but the recomposition of the three-colour pictures by means of printing leaves much to be desired. Especially the production of the photo-mechanical printing surfaces is not certain if a very accurate reproduction of all the delicate gradations is wanted, and also the printing process itself lacks that uniformity which three colour printing requires." Our author here expresses to what has for years been regarded as the weakness of trichromatics. Photographically it is a perfect system—though to say, up to the production of the negative and a few special prints. After that the falsification of the rapidly moving printing machine steps in, and, as we recently saw in "The Spectator," the chromatic renderings of coloured objects are the despair of those in whom the sense of colour exists to an acute degree. So well it will continue to be whilst the exigencies of money making demand long runs quickly executed. The first part of Von Hübl's book touches somewhat exhaustively of the undulating theory of light; of light; the theory of colour sensation; body colours and dyes; stuffs in their mixtures; and other somewhat more abstruse branches of the main subject. Running into some 50 pages, this part of the volume forms a fairly complete treatise in itself. In Part II. the author has set forth in some detail the theory and practice of three-colour printing. Forty pages are devoted to sensitisers, colours for finished print, and light filters, and in the remaining section of the book the actual practice of three colour printing receives attention. It is here, perhaps, that the photographer who would attempt the production of three colour negatives will find the book of greatest service, inasmuch as the most suitable solutions, plates, lenses, etc., are specifically mentioned—indeed, the information appears to be most minute in every detail. Very little is said of the actual block making, but printing and the inks therein used are discussed. There are many diagrams, colour charts, and other illustrations in the book, which obviously embodies so much that is valuable in connection with the theory and practice of trichromatics that it will probably be some time before it is displaced as the principal work of reference of its kind. The translation appears to be extremely well done, although here and there, if Mr. Klein will pardon us for saying so, some obscurity and ponderosity of expression are discernible. This is an appreciation rather than a criticism of a laborious piece of work the main features of which it is our immediate object to present to the reader.

SOLAR Photography.—At the recent meeting of the British Association at Cambridge Dr. W. S. Lockyer described in the cosmical physics sub-section the work done at the Solar Physics Observatory with the new instrument known as the spectro-heliograph, but recently by means of a special Government grant at a cost of £1,000. The operations consist of mono-chromatic photographs of the sun's surface and surroundings in the light of a particular element. Up to the present the calcium or K line of the spectrum has been used. Some of the results were remarkable, as showing the amazing force at work on the sun's surface. Thus a photograph taken on July 1 of this year indicated enormously rapid changes which the prominences on the limb undergo in comparatively short intervals of time. One prominence on this date in an hour's time changed from 160,000 miles in length to 96,000 miles, while its height increased from 50,000 to 60,000 miles in the same time. On July 2 an enormous prominence 192,000 miles in length grew to 216,000 miles in five hours. At the same time its height changed from 55,000 to 60,000 miles.

New Materials.

Barnet Orthochromatic Plate (Yellow Sensitive). Manufactured by Messrs. Elliott and Sons, Ltd., Barnet.

We recently drew attention to these orthochromatic plates made by Messrs. Elliott and Sons, and since then have had a fresh sample submitted to us of the "Backed" series. We find the backing that is used gives ample protection from halation, and we think that those photographers who incur the slight additional outlay will not readily turn to unprotected plates. We have had the opportunity to place these plates in the hands of Dr. Lehmann, of Munich, who has given the following report of their orthochromatic properties. For this purpose they were compared with one of the best German orthochromatic plates, which sells at about twice the price of Messrs. Elliott's manufacture: "The tests were made with a grating spectroscope of aperture 1 to 8, the width of the slit being .17 mm. and the dispersion about 12 deg. The weather was very dull. The sensitiveness yellow-green was about equal in both plates, but that of the Barnet extended rather further in both directions—i.e., into the red and violet, and with an exposure of 18 secs. the D line was visible. The sensitiveness for blue-green was greater in the Barnet plate, and from F to H it was nearly even throughout, whereas the German plate at H, between G and H, showed a pronounced maximum. (This is especially visible with 2 and 6 secs. exposure). The Barnet plate appears to be, however, much more sensitive, which I infer from the fact that it develops much more quickly. Both plates were free from grain. In practice, they should be of about the same effectiveness, but I would recommend a rather deeper screen for the Barnet, if such is used, but it should be of the paler varieties. Both plates may be used, without a screen, under circumstances, with effect."

Our experience of the Barnet plate in the camera has been most satisfying. It is rapid, easy to use, and of excellent colour sensitiveness for landscape work.

"Geka" Photographic Chemicals and Preparations. Sold by Messrs. A. E. Staley and Co., of 19, Thavies Inn, Holborn Circus, E.C.

We have received particulars and samples of the "Geka" photographic chemicals and preparations from the photo-chemical works of Dr. G. Krebs, Offenbach-on-Main. Messrs. Staley are the sole importers for Great Britain and Ireland of these productions, which include in the series we have seen practically everything chemical that the photographer finds necessary, from most efficient flash powders, etc., to mountant for the finished print. The developers are all neatly put up in glass tubes, and sample sets of "Geka" photographic chemicals, containing a pound of each of the following to make about 8 oz. solutions: "Gekaphene" "Geka" developer, carmal "Geka" developer, pyrogallol "Gekal" developer, daylight "Geka" developer, film "Geka" developer, hydrokinone "Geka" developer, brilliant "Geka" developer, triphenyl "Geka" developer, uranium "Geka" intensifier, persulfate of ammonium reducer, combined anti-hypo-hardening cartridge, vesta flashlight powder, "Geka" flashlight powder, potassium "Geka" toning bath, "Geka" acid fixing bath, "Geka" gold combined toning and fixing bath, "Geka" encaustic paste to give brilliancy to dull prints, "Geka" amylin mountant, three flash candles (two seconds), slip of touch paper for flash powders, will be sent per parcels post free on receipt of P.O. 5s. 6d.

The complete list of these preparations, containing full particulars and instructions for the use and application of the various chemicals will be sent on application to the above address. The handy form in which these productions are put on the market, and the reliability of the firm producing them, should ensure a great demand and extensive use.

RONTGEN Rays for Moscow.—According to "The Lancet" the Moscow Town Council has ordered a Rontgen-ray cabinet at a cost of £150, inclusive of dynamo, for the use of the hospital sent by the town to the Far East. This apparatus will be under the control of the manager of the hospital, and if it proves to be satisfactory more will be ordered both for the hospitals in the town and the one in the Far East.

FORTHCOMING EXHIBITIONS.

September 14-15.—Cambridge Photographic Society. Hon. Sec., T. J. Sowdon, "Sunny Side," Guest Road, Cambridge.

September 16 to November 5.—Photographic Salon, Dudley Gallery, Egyptian Hall, Piccadilly. Hon. Secretary, Reginald Craigie, Photographic Salon, 1904, Dudley Gallery, Piccadilly, London, W.

September 20-28.—Newbury Photographic Society. Hon. Secretary, E. J. Forster, Guildhall Club, Newbury.

September 22 to October 29.—Royal Photographic Society's Forty-Ninth Exhibition, New Gallery, Regent Street, London. Secretary, A. W. W. Bartlett, 66, Russell Square, London, W.C.

September 29.—Beverley Photographic Society. Hon. Sec., T. J. Morley.

October 15-29.—Coatbridge Photographic Association. Hon. Sec., Geo. W. Campbell, Ailsa Cottage, Coatbridge, N.B.

October 18, 19, 20.—Kettering Church Institute Photographic Exhibition. Hon. Secretary, E. Claypole, 112, Hawthorn Road, Kettering.

October 19-20.—Isle of Wight Photographic Society. Hon. Sec., J. Howard Burgess, 53, Pyle Street, Newport, I.W.

October 19-22.—Rotherham Photographic Society. Hon. Sec., H. C. Hemmingway, Tooker Road, Rotherham.

November 2, 3, 4, 5.—Newark Photographic Exhibition. Secretary, L. C. B. Appleby, Barnbygate House, Newark.

November 2-23.—Plymouth. Hon. Sec. Photographic Section, Chas. R. Rowe, 2, Walnut Villas, Cockington, Torquay.

November 3.—Frome M.I. Photographic Society. Hon. Secretary, B. J. Mitchell, 3, Willow Vale, Frome.

November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Sec., James Dunlop, Myrtlebank, Motherwell.

November 9.—Hackney Photographic Society. Hon. Secretary, Walter Selfe, 70, Paragon Road, Hackney, London, N.E.

November 15-19.—Sunderland Camera Club. Hon. Sec., Selby-Ord, 52, Frederick Street, Sunderland.

November 17-18.—Braintree and Bocking Camera Club. Hon. Sec., W. H. Tilston, 81, High Street, Braintree, Essex.

November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.

November 22-23.—Ipswich Camera Club. Hon. Secretary, R. H. Sutton, 37, Henley Road, Ipswich.

November 23-26.—Hove Camera Club. Hon. Secretary, A. R. Sargeant, 55, The Drive, Hove.

November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., G. W. Simmers, Aberdeen House, Ramsgate.

November 25-26.—Ilford and District Photographic Society. Hon. sec., W. N. Beal, 155, Thorold Road, Ilford.

December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.

December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104, West 101st Street, New York.

December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.

December 13-20.—Southampton Camera Club. Hon. Secretary, S. G. Kimber, Oakdene, Highfield, Southampton.

December 28-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 138, Glasgow Road, Wishaw.

January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.

January 20-21, 1905.—South Essex Camera Club. Hon. Secretary, T. Michell, 180, Browning Road, Manor Park, E.

January 28-February 12, 1905.—Photographic Society of Marseilles. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.

February 6-11, 1905.—Blairgowrie and District Photographic Association. Hon. Secretary, Wm. D. M. Falconer, James Street Cottage, Blairgowrie.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

March 4-11, 1905.—South London Photographic Society. Hon. Sec., H. Creighton Beckett, 44, Edith Road, Peckham, S.E.

June, 1905.—Northern Photographic Exhibition. Secretary, F. G. Issett, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

September 30.—"Photographic News." Quarterly Competition. "Photographic News," 9, Cecil Court, Charing Cross Road, London, W.C.

October 1.—Thornton-Pickard. £100 cash prizes for pictures taken with Thornton-Pickard cameras and shutters. Thornton-Pickard Manufacturing Co., Altrincham.

October 10.—Luna paper. £240 cash prizes for prints on Luna paper. Lucien Allegre and Co., 59a, New Oxford Street, London, W.C.

October 15.—Belgian Association Lantern Slide Stereogram Competition. Secretary, M. Vanderkindere, 97, Avenue Brugmann, Brussels.

October 31.—Coxin. 68 prizes for users of Coxin. Judging twelve pictures. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.

November 1.—The "Graphic." £50 in cash prizes. Manager, Photo Competition, the "Graphic," Tallis Street, Whitefriars, London, E.C.

December 31.—Barnet. Nineteen classes. Prizes valued at £500 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

March 15, 1905.—Ilford. £750 in cash prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

Commercial & Legal Intelligence

MIDLAND COUNTIES PHOTO COMPANY.—This company has been registered with a capital of £5,000 in £1 shares, to acquire from H. Spencer the entire interest in the business carried on as the Midland Counties Photo Company, and to carry on the business of photographers, photographic artists, portrait painters, etc. The subscribers are H. Spencer; J. Knight, P. B. A. Barrington, W. Tanser, A. White, A. Dougal, and T. King.

YORK AND SON, LIMITED.—This company has been registered with a capital of £5,000 in £1 shares. Object to acquire the businesses carried on at 67, Lancaster Road, Notting Hill, W., and 30 and 32, Fryern Street, Bridgwater, as York and Son; to adopt an agreement with W. York, and to carry on the business of manufacturers, photographic publishers, optical lantern slide makers, etc. The first directors are W. York (managing director), R. York, and W. Castle; qualification one share; remuneration of managing director, £300 per annum; of other directors as fixed by the company. Registered office, 67, Lancaster Road, Notting Hill, W.

A NEAT CAPTURE.—On Tuesday the Lowestoft police made an arrest under somewhat peculiar circumstances. It appears that early in the year a young woman, named Annie Buckman, was in service at Green Place, Womersh, near Guildford, and while there was visited by a photographer, who represented himself to be employed at the Art Studio, Regent Street, London. Miss Buckman gave this gentleman an order for photographs to the value of 4s. 6d., which it was understood the Art Studio were to supply. She heard nothing further. She informed the Guildford police, who told her that they had received complaints, and believed the man was wanted at Eastbourne, Worthing, and elsewhere. The young woman eventually obtained a situation in London; recently she went to Lowestoft with her mistress, who resided at a house at Kirkley Cliff Road. On Tuesday it happened that the same man seen at Womersh called at the house on the same errand. The girl recognised him, and while other servants engaged the man in conversation, Miss Buckman fetched a policeman and the photographer was arrested and taken to Lowestoft Police Station. Supt. Shipp telegraphed to Eastbourne, as he understood from the Guildford police that they believed the man was wanted in Sussex, and the Eastbourne reply was to the effect that they would send for the man, who had been detained, and he was later in the day handed over to Detective-inspector Leonard Parker, from Eastbourne.

PHOTOGRAPHIC INDUSTRIES, LIMITED.—This company has been registered with a capital of £50,000 in £1 shares (30,000 seven per cent. cumulative preference). Object to acquire: (1) A freehold factory in Ghent, erected and fitted under the supervision of Dr. Findlay; (2) British patent, No. 5,943 of 1904, relating to the

manufacture of films, and (3) the benefit of all improvements further inventions relating to the manufacture of films discovered by the vendors (Dr. J. Findlay and Major F. E. Freeth) while they hold the position of joint managing directors, with the right to apply for and obtain patents in respect thereof in the British Dominions and foreign countries, and to carry on the business of manufacture of photographic papers, dry plates, films, cameras, and photographic apparatus, chemicals, materials, and accessories, lithographic printers of picture post-cards, and advertisements, etc. Purchased consideration, £28,500, payable as to £8,500 in cash, and as to £20,000 in ordinary shares. The signatories are: J. W. Davy, Chaloner Street, W., 250 shares; Major B. H. Gunston, 74, Gloucester Place, W., 250 shares; J. Findlay, D.Sc., 56, Selbourne Road, Ilford, 250 shares; Major F. E. Freeth, Fairholme, Malvern Road, Acoc's Green, Worcester, 250 shares; D. Tackels, 129, Chaussée Courtraï, Ghent, 250 shares; E. W. Blake, 25, Victoria Street, S.W., 250 shares; L. Tucker, 2, Queen's Road, N.W., 250 shares. Minimum cash subscription, £10,000. The number of directors is to be not less than three nor more than seven. The first are: J. W. Davy, D. Tackels; Dr. J. Findlay, Major F. E. Freeth, and Major B. Gunston. Qualification £250. Remuneration (except managing directors) £100 each per annum and £50 extra for the chairman. Remuneration of Dr. Findlay and Major F. E. Freeth (as managing directors) £2 and £350 per annum respectively. The directors (including managing directors) are to receive a further £100 in any year when 10 per cent is paid on the ordinary shares. Registered office, 25, Victoria Street, S.W.

A MEETING of the creditors of Henry Frederick Bultz, photographer of 18, Victoria Street, Paignton, was convened at the office of the official receiver, Plymouth, on Tuesday last week. Gross liabilities returned at £2,209, of which £833 9s. 5d. is expected to rank; assets £133 18s. 9d., leaving a deficiency of £699 10s. 8d. Mr. Henry Square Paignton, represented Rev. J. D. Scott, the largest creditor, £1,000. Mr. W. P. Roberts, also of Paignton, appeared for the debtor. Creditors attended. Later the debtor attended at Stonehouse Bankruptcy Court, before Mr. Registrar F. B. McCrea, for his public examination. In reply to the official receiver (Mr. T. H. Geake), the debtor said he had been carrying on business in Paignton since June 1893. He commenced with a capital of about £1,000, £400 of which was expended in the erection of a studio. The business had been profitable all along. The sole ground for his bankruptcy was an action brought against him at the last Devon Assizes. Substantially, the question was whether a sum of £450 was money lent or paid to him for services rendered. Mr. Scott, plaintiff in the action, and himself were very friendly. He took Mr. Scott about a good deal and devoted much time in teaching Mr. Scott's pupils. He helped Mr. Scott to form the school, acting as his secretary. He understood that Mr. Scott was a very wealthy man. As a result of keeping company with Mr. Scott his business suffered, and he understood that the money was given to him to make up the deficiency. Had he known that the money was only advanced he would not have done what he did. He gave his solicitors a charge upon the property to cover the costs and expenses of the witnesses at the trial. He had been in monetary difficulties before, but he had managed to pay his way. About 1901 he began borrowing from moneylenders. He had a contra account with Mr. Bowden, of Teignmouth. If Mr. Bowden said that he owed him £200 and that he (Mr. Bowden) held promissory notes he should not think it was correct; he (debtor) did not believe he owed Mr. Bowden anything. Cross-examined by Mr. Square: He was insured in the Prudential office for £100, not £50, as he inadvertently told the official receiver. He borrowed £50 on the policy and £6 he believed was still owing. His life was never insured for £2,000. His gross income was £700 a year. For the year 1902-3 his gross takings dropped about £500. No friends were holding furniture or money for him. He still asserted that he did not have the whole of the £160 in notes from Mr. Scott. Mrs. Toby, of Teignmouth, gave him £30 to pay out an execution. His present income was derived from work. Replying to Mr. Roberts, debtor said he was also a picture dealer, and the pictures he sold to Mr. Scott was in the ordinary way of business. Replying to the official receiver, the debtor said a certain amount of the furniture belonged to his wife, while other goods were brought to the house by his wife's father and mother, who reside with them. The examination was closed.

News and Notes.

have received the syllabus of lectures, etc., for the forthcoming season from the Bowes Park and District Photographic Society. It contains the promise of a good series of interesting lectures.

Big Photograph.—At the exhibition of the R.P.S., Mr. W. H. of Talbot Lodge Studios, Reading, will exhibit an enlargement of nine feet long of a Royal group taken at Wellington College during the King's visit recently.

We would remind our readers that the entries for the Newbury Photographic Exhibition close on Thursday, September 1st. The nature of the prizes, the varied and comprehensive nature of the competitions, the names of the judges, and the high-class nature of this exhibition generally should be noted. Mr. E. J. Forster, Hon. Sec., Guildhall Club, Newbury, will gladly send schedules, etc., immediately on application.

An instructive series of lantern slides illustrating waves and other forms of the atmosphere, hydrosphere, and lithosphere has been collected by Dr. Vaughan Cornish for Messrs. Newton and Co. The collection includes the most interesting pictures shown by Cornish at the Royal Geographical Society and elsewhere, and descriptive notes which have been prepared for the slides direct to the chief points of interest.

A CROWDED audience at the Drill Hall, Bridport, was witnessing a show of animated pictures on Monday night when one of the films burnt, and the hall was suddenly lit up by a blaze of fire. The proprietor and a lady vocalist begged the people to keep quiet, but as the hall was in darkness many persons started to rush out. Fortunately excitement was soon quelled, and after the burning film had been removed out of the hall the entertainment was proceeded with.

To understand that Messrs. Watson and Sons, of 313, High Street, W.C., are now able to supply their "Argus" reflex camera of self-plate size, the dimensions over all projections being as follows: height 7 by 7½ in., and the weight of the camera 5½ lb. This compares favourably with those of other reflex cameras taking this size of plate. The cost of the camera, with three dark slides, has been fixed at 10gs., subject to a cash discount of 5 per cent.

BEVERLEY Photographic Society.—An exhibition in connection with this society will take place on Thursday, September 29 next. There is only one class in the open section, and that is for landscape, nature, and architecture. Any number of prints may be sent in. Entries close on Saturday, September 24, and entry forms can be obtained from T. J. Morley, hon. secretary, Beverley Photographic Society, Beverley.

BOARDMAN'S Electric Arc Lamps.—With the approach of the autumn season special interest attaches to those lighting systems which enable the photographer to work by artificial means. We have received the latest list of the Boardman Electric Patents Co., Limited, of 10, Southwark Bridge Road, London, S.E. This deals with electric arc lamps constructed for portraiture and other photographic purposes. It should be in the hands of all our readers desirous of familiarising themselves with the latest devices in these directions.

MANY of our readers, and in particular those of them who are acquainted with the life and work of the late Mr. Leon Warnerke, whose contributions to photographic knowledge earned him many thanks, and the thanks of innumerable photographers may be interested to know that his daughter, Miss Maria Léon, of 30, Regent Street, London, S.W., recently opened a studio at that address. Miss Léon devotes herself to a general practice, including portraiture, architectural photography, the reproduction of paintings and commercial specimens, printing for amateurs and the trade, developing and engraving, and the giving of lessons. We have seen specimens of her work, and can pronounce them as evidencing the possession of great artistic and technical ability. It is a great gratification to us to perceive in the daughter of the late Mr. Warnerke an accomplished artist in the stress of photography, and we wish her the utmost success in her enterprise.

Correspondence.

* * Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.

* * We do not undertake responsibility for the opinions expressed by our correspondents.

PSYCHIC PHOTOGRAPHY.

To the Editors.

Gentlemen,—I am sorry that you have announced "that your columns are closed on the subject of spirit photography," but I claim your indulgence, especially concerning "X's" remarks about the late Traill Taylor. I cannot allow his revered memory to be libelled in such a manner. I have yet to learn that an attack of dysentery (which was the cause of death) should in any way impair his intellectual years before. I was one of several who saw him depart for America, and was the last he spoke to on the platform at Waterloo. His words were, "Look here, Henderson, I will have my Christmas dinner in England."

Apropos of what some may think a recantation, I may mention that we had an understanding that whoever passed away first (if spiritualism was a truth) would give certain signs, which up to the present moment have not been fulfilled. Does this not tell its own tale? Does it show a falling off of mental power? I have to thank "X" for his complimentary remarks about myself. When he has had over fifty years' photographic experience and nearly forty years' experimental investigation in so-called spiritualism his opinion may be equal to and worth as much as that of yours truly,

A. L. HENDERSON.

Westmoor Hall, Brimsdown, Ponders End, Middlesex.

August 26th, 1904.

[We well remember that our late friend and predecessor, Mr. Traill Taylor, was in excellent health and spirits at the time of his departure for America. And now, to the discussion of psychic photography in these columns we must courteously but firmly apply the closure.—Eds. "B.J.P."]

THE FUTURE OF PROFESSIONAL PHOTOGRAPHY.

To the Editors.

Gentlemen,—When reading the article in your issue of August 12, re the future of photography, it occurred to me that perhaps a few remarks from one who has experienced both sides of the matter, employer and employé, might be acceptable. While agreeing with your correspondent on most points, I think the question presents phases other than those mentioned, and I am inclined to agree with the remark in your appended footnote. Mediocrity certainly does abound, and in a more far-reaching sense than is generally recognised; but I do not think that this is the direct cause of the cutting of salaries, although undoubtedly it does not help to mend matters. The introduction of simplified methods should in my opinion have resulted in the quality of work rising to a far higher standard than it has done, both technical and artistic; but instead of this being the case we find that the productions of some of the good wet-plate workers not only compare very favourably with our present examples of photography, but in many cases excel them. Why is this?

My theory is this. The manipulation of the collodion, silver bath, and other similar processes required really clever men to work them in anything like perfection, and consequently they devoted themselves thoroughly to the overcoming of difficulties and the production of first-class results; whereas now it has all been made so easy that very few trouble to go beyond a certain point, preferring to benefit by the brains of the pioneers of photography, and are either too ignorant, lazy, or egotistical to see their glaring defects and endeavour to attain to greater perfection, which would increase their market value besides being more creditable to themselves. This applies not only to the inferior firms, but in a less marked degree to some of our best houses, where, even if, as in many cases, the work is really good in technique, it is sadly lacking in artistic merit, the sitter being unmistakably, and often crudely, posed, and wearing a distinctly photographic expression. There are, of course, sitters of whom it is impossible to make anything really picturesque or even natural, but I am stating the matter in a general sense.

I have usually found that by tactfully diverting the attention of nervous and self-conscious sitters from what they regard as an ordeal, by genial conversation while posing, focussing, etc., a much more natural and pleasing effect can be obtained, and in some cases when conditions of light have been favourable, I have exposed the plates during conversation quite unknown to the sitter; and although to do this is by means the easy matter it might appear if everything is to be correct, the results have fully repaid me for the extra trouble and patience required. Art, as I understand it, lies in concealing the art under an appearance of natural simplicity; but it would appear that the average operator's idea of it consists of obtaining some unusual effect, at no matter what loss of ease, grace, and suitability to the subject. It seems to me that the really good men are only those who take a deep and genuine interest in their work for love of it, and not only for pecuniary benefit; but these are very much in the minority. It has often been a matter of wonder to me that firms who require first-class ability should offer so very little monetary encouragement to assistants, and when we consider that many third-rate operators get salaries of £2 and commission, which amounts to very nearly as much as that paid by good houses, can we be surprised that mediocrity does abound, because these men have no immaculate appearance to maintain, and their work is not nearly so particular?

Photography has, of course, become cheapened by popularity and competition, and, like everything else, the lowering of prices, and the springing up of new studios means less turnover for principals, and consequent cutting of expenses, and the crowded state of the labour market affords plenty of scope for the reducing of wages. Then, again, the expense of carrying on a business is far greater than many people (especially assistants) understand. Rent is enormous in the best business parts of any of our large towns; then there are rates, light, material, printing, and salaries, besides small every-day expenses, all to be paid before the proprietor gets a penny for himself, and considering the state of business in England during the last few years, the wonder is that some master-men get a living at all. Still, with all this there are firms who go to needless extremes in the cutting of salaries, and in some cases it would seem that the more noted the firm the greater the evil; and if, after all, the state of business does not allow of a moderately good salary being paid, there is still the alternative method of adding a commission to the present salaries, which would only mean increase of expenditure with increase of business. I feel convinced that if first-class firms were to consider their assistants a little more, the work would in many cases improve, for be the employés ever so philanthropic, they are inclined to work with far greater interest if by so doing they are benefiting themselves as well as the firm, and especially in cases where the business is left almost entirely to a managing operator, who can, without doubt, influence business by the unvarying production of really good work, and by favourably impressing clients with politeness, suavity of manner, and an apparent interest in their whims and fancies. He can also during conversation quite casually draw their attention to some more expensive production, and often without any undue persuasion can obtain orders which otherwise would never be given, though this requires experience and tact not to overstep the mark. I am inclined to think that there are still firms who would be willing to pay a very fair salary if they could only obtain really first-class ability, but as I have said, clever men in photography are conspicuous by their absence.

One of the best evidences we have of this fact lies in an advertisement in the *BRITISH JOURNAL OF PHOTOGRAPHY* a short time back, when a leading firm were wanting a managing operator, and after the advertisement appearing for three or four weeks, it stopped for a time, during which we may suppose an applicant was being tried, and then appeared again for a further period of three weeks; and this when business is almost at a standstill in England. Surely the firm should have had no difficulty in securing a first-class worker in a week.

Again, a noted firm also advertised very lately for a retoucher, offering £2 5s. per week, which is good as salaries go now, and later on again offering £2 10s., and still the advertisement appeared for several consecutive weeks, by which it would seem that they found it difficult to get a competent man. The market may be crowded, but scarcely it would appear with really genuine talent. It would be interesting to have one or two opinions from heads of first-class houses on the subject. I fear I have left retouchers, printers, receptionists,

etc., out in the cold in this letter, but the same state of inferiority seems to abound here, though perhaps in a less marked degree with operators, and the remedy, I fancy, is more difficult to find than they are glutting the market to a greater extent. It would seem the only improvement that can be suggested is the improvement of one's own personal ability. There is no standard so high but might be excelled, no knowledge so great but might be greater, and the more we learn, the more we can realise our own ignorance, and the greater truth of the words attributed to Socrates, "I know that I know nothing."—Yours faithfully,

M. ARNETT

"Clifton," Glenelg Road, Brixton, S.W.

August 23, 1904.

AUSTRALIAN TRADE MARKS.

To the Editors.

Gentlemen. Through the courtesy of an Australian Member of Parliament we have received an advance copy of the new Trade Marks Bill for an Act to cover the Six States forming the Commonwealth, namely, New South Wales, Victoria, Queensland, South Australia, West Australia, and Tasmania.

The Bill, which has just been introduced into the Senate, is a complement of the Fraudulent Marks Bill. The new Bill states at outset that, subject to certain limitations imposed, the common law of England relating to trade marks shall apply throughout the Commonwealth, and the States Trade Marks Acts cease to operate further than that the State Trade Marks Act under which a trade mark registered shall continue to apply to that trade mark, so long as registration under that Act remains in force. The registration of a trade mark under a State Act is to cease either at the expiration of fourteen years from the commencement of the new Act, or at any time when it first becomes liable to removal from the Register, whichever event first happens.

Trade marks already registered under State Acts may be federally registered. Where, however, the trade mark, or a nearly identical trade mark, is common to the trade in another State, it may be registered with an exception as to that State. The administrative sections of the Bill make the Minister of Customs the political head of the administration, with a Registrar of Trade Marks as executive officer. To the Minister and his subordinate all functions performed by State Ministers and officers in relation to trade marks, together with all records, are to be transferred. The essential particulars of a registrable trade mark are practically identical with the British. The additional matter which may be added to the essential particulars registered is limited to letters, words, or figures. No trade mark may contain the word Royal or a representation of the Royal Arms or Crown, the national flag of Great Britain, or that of the Commonwealth, or of any Australian State. Elaborate precautions for protecting owners against infringement are embodied in the Bill.

International arrangements for the protection of trade marks are provided for in the final clauses of the Bill. The protection afforded must, it is indicated, be reciprocal. If a foreign country is shown by an order of the Imperial Executive Council to be prepared to protect British trade marks in return for protection being given to trade marks, then the Commonwealth Government may enter into a similar arrangement.—Yours truly,

W. P. THOMPSON AND CO.,

Chartered Patent Agents.

6, Lord Street, Liverpool, August 23, 1904.

TINTERN ABBEY.

To the Editors.

Gentlemen. Every visitor to the Wye Valley has, of course, seen the ruins of the beautiful Abbey of Tintern, and everyone with a camera has, it goes without saying, photographed them from different points of view. For some time past these ruins, which, with the last adjoining, were bought by the Crown authorities from the Duke of Beaufort, have been in a rapid state of decay and some portions are in danger of falling. They are now being repaired. According to a writer to the "Standard," the eastern end of the nave is now covered by a forest of scaffolding. Therefore photographers who intend visiting the ruins this autumn will know what they will find. The writer says that the scaffolding has been erected to permit of supports be-

ced to the slender central shaft of the big east window, which some time past has been in danger of falling. The work now in progress includes the strengthening of the mullions of several of the windows of the nave and the pointing of most of the exterior. The preservation scheme includes the fastening of dangerous stones and removal of others. Of course, ruins of the type of Tintern Abbey need looking after, and at times repair to keep them from falling to a state of further decay; but it is to be hoped that nothing will be done in the way of repair that will at all alter their original character. Probably Tintern Abbey is the most photographed object of the whole of the Wye Valley, and there are hundreds of photographs that will testify as to whether its repairs have militated against beauty.—I am, yours, etc.,

A SOMERSETSHIRE PHOTOGRAPHER.

August 27th, 1904.

"SEIDLITZ" P.O.P.

"To the Editors.

Gentlemen.—There are several errors in my paper. It is usual to blame the printer; he is a merrie dog—clever withal, and must have his little joke. How he contrived to alter the type after it had passed the reader is beyond me; perhaps some day I shall understand. However, I accept the whole blame myself. It makes no use for further communication.

Page 745, col. 2, line 15, "work" should be "soak." Nine lines later, "swandown, calico" should be "swansdown-calico." The leached is more serviceable than the bleached, and cheaper, at 7d. or 8d. a yard does very well. Emulsion will not go through the highest qualities without pressure. And in the following, for "nitrate of silver" read "citrate of silver." The other mistakes are of no consequence.—Yours truly,

ALF. J. BROWN.

August 29, 1904.

SHEFFIELD Photographic Society.—The prospectus and entry form for the forthcoming exhibition of this society is to hand. It is printed on the outside with a representation of the society's plaque which appears to be not only good in design, but original in conception, and embodies the idea of the industries of Sheffield. The latest date for entries is November 5, and the judges will be Messrs. Alex. Keighley, Frank M. Sutcliffe, and C. Barrow Keene. There are six open classes, and full particulars can be obtained in the Hon. Sec., J. W. Charlesworth, 1, Joshua Road, Sheffield.

PHOTOLINOL enlargements as supplied by Photolinol, Ltd., of 10, Holland Park Avenue, London, W., should prove popular. This material, although requiring only the same treatment as bromide paper for the production of a photograph, has the great advantage of durability, the fabric being practically indestructible, waterproof, and impervious to the action of the sun. It can be rolled, stretched, or stretched, without the slightest injury to the photograph; it adapts itself to a legion of novel uses, its chief feature being high translucency. The company manufactures and prepares the material in cut sizes, in rolls (and on stretchers of standard measurements), in any length, and up to 10 ft. wide. They also produce their works, Chiswick Hall, W., enlargements to order up to 10 ft. wide. For an extremely nominal sum enlargements up to 16 in. on this new bromide linen will be supplied complete with etcher from customer's own negatives. As a paying line for the professional photographer these enlargements, which should be as permanent as any photographic process extant, deserve attention, in fact, also, that the base is linen offers endless opportunities for working up or painting in solid oils. The Photolinol Company will, however, undertake this part of the work, and also copying and original studio work. They are extending their facilities in this direction in fitting out their studios and galleries at Holland Park Avenue in the most approved and up-to-date style, and will shortly have ready a complete stage with proscenium and scenery for the mounting and photographing of actors and actresses amid "natural" surroundings. Their enterprise is to be commended, and photographers should apply to the company for the latest price lists and particulars of its productions.

Answers to Correspondents.

- * All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.
- * Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.
- * Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & Co., 24, Wellington-street, Strand, London, W.C.
- * For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

- C. Foster, Promenade, Port St. Mary, Isle-of-Man. Two Photographs of Bathers in Port Erin Bay.
- G. C. Morrell, 17, Alexandra Road, Morecambe, W.E. Photograph of finished Heysham Docks. Photograph of High Tide looking East at Morecambe, W.E.
- J. H. Smith, Waller Hill, Skipton. Photograph of "General" Booth.
- C. A. Brett, 1, Avenue Road, Hampton, Middlesex. Photograph of Colonel H. Bott.
- J. Bullock, 37, Clipstone Street, Leicester. Photograph of a Lift at Foxton, near Market Harborough.
- A. E. Seaman, 13, High Street, Chesterfield. Photograph of Mr. W. G. Grace and others Playing Cricket.

E. WHEELER.—The article referred to was held over just before the publication of the Almanac.

A. CLARKE.—If you will carefully read the paragraph in question again, you will perceive that coloured postcards are referred to.

J. W. DEBENHAM.—We believe the light may be seen at the British Westinghouse Company's offices, Norfolk Street, Strand. Kindly note that we do not undertake to answer letters by post.

RESTRAINER.—H. B. C. asks: "What acts as a restrainer to the pyro soda developer? I have tried bromide, which is most effectual with pyro ammonia, but find it does not appear to influence the pyro soda developer."—In reply: Bromide of potassium acts with pyro soda in the same way as with pyro ammonia. Have you not made a mistake somewhere?

STAINS FOR STUDIO FLOOR.—PROFESSIONAL says: "I wish to stain the floor of my studio a rich dark colour that will wear well. Can you give me a formula for such a stain? I should prefer walnut colour."—In reply: A reliable walnut stain can be prepared as follows: Take water 1 quart, washing soda 1½oz., vandyke brown 2½oz., bicarbonate of potash 4oz. Boil for ten minutes, and apply with a brush. This stain may be used either hot or cold.

COPYRIGHT.—DONALD says: "Recently I photographed a gentleman's residence. The photograph was taken from a public footpath. I have since published it in postcard form. The gentleman objects, and orders me to cease from selling any further copies. The photograph was a speculation on my part, and the sole copyright belongs to me. (1) Can you tell me if he can stop me selling further copies, (2) or compel me to destroy those I already have?"—In reply: If the photograph was taken from a public path the owner of the house cannot prevent the sale of the picture.

DISCOLOURED PRINT.—POSTCARD asks: "Can you tell me the cause of the back of enclosed postcard being discoloured? The cards are self-toning, and are fixed in a bath of hypo, 1 to 5. The discoloration begins to show about five minutes after prints are washing. I have tried all sorts of dodges, but can only get rid of it one way, that is, washing cards before fixing; but that alters the tone of them to a red instead of the nice brown of enclosed card. I shall be pleased to have your help. I may say that the makers' instructions are followed implicitly."—In reply: As we do not know how the cards are prepared, we cannot say. Why not write to the makers, and send them an example of your trouble?

VARNISH FOR PRINTS.—VELOX asks for a reliable varnish for protecting the surface of large bromide and other prints.—In reply: The following formula should be employed:—Borax 10grs., pale yellow shellac 30grs., carbonate of soda 5grs., glycerine 15ml., water 1oz. The addition of alcohol will improve this, and in this case it is better to use only ½oz. of water, boil, and then, when cool, add the alcohol, allow to stand for two or three days and filter. This is always a difficult thing to clear, and the best thing to do is to add about 5 per cent. of powdered pumice-stone and snake well and allow to settle; the pumice merely carries the floating particles of insoluble resin to the bottom.

OPINION WANTED.—MEDIUM writes: "1. Enclosed please find a few prints of my retouching, and I should be glad if you would kindly criticise them for me, and let me know if the work is worth 30s. per week as retoucher and general, considering the state of the labour market and things generally. 2. Can you let me know the price of the two following books: 'Artistic Lighting' and 'The Studio, and what to do in it'?"—In reply: 1. The work is poor, and we think it would not command more than the salary mentioned, if so much, considering the present state of the labour market. 2. The price of the works is 2s. 6d. each. We are continually saying that we do not answer correspondents by post.

SOLAR PRINTS.—A. GRIKSEN (Cape Town) writes: "Please give me the process of making solar prints, from the salting and sensitising of the paper to the fixing of the prints, or if there is any book giving the information please give name of same and where to be had."—In reply: To give such working instructions as would of any practical use would take up a page of the JOURNAL, and, moreover, the information would be of no interest to the general body of our readers, who, here in England employ one or other of the commercial bromide papers. All the earlier works on photography give the method of working. Abney's "Treatise on photography" is a good book; it may be had through any stock dealer.

BACKGROUNDS.—BACKGROUND says: "Will 'you kindly publish formulae for painting backgrounds in flatted oil and distemper? Also please state how canvas must be prepared in each case, and any particulars which you may consider necessary for guidance of an amateur."—In reply: Stretch unbleached sheeting on a frame and then size it with the ordinary size of the oil shops. Then, for distemper, mix together whiting, drop black, with a little Venetian red (to warm the tint) to the colour desired, with a little water; next add sufficient size to form a tremulous jelly when cold. Apply, cold, with a soft whitewash brush. For flating, size as before, and then paint with ordinary paint the colour desired. When dry make up flating colour with turpentine only, then add about a third of its bulk of Japanese gold size. Apply with a large painter's brush and stipple over the surface with a dry brush as it is laid on. There is no book published on the subject.

FLEXIBLE SUPPORT FOR CARBON PRINTING.—J. W. R. says: "Will you please tell me how to prepare flexible supports for carbon printing?"—In reply: The flexible support used in carbon printing is paper coated with an aqueous solution of shellac, made as under: White shellac 5oz., borax 1oz., water 20oz. Place the water and borax in a saucepan or similar vessel, and put on the fire. When the borax is dissolved, add the lac broken up into small pieces, and boil, stirring the while, until the lac is dissolved. Continue the boiling for three or four minutes, and then allow to cool. Strain through fine muslin, or filter through paper. Dilute with water according to the coating required on the paper, and pour into a flat dish. Float the paper on this for two or three minutes, and hang up to dry. A little glycerine added to the above—say half an ounce—will give greater flexibility to the coating than it would have without this addition. We may mention that the commercial flexible support usually has a substratum of insoluble gelatine before the lac solution is applied.

AMIDOL.—THE PHOTO DEVELOPMENT SYNDICATE write as follows: "Some three weeks ago I had occasion to mix a large quantity

of amidol—some 8oz.—and the weather being very hot at the time, I was perspiring very freely, and I think in consequence of having passed my hands over my face I have contracted amidol poisoning, which has had the effect of causing severe irritation of the eyelids, on the face, and a recurrent appearance of tiny sago-like lumps on the skin between some of my fingers. I have consulted my doctor, but unfortunately appears to be unable to give me any relief; but I have been informed that you gave a treatise on this poisoning, in one of your back numbers. In any case, I should be extremely grateful if you could give me any advice in the matter."—In reply: In our experience we have found no ill effects from use of amidol, though many have done so from metal which possibly, the article suggested applied. Perhaps a reader may help our correspondent? No such article appeared in our pages.

Patent News.

The following applications for Patents were made between August 15th and August 20th, 1904:—

- Printing Apparatus.—No. 17,695. "An improved apparatus for printing photographs." Complete specification. Frederick John Seaman.
- Enamelling Photographs.—No. 17,986. "Improved process for enamelling engravings, photographs, and the like." Leon Thines.
- Pocket Camera.—No. 18,019. "Improved pocket or folding camera." Complete specification. Adolph Richard Lange.
- Shutters.—No. 18,057. "Improvements in photographic shutters." Abraham Kershaw.
- Lighting.—No. 18,099. "Improved method of lighting for photographic purposes." Complete specification. Eduard Mertens.
- Backgrounds.—No. 18,102. "Improvements connected with photographic backgrounds." George Rutter.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Sept.	Name of Society.	Subject.
5.....	Bowes Pk. and Dis. Photo. Soc.	{ Principles of Composition. W. Tindall, R.B.A.
5.....	Southampton Camera Club.....	{ Print Competition.
6.....	Nelson Photographic Society...	{ Members' Negatives and Prints. Evening.
6.....	Rotherham Photo. Society	{ Bird Nesting with a Camera. Mr. J. Stamp.
7.....	Everton Camera Club	{ Lantern Slide and Print Competition.
7.....	North Middlesex Photo. Soc.	{ Competition—"Domestic Interior Home Photography."
8.....	Watford Camera Club	

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THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1905.

Edited by THOMAS BEDDING, F.R.P.S.

THE forty-fourth annual issue of THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC will be published on December 1st. This year's ALMANAC reached a total of 1,604 pages, and the entire edition of 25,000 copies was sold out before publication. Of no other photographic book ever issued can two such unique facts be recorded. The edition for 1905 will also consist of 25,000 copies.

The striking favour with which past ALMANACS have been received is the surest proof that the lines upon which the publication is produced meet the requirements of its readers and supporters. Upon such lines we propose compiling the volume for 1905. At the same time, we shall be pleased to receive and consider suggestions for increasing the value of the ALMANAC in directions which may occur to our readers as susceptible of improvement.

The ALMANAC for 1905 will appeal to photographers all the world over as a daily reference guide in practical work. The standard matter and formulæ will be revised and added to, where necessary, the year's advances in theory and practice will be recorded.

** The frontispiece of the ALMANAC will consist of a portrait study specially taken by Mr. Furley Lewis (medallist of the Royal Photographic Society's Exhibition, 1903).

** IMPORTANT NOTICE.—The attention of advertisers is specially directed to the announcement that this year the entire edition of the ALMANAC (25,000 copies) will be placed in the hands of dealers and the trade on December 1st next—a fortnight earlier than usual, so as to be well in advance of the Christmas publication season.

EX CATHEDRA.

A New Use for Celluloid. Detective Reilly, of the Mount Vernon Police, New York, owes it to a thick turn-down celluloid collar that he is at this moment not down among the dead men but very much alive. In a struggle with a highwayman the latter drew a revolver and shot the officer at short range, the bullet being stopped by the collar. In the confusion of the moment the man who fired the shot escaped, although Reilly was quick to recover from the blow, and pursued his man. This indicates a new use for celluloid in the provision of light armour which a man engaged in dangerous enterprises might wear without inconvenience beneath his coat. When the world was far more sentimental than it is now various stories were current of soldiers who had been through the heat of battle and found afterwards a bullet embedded in the bible or testament worn in a breast pocket given by the warrior's mother. There were so many of these tales flying about that one was apt to suspect that bullets had been fired into bibles for the set purpose of giving colour to them. The story will henceforward take a new version, and we shall read how Private Smith, having a packet of So-and-So's celluloid films in his breast pocket, found that a bullet had been caught in their coils, and that his life had been thus saved. They would probably be stated to have been developed films, so that the uninitiated could better understand what is meant by a "hard" negative.

* * *

Comic Art.

Just as a child must have its toys, so, it would seem, must those of older growth have something of a frivolous nature with which to forget for a time the cares of existence. Hence we have to suffer from the inanities of the sentimental and serio-comic song, and the publication of pictorial jokes of that feeble sort which can be purchased for about a halfpenny a hundred if one cares to invest in the latest issue of "Flimsybits" or "Boozybits," or whatever the name of the illustrated journal happens to be. We ourselves take a sort of fatherly interest in these publications, for we know well enough that they are born of photography. Without the process block they would have been impossible. That they bring delight to many is unquestionable, or they could not live; and we have often wondered what kind of mental organisation is that which can be roused to laughter by these pictorial buffooneries. The most recent of the family is a journal printed in colours. The blocks are not of the genuine trichromatic kind, but are of the more ancient type, consisting of an outline printed in black, filled in by subsequent impressions by tints of a very crude kind. One curious thing about them is that they represent a revival of the old comic toy lantern slide pictures. Some of us are old enough to remember the particular type of toy lantern to

which we refer. A tin arrangement, about seven inches high, with a spectacle lens, and a most evil-smelling oil lamp, accompanied by a box of glass slides, upon which the pictures were painted in varnish colours. It is interesting to find these pictorial monstrosities cropping up after so many years in another form.

* * *

A Beauty Show.

Bethnal Green and Whitechapel are not places which one usually associates with things beautiful and esthetic, and this shows how wrong we are likely to be when we speak merely from hearsay and not from personal knowledge. There is so much beauty hidden away in those two East End parishes that a beauty show has been held, just as they might hold a chrysanthemum show in Japan, or a hop show in Kent. And it is said that the judges had a most difficult task to perform, seeing that a bevy of blushing damsels came up as competitors for the prizes offered. It was the judgment of Paris over again, only that there were more than three competitors, and the first prize was a sewing machine, which would obviously have been quite useless to the trio of fair ones who have formed the subjects of so many classical pictures. We trust that the East End photographers were not slow to take advantage of this rare occurrence, and that we shall have an opportunity of judging ourselves of the particular type of beauty which commends itself to a Whitechapel jury. It must certainly have been somewhat embarrassing, both to judge and judged to hear a plaintive cry from the gallery when the ladies first tripped upon the platform, "Call this a beauty show, guv'nor?" but, of course we must not look in the East for that delicacy of feeling which distinguishes the West. Let us hope that pictures of the prize winners will adorn many a packet of tea, or other necessary comestible, or at any rate that the photographs will appear in the form of pictorial postcards. The opportunity of securing photographic records of the beautiful should never be missed.

* * *

Sustaining Interest in Work.

The photographer is not exempt from the operation of the natural law of action and reaction. Strong interest in work comes in bursts, followed by the reaction of temporary periods of lessened, if not total, lack of interest. In as far as this is generally the method of Nature in attaining her results, it would be unwise to attempt to alter it by what we may presume, on the face of it, to be a better method. Still, Nature will allow of modification within the strict compass of the action of her law. It is quite possible, for instance, to discipline oneself to a uniform method and practice of work by which the occasional burst of enthusiasm is toned down, and the corresponding period of reaction toned up. But such discipline is not tempting, nor is the uniform grey—however good a grey—of the result so pleasing as are the dashes of vivid colour, although alternating with the drab of many a stretch of the mud, of failure, or less carefully disciplined work. Whilst accepting the unquestionably higher worth and better results of the spirited effort of the more occasional burst of enthusiasm, we contend that it is possible and wise to modify to the worker's advantage the inevitable reaction. We wish we could believe the reaction to be avoidable, or possible of reduction in amount; but there is no getting behind the natural law, that "for every action there is a corresponding reaction, equal in amount, and opposite in kind." Fortunately, it is not also ordained that the reaction need necessarily come in one large amount, such as the specific form of the force which produced it. It is such a modification in the incidence

of reaction as to spread it out more, that we would, from personal experience, recommend wherever possible to other workers.

* * *

Deferred Development.

The suggestion is offered the moment readily at the present time, when thinking of the large number of holiday exposures that must be awaiting development. Taking the picture is one thing, developing it another. The accessories of sunshine, breeziness, change of scene, high spirits, and agreeable companionship of exposures, are very different to the gloom, the stuffiness, the loneliness, and the tediousness of the dark room and development. A dozen exposures may have taken up two or three days; there will be an effort to develop them in as many, or less, a number of hours. The result will be a weariness of the flesh, due in greatest measure to a less wise method of working, but attributed, and to its prejudice, to photography in general. The remedy is to spread the developing of the exposed summer plates and films over a longer period. It would be wise to allow a little time to pass after the holiday even before starting the development. Let the holiday maker wait a while, until he shall have shaken down a bit. As a rule, after a holiday some arrears of work have to be pulled up, friends seen, and so forth, and it is a mistake to be working in the dark room against time, and the consciousness of there being other duties unfulfilled outside it. Even if there be full leisure, there is yet a certain holiday fatigue of mind existing, that it would be wise to allow to wear off first. Arguing from the point of view of being an ordinary, average photographer, and an average man, we hold that at the very best there is an inevitable waning of interest, and a weariness of the work, after the careful developing of not more than six negatives, and that if work be continued against the grain after this, it is certain to suffer. As exposed plates will not be a scrap the worse for having been kept undeveloped for at least three months, there is no reason against, but every reason for, spreading development over that length of time. There are plenty of dull wintry evenings coming along when work in the dark room for a couple of hours would be an agreeable relief to reading or twiddling of thumbs.

* * *

Fatal Curiosity.

There is certainly opposed to this method the desire to see as soon as possible how the holiday efforts have turned out, but the counterbalancing consciousness that the best is being made of them by gradual working, should prove a sufficient compensation. The recalled emotions that induced the taking of the pictures will also prove the fresher and stronger from the fallow in which the mind has lain in the meantime. The conditions of working in winter may also be advanced against the suggestion. If the dark room be the coal cellar, the strength of the argument is admitted. It is too cold for comfort, and the space is more cramped from the winter's supply of coal. But if any other room, it will be cold. There is no reason why it should; why development may not be carried out with perfect safety in an ordinary room with a fire in it, and the plates taken out for washing into the scullery or bathroom. A flaming, flashing fire is, of course, out of the question, but one damped down with a shovelful or two of wet slack is not, with a large screen—of brown paper, in the absence of the orthodox one with the stork in the corner—in its front. With one's back turned towards such a protecting fire, and an easy fitting cover to the developing dish, there need be no fear of damage to most plates, short of extremely sensitive ones—which no photo-

grapher of any experience uses, except for very exceptional work. The development which we have ourselves found best under such circumstances—rarely making note, it must be confessed, of exposures—is that with weakened pyro-soda (with a restraining few drops of a 10 per cent. solution of bromide), strengthened as development proceeds, or otherwise modified as the necessity for a little special treatment may be indicated as the picture unfolds itself, and its details are recognised. The same procedure will apply not merely at holiday, but at all times. A man should not force himself against his inclinations into the dark room by an over anxiety to see how his work has turned out, but take mental photographic rest, and allow the developing mood a chance to assert itself interestedly and at leisure. The plates will be all right, the work will certainly be better, and interest in photography generally be sustained at a more uniform and comfortable pitch.

* * *

The Telescope in War. The telescope has always been regarded as a very necessary part of a naval man's outfit, and this is so well understood that any landsman who wishes to be mistaken for a "sea-dog" invariably invests in a telescope so that as he traverses the marine parade he can take it from under his arm at frequent intervals and with it sweep the horizon. But the soldier has ignored this aid to vision, unless, indeed, he has despised it. In a battle picture the Commander-in-Chief is sometimes represented looking through a telescope, but no one ever dreamed of his subordinates indulging in such a rarity. But times have changed since the old battle pictures were painted, and now there is a call for telescopes in our army. The matter came up last Session in the House of Lords during a discussion on the armament and position of the Yeomanry, and the ball was opened by the Earl of Wemyss, who asserted that the great want in the late Boer war was scouts who knew how to scout and men who knew how to use the telescope. He further stated that after the slaughter of the Highlanders at Magersfontein a general wrote to the Astronomer at the Cape, and said: "For God's sake send me as many telescopes as you can." Earl Roberts said that he had always used a telescope, and he thought it would be a great advantage if it was more generally used by officers. Lord Lovat also spoke in favour of the instrument, but advocated the abolition of "the obsolete telescope" of the War Office. It must not be taken from this that the War Office only possesses one telescope, but that the type which it has adopted is now out of date. It would not be difficult, to anyone who has a fair knowledge of the episodes of recent wars, to point to several instances in which the intelligent use of a telescope would have saved a disaster to the British arms. A good telescope and a commanding eminence from which to point it would afford most valuable information as to the presence or absence of an enemy for a radius of many miles, and in future wars possibly both of these desiderata will be forthcoming. There is no difficulty about the first, and if recent reports be true there will be little about the last. Mr. Cody has invented a man-lifting kite which has been the subject of experiment at Aldershot with a view to testing its usefulness for observation purposes in war time. It will pack up into small compass, and can be flown in a heavy wind which would render a balloon useless. So that in future campaigns, instead of the cumbersome balloon and its accompanying gas cylinders, we shall have a simple form of kite at the end of a steel wire, with a man hanging from it in a cage armed with a telescope. Of course, he will have a camera fitted with a telephoto lens as well. Nor will the apparatus be confined to military purposes. The bold men who swing over precipices and climb high trees for the laudable purpose of

photographing a birds' nest will, of course, take to the Cody kite, and the same implement will be employed for photographing inaccessible details of architecture in many old buildings. The snapshotting hooligan will possibly quickly see the advantage of the kite as a means of obtaining views of domestic interiors so far as they are commanded by top windows. It may be that the kite will open up many new spheres of action for the photographer, and will prove quite as useful to him as it promises to be to the military man.

* * *

Polar Photography. Possibly before these lines appear in print the members of the British Expedition to the Antarctic regions will have reached home and received the congratulations of their friends and fellow-countrymen, after their three years' absence upon one of the most important explorations ever undertaken. We may reasonably hope that the voyageurs will bring home with them a large collection of photographs so that we may all see what the scenery is like of the inhospitable regions where they have spent so long a time. Three years is a long period over which to spread the consumption of a stock of plates, but plates, as we all know, can, under favourable conditions, be kept in good condition longer than that. It is the warm, clammy air of the tropics that plays such havoc with gelatine; nor can we expect that a state of the atmosphere which will cover a pair of boots with a coating of grey mould in a single night can be very good for photographic plates which were once "dry." In the cold of the Antarctic zone plates should keep very well indeed, provided that they were originally properly packed, and even were it otherwise it would not be an impossible thing for men used to scientific methods to make a batch of plates for themselves should the original supply get spoilt or run short. Such experimental work would, in fact, be a relief to the monotony of a polar winter. Plate-coating on shipboard is not an occupation to be recommended as a rule, for the motion of the vessel would interfere rather with the coating operation, but when the water around is congealed into ice, and we have to deal with "a painted ship upon a painted ocean," everything must be so still that its cabin, with nothing to illuminate its darkness but an occasional gleam of the Aurora Australis, must be quite an ideal place for photographic laboratory operations. We may therefore hope that no lack of plates prevented the expedition bringing home with it quite a gallery of pictures. But there is one picture which will not be found in the collection, much as it would interest geographers to possess one. In the year 1841 Captain Dougherty reported the discovery of an island in a certain part of the Pacific where no island was marked upon the charts. Eighteen years later Captain Keates reported that he had sighted an island in the same place, that is, about half way between New Zealand and the south of South America. It was said to have a rocky structure, to be about seven miles long, with a glacier in the central portion which had an altitude of about three hundred feet. Nothing more was known of Dougherty Island, and for some reason or other no man had landed there. The Antarctic Expedition looked out for the land of Dougherty, but found it not. They, in fact, sailed over the place where it was supposed to be, and instead of finding any trace of it, their soundings revealed a depth of nearly three miles! Whether the island has been destroyed by some volcanic eruption, or whether its observers were misled by the appearance of an iceberg, and the island was a myth, will probably never be known. If either of its sponsors had taken a photograph of the place it would have been possible to test the iceberg theory. As it is, Dougherty Island must be erased from the maps, although its alleged existence will doubtless be utilised by one of our wonder-loving novelists.

SILVER PRINTS: ANCIENT AND MODERN.

It will be remembered that in concluding an article (see page 724 *ante*) on the stability of the prints made in the early days of our art-science, as compared with those made at the present time, we intimated that we might recur to the subject and point out the different conditions under which the prints were made then and now. Since that article appeared many have been anxious to learn how the prints that have proved permanent for so long a time were made, and whether the conditions then obtaining cannot be applied to the present-day system of working with the object of securing greater stability in our silver pictures. This shows that at least some workers are really desirous of obtaining results that will prove more permanent than the majority of modern ones do. Very many who have only entered the ranks of photography during the last few years, and whose practice has been confined entirely to the working of emulsion plates and papers, have really very little idea of the older printing methods—the plain salted and albuminised papers or the negatives that used to be employed with them.

The negatives, it must be mentioned, were quite different in character from the present ones, and they had much to do with the stability of the old prints. This statement may possibly take some of our newer readers by surprise, but it is the fact, nevertheless. The early wet collodion negatives, it may be explained, were developed with pyrogallie acid, and they were made very strong, and often took, in a good light, a whole day or more to print. They differed entirely from dense gelatine ones, which although they may even take longer than the time mentioned to print, are really not anything like so intense, that is, in the sense the others were. The slow printing qualities of dense gelatine negatives is due to general density and staining of the film, and not to the long range of tones from the highest lights to the deepest shadows. The old negatives were exceedingly intense; the highest lights were very dense, while the deepest shadows were represented by perfectly clear glass—as clear, in fact, as if there was no film whatever upon it. Now a little consideration will show that during the long time the lights were in printing through, the light would be penetrating deeply into the paper in the shadows, which would become strongly bronzed through the large amount of silver that was reduced in them. It was no uncommon thing for the deepest portions of the image to show on the back of the paper. Hence the image was almost as much in the body of the paper as it was on its surface, so that the prints contained a large proportion of reduced silver to begin with, and, consequently, a larger quantity to resist the action of time than is the case with modern negatives, and prints from them where the image is confined entirely to the surface or albumen film. This shows that the permanence of the old prints owed much to the character of the negatives from which they were made.

Now let us consider the papers upon which the prints were produced. In the early days two were employed—the plain salted and the albuminised—which the user had to sensitise for himself, even if he had not to salt, or albuminise them as well. Here is a formula for the latter, taken from a third edition (1856) of "Hardwick's Photo-

graphic Chemistry":—"Chloride of ammonium or sodium, 200 grains; water, 10 oz.; albumen, 10 oz." Here it will be seen that the albumen was diluted with an equal bulk of water, and that the mixture contained no less than ten grains of chloride to the ounce. The paper thus prepared would now be classed as a matt paper. With the present albumen paper, not only is the albumen used without dilution, but it is often concentrated so as to obtain a high gloss, and also confine the image to the film of albumen as much as possible. The albumen now used also contains far less chloride than did that of fifty years ago. The early albumen paper was sensitised by floating it for from three to five minutes on a solution of plain nitrate of silver; strength, sixty to ninety grains to the ounce of water. Now it will be seen that the chloride of silver, formed by double decomposition, was not only on the surface of the paper, but in the body of it as well, and that there was also a very large amount of free nitrate as well, both in and on the paper. Hence, with the strong negatives just referred to, a very large quantity of silver was reduced to the metallic state in the formation of the picture. The modern albumen paper is but lightly salted and lightly sensitised, and is also printed from thin negatives, so that there is very little silver reduced as compared with the older paper when the image is printed. This shows the wide difference there is between the paper used in former times and now.

The conditions of toning and fixing then and now were also different, although the combined bath was the one employed. The old combined bath contained no such things as alum, acid, lead, etc.; it was simply a strong solution of hypo, water, and gold. Here is the formula that was generally employed:—Hyposulphite of soda, 8 oz.; water, 16 oz.; chloride of gold, 8 grains. Some workers used even a stronger bath than this, and some also added a little nitrate of silver as well as the gold. The toning action was slow—usually taking an hour or more. Here, then, there was no question—with this strong solution—about the prints being thoroughly fixed long before the desired tones, however warm, were obtained as there is with the present-day combined bath. By reason of the large quantity of silver reduced in the prints, there was a large proportion of gold deposited upon them in obtaining the tones, therefore the image, generally, was far more "robust" and better adapted for resisting adverse influences than is the present-day delicate and attenuated one.

There is yet another point that should be kept in mind, which is, that the work in the olden time was usually done by those who thoroughly understood it, and did it in a conscientious manner. That is not always the case at the present time, when so much of it is entrusted to lads and girl apprentices.

We have here very briefly pointed out the differences between the conditions under which silver prints which have lasted fifty years, and more, were made and those obtaining now. But can these conditions be assimilated in any way? The papers of old would certainly not be suitable for modern gelatine negatives, and, on the other hand, the old intense negatives would practically be useless with the present-day papers, which are specially made to meet the requirements of thin and delicate ones.

LENS RAPIDITY.

Amongst the many dogmas concerning matters photographic which have become classical through age and frequent repetition one is more venerable or more supported by authority than that which affirms that the rapidity of a lens depends upon the size of its working aperture. Were this in reality true the giving of correct exposures would be a far easier matter than is unhappily the case, and consequently manufacturers of plates and films would find the annual consumption of their goods considerably restricted. But, as a matter of fact, practically it is not true, as it merely covers one portion of the subject, and one portion, moreover, which I venture to assert does by no means the most important. It would be equally true and equally false, for example, to say that the efficiency of a lens depends upon the amount of cork put into their construction. As was proved by a recent appalling disaster, a good many things other than cork must be present, and must be serviceable, before the life-saving apparatus itself can be regarded as efficient.

In the following brief notes I propose to show not only that the universally-received belief that lens rapidity depends upon the width of the working aperture is only partially true, but also to point out what are the chief amongst the other causes which govern this condition.

It requires no special proof to convince even an expert photographer that, other things being equal, the greater the diaphragm opening of a lens the greater must be the amount of light capable of passing through it, and consequently the greater must that lens rapidity be. But, unfortunately, other things are not always equal, and light may lose a portion of its volume and some of its actinic properties during its passage through a lens, thus rendering the latter less rapid. This highly-important question, like all others, must, in fact, be considered, not from the ideal or theoretical standpoint, but from the actual and the practical. And in actual practice it will be noted that there exist a good many factors other than the lens aperture which considerably modify its "normal" rapidity.

In the first place, let us take the substance from which a good photographic lens is manufactured. In the making of the best optical glass certain minerals are employed, the selection, proportionate amount, mixing, heating, and cooling of which require great scientific knowledge and manipulative skill. So far, however, though it must be admitted that very great attention is bestowed on the several mechanical processes, scientific knowledge is not yet by any means commensurate with the end in view, and this deficiency leads to the production of lenses which sooner or later become discoloured through chemical action, in a slight or in a more pronounced degree. When this condition occurs, even when it is so faint as not to be apparent to the eye unless looked for with great care, rapidity is sensibly diminished, becoming more accentuated, of course, in proportion to the amount of discoloration present. On laying a lens afflicted with this form of constitutional malady on a sheet of white paper it will be seen that the glass is no longer absolutely white, but shows, on the contrary, distinct traces of yellow or brown. And, apart from this faint impairment of transparency, different degrees of "rusting" may make their appearance up to that which is clearly discernible and obviously harmful.

But instead of the discoloration being uniformly diffused throughout the glass, it may be present only in scattered spots or in the form of striae, conditions which, although for mechanical reasons not so fatal to rapidity, yet undoubtedly slow the action of the lens.

Similar in some respects to chemical spots are the air-bubbles so often found in the substance of lenses, good, bad, and indifferent. When they are minute and few they are practically

innocuous, but when they are many and large they cannot be regarded otherwise than as elements detrimental to rapidity. In saying this I am not only supported by my personal experience, but by what is of far greater weight, the authority of a well-known law of optics, although I am perfectly aware that during recent years many of the foremost manufacturers, finding they were unable to produce the best class of photographic glass, perfectly homogeneous in structure, have issued notices to their clients stating emphatically that the presence of bubbles is quite unimportant. When, however, they have sufficiently improved their methods as to eliminate these deleterious air cavities, I feel confident the most successful in this direction will instantly circularise the purchasing public against buying lenses which are not entirely free from bubbles. Human nature is made that way. So also, and apart from the glass of the lens, obscuration may, and often does, occur through uneven dessication of the so called cement with which the separate portions of a lens component are fastened together. This is usually due to exposure, to rapid changes of heat and cold, or to great variations of humidity, even when the best—i.e., the most suitable—material is employed, but is also often caused by the use of cement of inferior quality, or to improper handling during the process of manufacture.

Passing now from the substance of the lens to its surface, we find further and fruitful sources of lessened rapidity. In the first place, the accumulation of dust and the products of moisture, if not carefully prevented and removed, are common and exceedingly potent causes of this condition. In many hand cameras the lens cannot be taken out for purposes of cleaning, except with great difficulty and much risk of doing damage, and thus the dust demon has ample scope and leisure for working his wicked will. So also not a few otherwise high-class lenses are so constructed that their components cannot easily be taken asunder, and on the inner surfaces of these fine particles of dust readily collect.

Then, again, and in addition to or apart from the above-mentioned conditions, a very frequent source of lens-dimming is seen in the case of numerous patterns of hand cameras which have no protecting cover, or no adequate one, over the front surface of the lens when carried ready set for use. For instance, I have just received an expensive folding "Post-card" hand camera, the lens of which is without a vestige of cover both before and behind. In carrying such an instrument along a road, or, indeed, in any situation out-of-doors, it would be quite impossible to keep the anterior surface of the lens bright and free from dust. In the case of the numerous types of "Reflex" cameras which are now deservedly coming to the forefront of popular favour, the release of the shutter acts like a powerful fan, and creates an air-blast, setting up a miniature storm of dust, much of which eventually settles on and greatly obscures the posterior surface of the lens.

Several other factors making for obscuration, and, therefore, for diminished lens rapidity, could be readily adduced were it necessary to advance further evidence in proof of my contention. But sufficient has, I think, been said to show that the mere width of the working aperture of a lens is by no means in practice the sole factor governing rapidity, or, as I believe, the most important one. The working aperture of a lens can always be ascertained with facility, and the necessary calculations as to exposure are easy in the extreme. On the other hand, many of the conditions I have referred to are not only extremely common, but are difficult to detect, and still more difficult to rectify; some vary greatly in their intensity, it may be, from day to day, whilst others, from their very nature, are wholly irremediable.

From the foregoing considerations the following amongst other practical deductions may be made:—

1. Every lens and every camera ought to be so constructed

that the former can be readily removed and taken apart in order to be cleaned in every portion.

2. Every camera—more especially every hand camera—ought to have the front surface of the lens thoroughly protected from dust and moisture.

3. No lens can be regarded as efficient which is not perfectly white when looked at by transmitted light; which has not a brilliantly-polished surface, and the substance of which is not free from marks, cavities, or other departures from homogeneity.

F. GRENFELL BAKER.

STEERAGE PHOTOGRAPHY.

BY A THIRD-CLASS PASSENGER.

The photographer has one peculiarity which marks him as a man apart from the common run of mankind. Whereas the average man, in those too-brief periods of his life known as "holiday" aims to forget his normal existence and the daily grind that brings him bread and cheese, the photographer celebrates a holiday by seizing his camera and making for new scenes which he may portray.

There is no doubt about it, the photographer is generally in the profession because he loves the work, and has found the niche for which he is fitted. Outside of business days he takes his hand-camera, and becomes a "blooming amateur." Thus it seemed natural to sprawl on a tarpaulin-covered hatchway, and listen to the photographer who had left his business for a month's holiday—happy mortal!—and to hear him wax eloquent as to the merits of his pocket kodak. His sleeping berth was shared with fifteen others, and all through the day there would be six or eight men sprawled in their bunks; but in that berth he developed his negatives, for his enthusiasm was such that he could not wait until the boat reached New York. And yet he was a professional photographer!

I had noticed him prowling along the steerage deck. The promenade deck above him cut off his light, and prevented any chance of work. For his pocket-camera was incapable of any effort better than F. 11, and that aperture is hopeless under cover and on dull days. But before we were two days out he was marching up and down with a strip of half-a-dozen negatives flapping in the wind. He had managed to find subjects which his camera could compass.

The man who goes a voyage for several days' duration should certainly take a camera with him. There are lots of interesting "bits" to be snapped, when the first forty-eight hours are over, and passengers are struggling on deck to get the last traces of "that unwell feeling" blown out of them. And the camera should be a hand one. The space is often too crowded for comfortable tripod work, and the whole charm of ship photography lies in its naive spontaneity. A happy snap makes a pleasant picture; but any attempt to pose subjects has disastrously wooden results.

First and second class passengers have usually facilities for changing plates; and if they really wish to develop plates the way may be made easy for them. But if the steerage passenger wishes to develop—well, he will need a strong dose of enthusiasm to carry him through. Make sea photography a holiday pastime, and be content to take it in moderation. If they are not recklessly wasted, a dozen plates will give a very fair record of a voyage from Liverpool to New York. Of

course an inexperienced photographer will waste plates on Fastnet Light, as the ship slips between it and the Irish coast, or on the coast itself, or some sailing-ship which passes a mile away. But outside the ship, if we except a snap at gulls which come screaming after the waste from the table, there is usually nothing to photograph.

The inside economy of the ship is equally unsatisfactory to the holiday photographer. Artificial light would be a necessity; but the real drawback is the bareness and crampedness of all below decks. Narrow passage-ways, close-packed sleeping-berths, and bare wooden tables and forms are about all that is to be found in steerage quarters, and in the more expensive parts the prevailing impression is red velvet and polished mahogany. Yes, except for one or two views along the deck, ship photography is a matter of snapshots of life.

There were four photographers on the steerage deck. First, there was our professional enthusiast, with his pocket kodak; second, a young schoolmaster with a No. 2 Brownie; third, a young clerk with a quarter-plate magazine camera; and, last, there was your servant the writer.

No two ships seem built on quite the same plan, but of all of them I believe that steerage passengers have some share of the deck open to the sky. On some of the best-known of the Atlantic liners the open space is very limited, being confined indeed to a hatchway on which passengers can sit or sprawl in the sun. We were more fortunate than this, for we had not only two hatchways, one each forward and aft, but we had also a few square yards of open deck between the hatchways and the bulwarks. These open spaces were our photographic salvation. Sometimes a picturesque group of Hebrew women washed tiny garments, or hung them in the sun; sometimes an old Hebrew would don his phylactery and rock himself to and fro at prayers. Or a group of stewards and firemen would stand to catch the breeze. There was always some life under the open sky, and always the possibility of an interesting picture.

I have recommended that the camera should be a hand one. Either films or plates may be used; and if the latter, there is no real difficulty in changing them. The electric light can be switched off for a few minutes—it is safer to detach the lamp, rather than just switch off the light—and then under a blanket it is easy to do the rest. I would certainly not counsel development on board. If, however, enthusiasm prevails, borrow a pail of water from the steward, and work under blanket as before, using developer which was mixed before the trip. Perhaps the steward has a spare room which may be used—and third-class stewards are usually good-hearted, and do not expect enormous tips. A sailor will always tell you which tap yields salt water (fresh water does not run to waste on board ship), and salt water is all right for (photographic) washing purposes.

It is when we near land that the photographer is in his glory. He has picked up stray subjects on board ship; but he is just a little tired of the trip, and he longs to step on firm ground once more. Instead of seeing one ship per day, three are in sight at one time. Then he sees that faint line of land to the north. After this events crowd thick and fast. There is a pilot to be picked up; the shore grows nearer and nearer until fields, and houses, and lastly people, can be seen. More boats pass, and we watch them in our finders to decide how big they would be on the plate. There is always plenty to see when slowly steaming up a crowded harbour, and everything looks doubly alluring after a week at sea. On board ship we had felt that the photographic limitations were too many; but as we swung alongside the dock, and expended a last plate on the bare height of a New York skyscraper, we felt anew the force of the rule—never travel without your camera.

PLATINUM PRINTING, BRONZING, ETC.

The making of platinum prints during the summer season is almost always attended with more or less trouble. These difficulties are not entirely due to the high temperature, but arise in a great measure from the excess of moisture contained in the atmosphere. This moisture, aided by the high temperature, causes the ferric salts employed in the preparing of platinum paper to become very active, and tend to produce other salts of iron by oxidation. This action is the main cause of the yellowing of the whites of platinum prints. Bronzing occurs principally through over-exposure, causing an excess of ferrous salt to be formed from the ferric salts upon the paper, while this excess of ferrous salt in turn causes an excess of platinum to be deposited when brought into contact with a free oxalate, which is always contained in a platinum developer. The high temperature aids rapid development, and consequently results in excessive bronzing. This effect of bronzing is produced only with papers containing the iron salts in excess, as well as the platinum salts in combination therewith, because bronzing never occurs unless there is an excess of platinum deposited, and this, too, when deposited very rapidly, the rate of deposition having something to do in producing the bronzing effect. Such papers as the above are capable of producing the very finest results, because there is a sufficiency of both the salts of iron and platinum to give the required deposit before the sensitive surface becomes washed off the paper.

Mr. A. J. Jarman, in the current issue of "Wilson's," deals with these matters very fully. He says: "It is very remarkable that prints produced by the hot bath process, which process preceded the cold development process at present largely in use, showed very little tendency to while a print that was over-exposed became grayed all over, so that it was quite useless. This result was due, without doubt, to the sensitive surface being prepared quite differently to the present cold development paper and to the use of a perfectly neutral solution of potassium oxalate as a developing agent. Much greater care had to be bestowed upon the use of platinum paper for hot development than is exercised to-day in the use of paper for cold development. Every print had to be placed in a specially made tin case charged with dry calcium chloride, in a receptacle fitted beneath a perforated plate, which formed the bottom of the tin case, upon which the exposed prints were placed and kept as near air-tight as possible until the time for development arrived. Many photographers to-day employ simply a plain solution of potassium oxalate to develop prints that are made upon the present paper for cold development, and by this means very often get inferior results. This is because the potassium oxalate used varies in quality. If it is in the least alkaline the full values contained in the negative are lost in the print. An acid developer is best suited for cold development, restrained by the addition of either potassium phosphate or sodium phosphate, it matters not which, if the salts are mixed and the developer made up at once with hot water. If sodium phosphate is mixed with potassium oxalate and kept some time before use, the combination becomes moist and forms a conglomerate mass. This, however, is no detriment when made up into a developing solution. This moistening of the salts does not take place when the potassium phosphate is used. When making up a developing solution for cold development the salts should always be dissolved in boiling water, so as to secure a more perfect combination, the resultant solution being filtered for use as soon as it becomes cold.

The best way to make up a platinum developer is to employ a stoneware crock of any kind, with a lid. The salts may be placed therein and the necessary quantity of boiling water

poured upon them from a tea-kettle, stirring the whole with a clean glass strip. An excellent developer for black platinum prints can be made as follows:—

Potassium Oxalate	...	...	...	6 oz.
Sodium Phosphate	...	...	...	1½ oz.
Oxalic Acid (c.p.)	...	...	...	½ oz.

Place these in a stoneware crock, then pour upon them fifty ounces of boiling water. Stir well, then allow to cool, when it is ready for use.

In the process of platinum printing there are sure to be some prints that have been overdone, or, as it is usually termed by platinum printers, "cooked too much." It is with this class of print that this article is intended to deal. Generally such a print is torn in halves in the printing frame and thrown away or cast into the waste-box. If such prints are only over-printed they would not make a good picture under the usual method of development, they may be saved and excellent pictures made by developing them in a specially prepared developer. It is this class of print that yields the objectionable bronzing in the shadows, and is so often thrown out as being unfit for delivery. This occurs only too often with very large platinum prints, such as 11 by 14, and 20 by 24, which, owing to the high cost of the paper, becomes a serious loss to the photographer. All such prints as these should be placed in a separate box or receptacle until the time for development has arrived. Then have prepared and ready at hand a developer made up according to the following formula, which, after being prepared and allowed to become quite cool, filter twice through absorbent cotton, being particular at the same time that the glass funnel and the bottle or bottles into which it is filtered are perfectly clean:—

Potassium Oxalate	...	...	...	8 oz.
Potassium Phosphate	...	...	...	2 oz.
Oxalic Acid (c.p.)	...	...	...	1 oz.
Chloride of Potassium (c.p.)	...	...	...	2 oz.
Boiling Water	...	...	...	60 oz.

Stir well, allow to cool down for half an hour, then add glycerine, 8 oz. Stir well until all are thoroughly mixed. Allow this to become quite cold before use. Employ a separate tray for this developer, and place a small lump of ice in it a short time before use. Take one of the overdone prints and pass it through the developer in the usual way. It will be seen to come up very even. As soon as development has been carried to the necessary point, place it at once in the acid-clearing solution, 1 part muriatic acid to 60 of water, the same as is usually employed. After a few minutes remove the print and examine it, when it will be found to be perfect in every particular, with a full colour, inclining to blue-black. Of course, if the print has been hopelessly overprinted, then it must be discarded, but for prints that are somewhat overprinted and would otherwise be completely spoiled and bronzed in under the usual method of development, all and every such print can be saved and turned to profitable account by the employment of the above developer. This solution can be used over and over again, the same as an ordinary developer, taking care to filter each time before use, and adding a little clean new developer each time.

In the formula given for the first developer as much as one ounce of oxalic acid may be used, for by the use of this chemical in moderate quantity the whites are kept very clear. This is brought about by the dissolution in the developer of the traces of the lower oxides of iron formed by damp and heat, so that by keeping the whites brilliant and clear the blacks appear to be more black. More than this, a strongly acidified developer, like those of green hue, clears away the very cause of the yellowing of the whites of platinum pictures. It may be taken

as an axiom that the thicker or heavier the paper is, the longer it must remain in the acid clearing solutions, so as to clear out every trace of the iron salts. The writer had considerable trouble some six years ago in keeping the whites brilliant when using a very heavy platinum paper, but succeeded in getting over it by leaving the prints in a fourth acid clearing bath overnight, washing them the next day. Under this treatment the whites were found to be all that could be desired. This proves that "time" is necessary to clear out the iron salts absorbed by a heavy paper. As to the clearing solution of muriatic acid or, more correctly, "hydrochloric acid," this solution is almost universally used. There are other clearing solutions, that which was employed originally was oxalic acid, and of the two is superior to hydrochloric acid. The drawback to its use is its great danger of poisoning the fingers by absorption, its tendency to become lodged under the finger-nails and around the quick, producing intense pain, throbbing, and eventually a small fester. An excellent plan to adopt after the hands have been dipped for some time in an oxalate developer is to rinse them well in clean water, using no soap, then rub the hands well with lime-water. The lime neutralises the oxalate, and thus prevents the chance of poisoning.

The introduction of chloride of calcium and chloride of sodium into the clearing solutions has a very marked effect in preserving the whites of the picture. The following clearing solutions for use during the hot weather are very effective and certain in their action:—

Sulphuric Acid (c.p.)	...	...	...	2 oz.
Water, Cold	...	...	...	120 oz.
Chloride of Sodium (Common Salt)	...	...	...	2 oz.

Pour the acid into the water, rinse out the graduate, place the salt in the tray, stir until it is dissolved, and mix. As soon as the print is developed, place it in this bath. The iron salts become quickly dissolved out; in fact, this mixture produces hydrochloric acid in its nascent state. This appears to account for its decided action in the clearing, because all bodies become more active when in the nascent condition, or, in other words, when in their highest active state. Another excellent clearing bath the writer has employed with perfect results is made up as follows:—

Hydrochloric Acid (c.p.)	...	...	...	2 oz.
Water	...	...	...	120 oz.
Chloride of Calcium	...	...	...	2 oz.

The chloride of zinc and magnesium do not give the same results, the chloride of zinc having a tendency to make the hands sore, but the chloride of calcium acid bath is very good.

Sometimes it occurs in the process of ordinary development that a print otherwise good is too black and undefined in the shadows, although it has not reached the stage of bronzing. The print may be a valuable one, and wanted in a hurry, at the same time, owing to bad weather, there is not an opportunity to make another print. As every photographer is not equipped with an electric-light printing plant, it may prove both profitable and advantageous to save such a print. This can be accomplished in a very simple manner. The question has often been asked, and is still asked, "Can an overdeveloped platinum print be reduced?" It can be reduced, and accomplished very effectually, not by chemical means, for it is impossible to dissolve platinum by any chemical agency when deposited upon paper without destroying the support. But the reduction can be made mechanically, and in a very simple way, especially if the print has not been allowed to dry from the time it has been developed, cleared, and washed. The paper is then very pliable, and the platinum image is held by slight tenacity to the surface. If the print has been allowed to become dry it must be well wetted and allowed to soak for some time, say an hour, before reduction is attempted.

The following utensils and materials will be required: nickel-plated or tin coffee-pot, with the handle attached to the side. This kind of a pot is better handled and the operation of reduction more easily watched than where a coffee-pot of the usual kind is employed. One 11 by 14 or 14 by 17 deep papier maché tray; one quart of boxwood sawdust or fine sawdust from white wood, i.e., willow, the boxwood dust being the best. It can be procured at any watchmaker's material supply house or from those who supply material for electro-platers and gilders. This kind of sawdust contains no resinous matter. Place the print to be operated upon, after being thoroughly wetted, in a sloping position upon a clean, smooth board covered with white oilcloth, or upon a clean sheet of glass, clipped at the two top corners with clean wood clips. Pour a pint of the sawdust into a half-gallon wide-mouthed bottle. Add thereto about three pints of clean cold water, shake it up well, then pour it into the coffee-pot. Now proceed to pour the water and sawdust upon the part to be reduced, and carefully watch the operation, because in a very short time the platinum will commence to wash off the paper. The continued pelting of the little crisp pieces of wood dust removes the excess of deposited platinum by abrasion, the result being that the heavy shadows soon begin to lighten up. In fact, if a very dark print be taken and carefully treated all over, the effect produced is like a beautiful engraving. When the operation is finished, it becomes difficult to believe that the resultant picture is a platinum photograph, except to those who know how it was produced. The use of sawdust and water was advocated some years ago for the development of a special kind of carbon print, but it fell into disuse, because it was a long and tedious operation. Such, however, is not the case when employed for the reduction of a platinum print that is too dense.

If a sepia platinum print be made and printed a little more deep than suited for the usual class of portrait, then treated as described, the effect is very charming, particularly if the print is a copy of an old oil painting. Head and bust portraits from life treated in this way possess a very desirable quality because of the genuine stipple effect aimed at by the use of a somewhat coarse-grained paper. Views and landscapes treated by this method produce effects that are not equalled by any other process except by beautiful engraving. The writer is not aware that this method of reducing the over-density of a platinum print has ever been brought into use. It will prove to be both a new and novel power in the hands of the skilled photographer. It could no doubt be applied to other photographic prints, but the object here is to point out its use in a direction where it has already proved its value, where it might be the means of creating a new and separate class of portrait, enabling the photographer to produce a special portrait of a remunerative character, and forming a special feature of attraction to his studio.

The production of platinum images upon porcelain or opal glass is not an impossibility. They have already been made, both in blue-black and brown-black, and may before long become a commercial article. The results, with such pure whites as that of a porcelain or opal base for the high lights, leave nothing to be desired in the way of black and white when applied to portraiture. Platinum opals will become an accomplished fact as well as carbon opals. With a glass or porcelain base the reduction of a platinum image can be easily accomplished by chemical means, and can be strengthened by alternate toning with gold and platinum.

The sawdust reducing mixture can be saved for future use. The best plan to adopt is to wash the sawdust well, then wring it as dry as possible in cheese-cloth, and lay it out upon blotting paper to become quite dry. Another point may be mentioned here. In an overdense platinum print, especially one made during the hot weather, the whites are very apt to become

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lightly grayed. This grayness is easily removed by the saw-dust and water reducer, so that the process becomes doubly valuable. With the smaller sized platinum prints that are produced upon smooth paper, and where it is so often desired to have them a semi-gloss, so as to make the shadows more transparent, this may also be readily accomplished with a surface that is quite waterproof, one that not even mild acids or alkalis will affect. To accomplish this the prints must be well washed and dried in blotters, so as to lie quite flat. This is best done by first draining the water well from the prints, then blotting them off between clean white blotters. After this is done place the prints in another set of clean dry blotters upon a very level board or sheet of thick plate glass. Place several blotters at the bottom, if glass be used; thus with two blotters between each set of prints place a level piece of board upon the top and submit them to considerable pressure for the night. The next day the prints may be removed, that is, if they are quite dry. Procure a glass slipping bath, such as is used for the wet collodion process. Fill it nearly to the top with the following:—Albaline, 1 part; thinner, 1 part. Take the prints one by one, dip them completely in the mixture, hold the print up to drain by one corner, then clip it at each corner with two wood clips, and suspend it to dry away from dust. (The prints should not be rimmed until after this operation.) When dry, trim prints to size and prepare to mount with a good strong paste, by rubbing it well across the back of the print. Perform this operation thoroughly, then mount as desired, taking care to hold the blotter that covers the surface of the picture with the left hand, while applying the roller with the right, so as to prevent the picture from slipping. Roll down well, wipe off any excess of paste with a damp sponge, cover with clean blotter, then place under pressure until dry. When dry, remove the prints, flatten them out by passing them through a rolling press, when it will be observed that the shadows are very transparent, the whole picture presenting the surface of an artistoplatino with intense blacks. It will be found that prints tested in this manner are about as waterproof as it is possible to make a paper print, and that on the whole it approaches the effect that is observed when a platinum print is wet. This will no doubt meet the requirements of many photographers who have desired such a result.

The precise effect of a platinum print as seen in water can be produced in a dry state, a method for accomplishing it will be described in a future article in this magazine.*

THE ILLUMINATION OF THE DARK ROOM.*

SEVERAL articles have been published by me with regard to the subject of lightening up dark rooms. Daily more experience is acquired respecting the suitable arrangement of light for the dark room, especially as regards the use of colour-sensitive plates and concerning the phenomena appearing when ordinary plates are handled.

There is no light extant which does not affect plates as sensitive as bromide plates are, and which if acting on them for any length of time would not cause fogging when they are developed. Even the most perfect devices for producing non-actinic light are only in a figurative sense absolutely reliable, and one can easily ascertain that an ordinary plate if exposed for a sufficiently long period of time is sensitive to any kind of light visible to the eye. If artificial perfectly pure red light is obtained by creating through a prism a spectrum of sufficient length and then separating this light by a crossed prism from the other light as is always admixed owing to reflex

phenomena one readily perceives that, given sufficient intensity and a sufficiently long exposure, even extreme red light will affect a photographic plate. If this holds good for spectrally thoroughly purified light of long wave lines it holds all the more good for any red light separated by means of ordinary coloured glass. Even the most perfect filters—let alone the far less perfect ruby glass usually used—transmit light which, if of sufficient intensity, affects a photographic plate in a short time. An experiment in this direction can easily be made. If one produces deep red liquid strata which previously have carefully been examined spectrographically and which are free from ultra violet light that not infrequently passes through certain red filters, and exposes under such a filter a plate to sunlight, the plate will, even in the event of there being transmitted no light of a shorter wave length than 650, show in a few seconds a developable impression. Hence all attempts at developing plates by the aid of ever so perfect filters in broad daylight or sunlight are brought to failure.

To provide practically light-proof illuminations of dark rooms, care has to be taken therefore, not only that so-called ineffective light passes through the filters, but also that the intensity of the light-employed does not exceed a certain degree. It is therefore impossible—at least as far as gelatine plates are concerned—to provide for the dark room light-proof illumination which would be brilliant at the same time; and this is all the less feasible, the less perfectly the filter mark the boundary line.

The worst in this respect is, as is well known, coloured glass. When examining in direct sunlight, the spectrum of even the best ruby glass, it appears that the red light transmitted is weakened, whilst with the red light considerable quantities of green and traces of blue light will pass. This remark applies to all kinds of ruby glass in general. It is true the shade can be taken so deep that it becomes difficult to demonstrate refrangible light at all. But even in such a case the fact in question may be demonstrated by taking a spectrographic picture with a wide slit and intense rays of concentrated sunlight.

Other conditions being equal, the demand made on a filter will have to be all the greater the richer the light employed is in refrangible rays. Even an imperfect filter of ruby glass is tolerably useful for petroleum, or ordinary gas-light, but much less so for electric incandescent gas-light, daylight or electric arc-light. The use of incandescent gas-light as source of light for the dark room is but little advisable, because of its being comparatively poor in red while rich in green rays, which latter display an intense action on the plate, and are more or less perceptibly transmitted by ordinary ruby glass.

Hence follows that the power of dark room filters must depend upon the source of light employed—viz., on the one hand on the intensity and brightness of the light employed, and on the other hand on its nature and composition. It is much easier to provide a tolerable dark room filter suitable for petroleum and gas-light than for a daylight window.

Seeing that the intensity of the red light may not be increased ad libitum without running the risk of fogging the plates a light filter must always be arranged so as to allow only a certain amount of light to act on the plate, and it will answer its purpose all the better the more the transmitted light is purified of any refrangible rays. The greater the degree of such purification the greater the amount and brightness of the light that may safely be employed. When using ruby glass panes, the illumination of the dark room, if chosen sufficiently dense, will always be exceedingly imperfect in the event of ordinary gas or petroleum or gas lamps being used. Ruby glass absorbs far too large a proportion of useful light, whilst transmitting at the same time detrimental light unless with a very deep ruby stratum. Far better results are obtained if in the place of ruby glass suitable coloured filters are em-

* From a pamphlet, "More Light for the Dark Room," published by A. Staley & Co., 19, Thavies Inn, E.C.

ployed, as the absorbing power of artificial dyes is far better and more pronounced than that of ruby glass. When daylight or artificial sources of bright light are used, one is hampered in two directions. In the first place the filter must be so dark that absolutely none of the large proportion of refrangible light is transmitted, and, secondly, the red light must be subdued to such an extent that it is prevented from exerting any detrimental influence. Both drawbacks are more successfully avoided by means of other colour strata than those feasible in ruby glass.

When daylight or electric arc-light is used the filter strata must, it is true, be prepared accordingly if they are to transmit non-detrimental light under such circumstances.

From the foregoing it will be seen that the task of properly illuminating the dark room according to existing circumstances is not an easy one and that the production of suitable artificial filters for this purpose requires close study and an extensive practical experience. Photographers will not always be able to prepare serviceable filters from artificial dyes having the required characteristics. A long-felt want will be met therefore by enabling them to buy such filters of good quality.

There are now produced good filters for illuminating the dark room, and there are now placed on the market gelatine dark room filters answering all reasonable requirements—viz., filters which are coloured so as to give with the various sources of light a useful and yet the brightest possible illumination.

For the illumination of positive rooms, for silvering albumen paper, for charging copying frames with copying papers, for developing Lenta papers, and other little sensitive preparations, gelatine filters of a suitable yellow tint will prove sufficient.

For developing ordinary dry plates with the brightest possible light there are filters transmitting intense and yet perfectly safe red light, whereas for daylight illumination and the handling of highly coloured sensitive plates, as well as for panchromatic plates and collodion emulsions deep red, exceedingly reliable and yet bright filters are made. When there is an opportunity I shall revert to the subject of the use and characteristics of these filters on the basis of practical experience.

DR. A. MIETHE.

TONING BROMIDE PRINTS.

I HAVE been using sulphate of copper for some time past in toning Ilford bromide prints, and have found it excellent. Many other methods of obtaining the same result have been suggested—iodine, potassium bichromate, potassium ferricyanide, etc. I have tried them all, and find that the copper sulphate is the best. It takes a little longer than iodine, writes Mr. Harold Baker in "Photographic Scraps," but is far less expensive, and in my hands has proved more reliable. Some have questioned the permanence of the results, but it seems to me that such prints are likely to be quite as permanent as ordinary bromide prints, as, if the operations are properly carried out, the chemicals which are used to bleach the print before toning, fail to have any effect on the finished toned print. Toned bromides by the old cooking process, with hypo and alum, have proved very permanent, and as the chemical change produced by the sulphide process is precisely the same as by the cooking process, but far more complete, the results ought to be more permanent than those by the cooking process. The sulphide process has several great advantages over the cooking method. First of all, no special kind of print is necessary, as there is no change in depth. A good black ordinary print will tone to a good colour.

With the cooking method the print must be darker, as the process reduces the depth, and, in order to get a good sepia, it is necessary to over-expose and use a restrained developer

to obtain a greenish print; at times, also, patches of prints would refuse to tone at all and remain black, in spite of even of prolonged boiling. I found these patches were caused by hypo and developer being on the print at the same time either hypo from the fingers during development, or developer remaining on the print during fixation. None of these troubles need be feared with the sulphide process.

The solutions needed are simple. First, the prints should be hardened with alum or formalin (I prefer the former). After slight washing they are bleached thoroughly in

Copper sulphate	...	...	1 oz.
Potassium bromide	...	...	1 oz.
Water	...	...	10 oz.

This can be used again and again, until it works too slow. Next, the whole of the copper remaining in the paper must be washed out; to assist in this the prints should be placed in a 2 per cent. solution of nitric acid for five minutes, followed by more washing. Finally they are toned in a very dilute solution of sulphide of sodium.

The copper solution converts the silver of the image into silver bromide of a pale yellow colour, and the sulphide converts the bromide into a rich brown sulphide of silver, a very stable salt.

It is most important that the whole of the copper should be removed from the paper before the sulphide is applied; if it is not, the paper will be stained brown, a stain which cannot be removed.

The sulphide solution should not be used a second time and should be used dilute, as it has a markedly softening effect on the gelatine, and if too strong will blister the print very badly. It is important, however, that it should be allowed to act long enough to convert the whole of the silver bromide into sulphide. The sulphide of soda has a very unpleasant smell, very much like rotten eggs, so that it should be used in a well-ventilated room. The solution needs some care in its preparation. The sulphide should be obtained from a reliable chemist, and should be as pure as possible. The crystals should be bought in bottles as they are extremely deliquescent, and will almost dissolve in their own water on crystallisation. I usually make an almost saturated solution which is boiled in a flask or an enamelled iron vessel; when cool the solution is filtered through filter-paper to remove a fine black precipitate which is thrown down. One ounce of the saturated solution should be diluted to 50 oz. for use, but it is convenient to keep it in the concentrated form and dilute when required. The strong solution should be handled with care, as it has a very solvent action on the skin.

If only a few prints are to be toned, the iodine process may be used, but for large batches iodine is expensive. The ordinary tincture of iodine from the family chemist answers quite well, diluted, of course. The first change is to darken the paper support of the print to a deep purple, the image then begins to change to a pale yellow (silver iodide), and the bleaching is continued until the print appears as a negative, a yellow image on a deep purple ground; it is then passed through a dilute solution of sodium sulphite, which discharges the purple colour of the paper so that it is possible to see whether the whole of the black silver bromide has been converted into yellow iodide. If any black remains, the print should be washed and returned to the iodine solution; when thoroughly bleached it should be washed and placed in the sulphide solution.

The exposure and development have an influence on the colour of the toned print, long exposure and restrained development produce a more yellow colour. Altogether the process is a great advance on the hypo and alum cooking method, with less risk of failure and better results.

J. CRAIG ANNAN.

frequently said, and often also with much truth, that a prophet has no honour in his own country. The great men of the day, however, oftentimes defy this prophecy, and then admiring neighbours find it the lie direct. Photography is so much a thing of to-day, that it is rare to find a photographer proving the falsity of this doctrine; Mr. J. Craig Annan, however, who is essentially a leader, defies this doctrine, and "The Bailie," the Glasgow "Punch," last week publishes an appreciative notice of him, under the well-known heading of "Men you Know." The fact that he figures as 1,663 proves that this feature is of sufficient antiquity to merit mention, we therefore make no excuse for quoting "The Bailie's" graphical appreciation in extenso:—

photography also among the fine arts? is a question around which an intermittent warfare has for some years been waged with sharp-shooting and raising of dust and smoke. To the unalloyed genius known as "the man in the street" there seems no peculiar reason why the camera should not be considered as legitimate an instrument for the expression of the artistic spirit as the oil or the paint brush; but this the brethren of the palette are not to admit. Art, they say, is nature seen through a temperament not through a glass lens; its purpose is not to report a fact, but convey an impression; and its method includes a certain selection and arrangement of outlines and masses, a suppression of detail, a barrenness of composition, and a generalisation of effects, which, contended, cannot be attained by the use of mechanism.

is usual in such controversies, the only effective answer is supplied, not by the man of words, but by the man of action, not by who says the thing can be done, but by him who does it. Among such, the "Bailie's" "Men you Know" for this week occupies a prominent place, and this fact has received an emphatic recognition in his selection by His Majesty's Commission to the St. Louis Exhibition to represent Great Britain, along with General Bouverie, on the International Jury for the photographic section of that gigantic show.

his is the culminating honour in a series of similar tributes that have been paid to Mr. James Craig Annan in his capacity as a visitor of the uses of the camera. These date as far back as 1893, when his exhibits at the first exhibition of the Photographic Salon in London, by their combined character of restraint and unconditionality were considered the most striking features in an exhibition destined to become the basis of "the new photography." Owing to this, Mr. Annan appeared as an exhibitor at Brussels, Vienna, New York, and Munich, in all of which cities his work has been most favourably received by the critics; while the sums of Dresden and Hamburg have procured specimens of his productions for a place in their permanent collections. In January, 1900, the Royal Photographic Society instituted a series of "one man shows" in their rooms in Russell Square, and invited Mr. Annan to inaugurate the series by contributing a representative selection of his most typical work. Again at our own International Exhibition of 1901, Mr. Annan was the convener of the photographic committee of the art section; and the beautiful and complete collection of photographs gathered there from all parts of the world very largely due to his energy and influence.

the principal incidents in Mr. Annan's life may be told in a few words. Born in Hamilton, he is the second son of the late Mr. James Annan, who was well known to a previous generation as one of the leaders in photography, especially in its artistic developments. These who can remember the late Mr. Annan do not require to be reminded of his keenly artistic sensibilities and his strong interest in his craft. Mr. Craig Annan may be said, therefore, to have inherited a photographic and artistic atmosphere from his childhood, in a metaphorical sense to have been cradled among *materia photographica*.

After learning the rudiments of his craft in his father's works, our subject spent some years studying chemistry in the laboratory of the Professor Dittmar, and shortly afterwards, in 1883, went to Vienna to learn the then new process of photogravure under the tutor, Herr Karl Klic. Having mastered the mysteries of this

beautiful method of reproduction, Mr. Annan returned to this country, where he has since worked the process with success and increasing reputation. The first to introduce this method into Britain, his firm of T. and R. Annan and Sons still hold a leading position among many later competitors, as is evinced by their illustrations to such *de luxe* books as "The Portraits of J. S. Sargent, R.A.," "The Works of Sir Henry Raeburn," and "The Bridgewater Collection."

The Man You Know is of a modest, unassuming habit of mind, and is greatly beloved by all who know him. He is now on his way across the Atlantic. "The Bailie" congratulates the St. Louis Exhibition authorities on their visitor, and wishes him a calm sea and a prosperous voyage.

The article is accompanied by a full-page portrait of Mr. Craig Annan.

THE PHOTOGRAPHIC SURVEY OF ESSEX.

THE question of local and county photographic surveys has frequently been debated in these columns, although the exact purpose of the ultimate results of the work remains in many instances a matter for speculation. These surveys undoubtedly provide information that may be invaluable to future historians and other workers, but it is eminently necessary that such surveys should be systematic and thorough.

Mr. A. P. Wire, in replying to an editorial note in the "Leytonstone Express," complaining of the lack of interest taken in the photographic record of Essex, which Mr. Briscoe, of the Stratford Technical Institute, tried to inaugurate over a year ago, says:—"As far as an organised survey of the whole county is concerned, this, as far as I know, has not been attempted. It is too gigantic a task for any individual to accomplish, and to do it would require an organisation in touch with every part of the county. Such organisation does not exist, and who is the person or where is the society that can call such an organisation into existence? It seems that Mr. Briscoe did nothing more than read a paper about it at the meeting of the Essex Field Club. It is certain that the Executive of the Essex Field Club has not the organising ability in any way adequate to carry on a work of this kind. Notwithstanding this, a great deal of work has been done, and is being done, in our county. In the pages of the "Journal of the Essex Archaeological Society" and of "The Essex Review" may be found many Essex records, and numbers of amateurs are at work making and collecting pictures. The National Photographic Survey, under Sir Benjamin Stone, of course, covers Essex, and this survey would receive a great deal more help were it not for the rule that only platinotype prints are accepted.

"Colchester has been done, I may say, exhaustively. In the Town Hall and Museum of that town are large collections of pictures and antiquities that illustrate the history of the town, and one amateur residing there has a vast collection of pictures and notes that we all hope will ultimately become the property of the Corporation. As for this district, there is at work an organisation for the 'Survey of Greater London.' Almost all the work of this committee is done by the voluntary active members, who photograph, draw, make plans, etc., as the committee determines. This committee not only collects information, but from time to time, as funds allow, publishes monographs, or memoirs. Among these the committee has lately published a 'Monograph of the Great House, Leyton,' with numerous illustrations. I have worked on this committee for some years, and we have in hand now monographs of West Ham Parish Church, East Ham Old Church, and Waltham Abbey, all in Essex, besides others in various parts of London. This committee not only does this record work, but uses its influence to prevent the wanton destruction of old buildings. It assisted in this way in saving the Trinity Almshouses, Mile End, and the Church of St. Mary, Stratford-le-Bow. After Mr. Briscoe read his paper I wrote and suggested that he should organise a survey of West Ham, for there is plenty to be done in that large parish, but no reply came. It seems that if this work is to be successfully carried out, it must be done under the auspices of the local councils, for, alas! very, very few people take an interest in antiquarian matters, and nothing of this kind can be done without money."

PATENTS AND RECIPROCITY.

At a time when everyone is considering schemes for the encouragement and maintenance of our trade, it is, perhaps, not out of place to touch upon certain points connected with the method of promoting industrial activity in this realm by grants of letters patent, a subject included amongst those now receiving attention at the hands of the Tariff Commission.

England (writes Sir Lloyd Wise, in the "Times,") was the first country to recognise that inventors who introduced or improved an industry benefited the community, by causing an increase in the trade and employment of the people, and to adopt the method of rewarding inventors by the grant of letters patent securing to them the exclusive right to use their inventions for a limited period. Her remarkable rise to the position of the leading industrial nation of the world has been due more largely than is generally allowed to the adoption of this means of encouraging inventors, the success achieved being commonly attributed rather to natural resources and the commercial instincts of the people; and it is a standing memorial to the astuteness of the legislators of the time of James I. that, notwithstanding the violent prejudice against monopolies which had been caused by the gross abuse by the Crown of its prerogative, in granting monopolies of various trades to courtiers, and for the purpose of raising money, they expressly excluded letters patent for new and useful inventions from the operation of the statute which declared monopolies in general illegal. Nearly every civilised nation has followed our example by granting protection for inventions.

But whilst an exclusive privilege of limited duration is calculated to enable an inventor to reap a reward fairly proportionate to the benefit accruing to the public from his invention, such privileges have occasionally been so exercised as to have a detrimental effect, owing to greed of owners and attempts to monopolise the home market for imported articles by preventing manufacture in this country. The more important the invention the more disastrous to our trade is such a course likely to prove. In an extreme case it is conceivable that the effect might be to cause an industry to dwindle during the term of the patent until, on its expiration, the foreigner found himself in practically complete possession of the market. Obviously, to admit of such a possibility would be to carry the principle of reward altogether beyond reasonable bounds.

Recourse has in many countries been had to expedients for protecting manufacturers and consumers. Thus a patent is prevented from being utilised to secure a monopoly for imported goods, either by direct prohibition, as in France (subject, however, to international arrangements) and Canada, or by being made liable to revocation on failure to carry on the manufacture within the country after a given lapse of time, as in Austria, Belgium, Denmark, France, Germany, and elsewhere. But our law does not go so far. Under it importation of patented products without manufacture here may go on indefinitely unless some interested party, possessed of ample means and sufficient courage to run the risk, should succeed in satisfying probably the most expensive tribunal in the land—the Judicial Committee of the Privy Council—that the reasonable requirements of the public with respect to the patented invention have not been satisfied.

Under the Patents Act of 1883 the Board of Trade had power, in certain cases, to order a patentee to grant a licence on the application of an interested party. The practice was to delegate to a referee the duty of hearing and reporting on the matter, and then to decide what, if any, licence should be granted. The machinery was found to be needlessly complicated, and in the case of a foreign patentee residing out of the jurisdiction either inoperative or very difficult to enforce. In 1900 the Board appointed a strong departmental committee (of which Sir Edward Fry was chairman) to inquire and report as to this amongst other patent questions, and the Patents Acts of 1902 resulted, although its provisions are not entirely in accord with the recommendations of the committee.

Under that Act any person interested may petition the Board of Trade for a compulsory licence, or in the alternate revocation of the patent, on the ground that the patentee has not satisfied the reasonable requirements of the public. Assuming a *prima facie* case to be made out, the petition is (unless the parties come to terms) referred to the Judicial Committee of the Privy Council. If the patent is worked or the patented article is manufactured exclusively or mainly outside

the United Kingdom, and the patentee fails to disprove the grounds of the petition, the petitioner is entitled to succeed. The reasonable requirements of the public are not to be deemed to have been satisfied through default of the patentee to work his patent or to manufacture the patented article in the United Kingdom to an adequate extent, or to grant licences on reasonable terms, any existing industry or establishment of any new industry is unfairly prejudiced, or the requirements for the patented article is not reasonably met. If the committee of opinion that the reasonable requirements of the public will be satisfied by the granting of licences the patent may be revoked but a patent cannot be revoked until after three years from its grant or if the patentee gives satisfactory reasons for his default.

The Associated Chambers of Commerce recently passed a resolution to the effect that the law should be so altered as to secure the enforcement of every patent if the invention, though workable in this country, is not worked within a reasonable time. This is a needlessly sweeping proposal, as a patentee who is not mainly interested in manufacturing abroad, if unable to supply the home demand himself, is usually quite willing to grant licences on reasonable terms; and it would be both unjust and impolitic to deprive him of his rights simply because of his inability to manufacture or to induce others to do so. Under such a provision small encouragement would be afforded to inventors of limited means, because it would operate as an incentive to manufacturers to abstain from taking licences, so as to bring about the extinction of the patentee's rights. Indeed, the arguments adduced in support of the resolution were directed against foreign owners of British patents manufacturing abroad and importing into this country to the serious detriment of our manufacturing industries. They might advantageously extend to prevent this; also to impose on foreign holders of British patents conditions analogous to those imposed by the patent laws of their own countries.

It is intolerable that foreign manufacturers should be helped by our patent laws to flood this country with foreign-made wares, while their patent laws operate to exclude English-made goods from their markets. Our manufacturing industries are sufficiently handicapped by prohibitive tariffs, but even retaliation in that direction would suffice to protect them so long as articles unconditionally protected by letters patent here could be imported. Neither would the consumer be protected; because, competition being shut out, those who purchased the articles could be made to pay such a price as would include any import duty that might be imposed.

It is desirable, then, that our Government should be in a position to secure reciprocal treatment for British owners of foreign patents, and to this end our law might with advantage be so amended as to provide, not only for compelling patentees to grant licences, but under certain circumstances, and subject to international arrangements, for requiring patented manufacturers to be carried on in the United Kingdom, and for prohibiting importation of products protected by British letters patent, all of which might be subject to rules to be made from time to time by the Privy Council or the Board of Trade.

Any such enactment should give ample power of discrimination as not to inflict hardship upon and discourage English inventors; would, for example, such a measure as suggested by the Associated Chambers of Commerce; and, furthermore, should provide a more ready and economical method of dealing with applications for compulsory licences than the present one, which seems eminently calculated to encourage oppression of persons of moderate or small means by those who command capital.

Seeing that, even in cases bristling with legal and technical difficulties, the Comptroller-General of Patents, or the Chief Examiner or his deputy, has to determine (subject to appeal to one of the law officers whose decision is final) in every opposed case, whether letters patent shall or shall not be granted at all, there appears to be no reason for driving applicants for compulsory licences to so exceptionally expensive a tribunal as the Judicial Committee.

The law relating to compulsory licences would be far less likely to remain practically a dead letter if, with a view to enabling decisions to be obtained quickly and cheaply, it were amended on the lines of the scheme embodied, on my recommendation, in the Canadian Patent Act of 1903, according to which the head of the Patent Office or his deputy (aided, where he or either party so desires, by a specially qualified assessor) is the authority for dealing with applications

onsory licences, and if the owner of a patent refuses or neglects simply within a stated time with an order for a licence, the patent becomes null and void.

The aim of any amendment in our law should be, whilst giving the patentee a right free from needless uncertainty, so that he may be enabled to derive due advantage from his invention, at the same time afford manufacturers and traders an opportunity of readily protecting themselves against any arbitrary owner of letters patent who may seek to exercise the privileges thereby conferred in such a manner as to do injury rather than to confer benefit upon the community.

TRADES AND FACES.

It is an undisputed fact that a man's trade or profession affects, more or less noticeable extent, not only his disposition, but his physiognomy. That certain faces appertain to certain calls is a matter of everyday observation. The expression of the "key" man—be he trainer, jockey, or groom—is quite unmistakable and peculiar. The professional cast of features of the doctor or lawyer is equally well known, and yet more strikingly distinctive is the face of the actor. Butchers and shoemakers, writes Miss Bruce Bacon in the "English Mechanic," tailors, publicans, and servants all have facial peculiarities which they hold in common with all other members of their trade, and to a keen observer of human expression all workers of whatever station bear upon their features the impress of their labour. To state the fact is easy enough, to explain it is another matter. The connection between thought and its physical expression, as also between emotion and its physical, especially facial, concomitants, is ever complex and elusive. Nevertheless it is those who have devoted careful study to the matter, and whose results have proved sufficiently curious and interesting. One especially instructive instance, among many others, has been related by a well-known medical man. In his work as surgeon in the hospital shipbuilding town, he was struck with the lowering brows and gruff expressions of the riveters and boiler-smiths with whom he came in contact. Only by experience did he come to understand the apparent watchful hostility which each seemed to exhibit was in reality a trick of the countenance merely, and not at all indicative of the actual feelings. And pondering over this he arrived finally at the conclusion that the scowling look, which he maintains is common to all kinds of smiths, is due to the constant automatic contraction of the brow to protect the eyes from the flying sparks, as heavy sleage descends on the glowing metal. A blacksmith is, by rule, credited with being a serious and downright man, who looks the whole world in the face and stand no nonsense. It has been noted that the mere act of striking heavy blows, accompanied always with a flush and a frown, has about it so much suggestion of wrath and determination as in time to affect the character to a certain extent. In the case of the shipbuilders also their work is noisy as to render them all slightly deaf, which infirmity always has a closely watchful expression to the features. Another curious, some may think far-fetched, explanation of a "trade expression" has been given in the case of the tailor. Let anyone watch the face of a person engaged in cutting a thick piece of material with a pair of scissors, and it will be seen that the lower part of the face works in involuntary unison with the blades. May not (so it is argued) the constant working of a tailor's jaws concomitantly with his shears help to bring about that cast of countenance which distinguishes him.

The well-known and recognised type of face belonging to the key man has its peculiarity chiefly in the set of mouth and jaw. This is explained from the fact that the muscles which close the jaws and compress the lips are always called into play when a man is asserting his will over that of a horse. The incessant manipulation of his own power and will over that of an animal tends to that firmness of jaw and thinness of lip which a horseman wears. Somewhat different when the command is exercised over men and of animals. The firm mouth is still seen in the drill sergeant; the commanding eye—which is absent in the groom—is also added, as in dealing with men the higher method of expressing authority is made use of. Generally speaking, it is strenuous contest with ever-rising minor difficulties which produces thin and compressed lips.

Many housewives who suffer the little worries of life to prey upon them, or whose existencies are a perpetual struggle to make both ends meet, exhibit this peculiarity, even to extremes. Compressed lips are generally rather a sign of weakness than strength. A strong will is above the perpetual petty strife they indicate. The commanding officer, sure of his men's obedience, lacks the look of tension which his sergeants wear, and that absolute monarch, the sea captain, though his face carries authority and power, has the easily-set mouth of confident assurance. It has been remarked that there is a certain marked resemblance between the types of face, especially the calm lips, belonging to the naval officer and the engine driver, brought about by the fact that both are absolute masters of the powers they control. The priestly face bears also the sign of authority, though the thin lips are frequently present, added to a sense of the dignity of position. For some mysterious reason also the skin, especially beneath the eyes and about the throat, tends to be full and baggy—a peculiarity the cleric shares, though in a lesser degree, with the musician. The doctor's face, as also the lawyer's, wears an expression of weighty perspicacity, whether deserved or not, though it may be noted that the leading members of both professions do not display their distinctive symbols to anything like the same extent as do the rank and file, probably because the constant desire to impress and the effort to appear learned is no longer necessary. It is curious, by the way, though undoubtedly, how emotions, the effect of which may at the time produce no perceptible change in the face will, if constantly indulged in, nevertheless affect the whole cast of countenance, showing that all feelings, however slight, send impulses to the appropriate muscles, which, though too faint to make outward movement, yet are cumulative in their action. In the same way constant, though unconscious, mimicry has its outward result in time on the expression. It is frequently remarked how people who have long lived together—as elderly married couples—have a tendency to grow alike, due, doubtless, to that facial limitation we are all so prone to. It needs no insisting on how liable we are to unconscious imitation; the way in which a yawn will spread among a company, if started by one individual, being a well-known case.

The faces of actors are peculiarly distinctive and unmistakable. An actor's art involves the stimulation of the muscular factors of expression. Not only must he emphasise his facial movements, so as to make them plainly apparent to his audience, but by his constant change of rôle he is called upon to portray all kinds of emotion in turn; consequently his expression muscles are exercised as thoroughly as an athlete exercises his biceps, and when seen at rest no one group of muscles out-pull another in an actor's face, giving a peculiar, slightly mask-like or wooden aspect to the whole. An even layer of subcutaneous fat seems also to be induced by constant emotional stimulation of the features. One noteworthy result of this continual facial exercise is to overrule and obliterate the usual records which time brings to every face, and consequently to preserve in a remarkable way the youthful appearance for which actors and actresses are so well known. Actresses, in particular, seem possessed of a special power of indefinitely preserving their youth and freshness, even though the life they lead is an unnatural and more or less unhealthy one. Coming to musicians, professional and otherwise, it has been noted that they are mostly distinguished by a bagginess beneath the eye and jaw; the eyes are prominent and dreamy, and the mouth characterised by a lax and flabby set of the lips. The mouth, indeed, approaches in appearance near to the recognised mouth of the sensualist. It is a curious fact that this mouth, which ever accompanies the artistic temperament, whether in music or other arts, always has about it the suggestion of habits of self-indulgence. It may probably be explained in this way—that the true artist is born, not made, and he therefore achieves greatness more by following his own spontaneous emotions than by painful efforts. Thus his work is, in a sense, a species of self-indulgence; and it too often happens that this principle of drifting, fostered by the artistic temperament, widens and embraces other departments in life.

QUITE a novel bid for popularity is now nightly drawing all Leeds to the Coliseum Music Hall. During the evening some thirty photographs of people snapshotted in the street are exhibited on a screen, and if any of the persons happen to be in the house and recognise themselves they receive a sovereign each. Fresh photographs are shown every night.

"MYSTERIOUS MARKINGS" NOT CAUSED BY SPIRITS.

THE newspapers have contained a good deal lately on the subject of "spirit photography," and besides actual portraits, which are put forward as spirit photographs (says the "Barnet Photographic Record") a number of plates have been exhibited which displayed what were termed "mysterious markings." Whatever may have been the origin of the particular markings in those instances, it is only too easy to make plates which shall give mysterious markings every time.

The idea that glass is perfectly inert and insoluble is one which it is very hard to banish. We are so accustomed to fill a glass with water or other liquid, empty it, wash it out, and dry it, and regard the glass as unaffected by the process, that it comes as a positive shock to learn that it is impossible to dip a glass in water without some—the merest trace, it is true, but still a trace—of it being dissolved, and that when once a chemical solution has come in contact with a glass it is a difficult, almost an impossible task, to clean that glass so perfectly that a delicate test will not afterwards still show traces of the chemical to be present.

When wet plates were principally used, and photographers had to prepare them themselves, they were in the habit of cleaning off the spoilt negatives and recoating the glass. It was then by no means an uncommon occurrence for the original image to develop together with the second image, even after the glass had received what seemed to be a most thorough cleansing. The conditions under which the wet plate worker carried out his photography did not make this of so much importance as it would be now. He coated, exposed, and developed his plate before leaving his subject, and an occasional failure only meant an immediate repetition of the operations.

Now that the dry-plate user exposes hundreds of plates on a journey, rarely making two exposures on the same subject, and deferring all development until he gets back, a few such "mysterious markings" would be sufficient to drive the make of plate on which they occurred right off the market, and in the Barnet Works accordingly, the most elaborate series of precautions are observed to prevent the slightest chance of anything of this sort occurring.

Needless to say, every piece of glass used in the manufacture of the Barnet plates is new.

It is more. It is carefully selected and preserved from risk of any accidental soiling, and immediately before use is passed through machines designed to give it a cleansing, beside which all ordinary washing operations seem absurdly perfunctory. The result is, that when the glass passes through the coating machine it is in a condition of purity, unapproached in any other manufacturing operation whatever, and the users of the plates so made are able to place in them the most complete confidence.

FORTHCOMING COMPETITIONS.

September 30.—"Photographic News." Quarterly Competition. "Photographic News," 9, Cecil Court, Charing Cross Road, London, W.C.

October 1.—Thornton-Pickard. £100 cash prizes for pictures taken with Thornton-Pickard cameras and shutters. Thornton-Pickard Manufacturing Co., Altrincham.

October 10.—Luna paper. £240 cash prizes for prints on Luna paper. Lucien Allegre and Co., 59a, New Oxford Street, London, W.C.

October 15.—Belgian Association Lantern Slide Stereogram Competition. Secretary, M. Vanderkindere, 97, Avenue Brugmann, Brussels.

October 31.—Coxin. 68 prizes for users of Coxin. Judging twelve pictures. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.

November 1.—The "Graphic." £50 in cash prizes. Manager, Photo Competition, the "Graphic," Tallis Street, Whitefriars, London, E.C.

December 31.—Barnet. Nineteen classes. Prizes valued at £500 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

March 15, 1905.—Ilford. £750 in cash prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

FORTHCOMING EXHIBITIONS.

September 14-15.—Cambridge Photographic Society. Hon. T. J. Sowdon, "Sunny Side," Guest Road, Cambridge.

September 16 to November 5.—Photographic Salon, Dudley Egyptian Hall, Piccadilly. Hon. Secretary, Reginald Craigie, Graphic Salon, 1904, Dudley Gallery, Piccadilly, London, W.

September 20-28.—Newbury Photographic Society. Hon. Sec. E. J. Forster, Guildhall Club, Newbury.

September 22 to October 29.—Royal Photographic Society's ninth Exhibition, New Gallery, Regent Street, London. Sec. A. W. W. Bartlett, 66, Russell Square, London, W.C.

September 29.—Beverley Photographic Society. Hon. Sec., Morley.

October 15-29.—Coatbridge Photographic Association. Hon. Geo. W. Campbell, Ailsa Cottage, Coatbridge, N.B.

October 18; 19; 20.—Kettering Church Institute Photographic Exhibition. Hon. Secretary, E. Claypole, 112, Hawthorn Kettering.

October 19-20.—Isle of Wight Photographic Society. Hon. J. Howard Burgess, 53, Pyle Street, Newport, I.W.

October 19-22.—Rotherham Photographic Society. Hon. Sec. C. Hemmingway, Tooker Road, Rotherham.

November 2; 3, 4, 5.—Newark Photographic Exhibition. Sec. L. C. B. Appleby, Barnbygate House, Newark.

November 2-23.—Plymouth. Hon. Sec. Photographic Soc. Chas. R. Rowe, 2, Walnut Villas, Cockington, Torquay.

November 3.—Frome M.I. Photographic Society. Hon. Sec. B. J. Mitchell, 3, Willow Vale, Frome.

November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. James Dunlop, Myrtlebank, Motherwell.

November 9.—Hackney Photographic Society. Hon. Sec. Walter Selfe, 70, Paragon Road, Hackney, London, N.E.

November 15-19.—Sunderland Camera Club. Hon. Sec., Seiby 52, Frederick Street, Sunderland.

November 17-18. Braintree and Bocking Camera Club. Sec. W. H. Tilton, 81, High Street, Braintree, Essex.

November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.

November 22-23.—Ipswich Camera Club. Hon. Secretary, I. Sutton, 37, Henley Road, Ipswich.

November 23-26.—Hove Camera Club. Hon. Secretary, A. Sargeant, 55, The Drive, Hove.

November 24-25.—Isle of Thanet Photographic Society. Hon. G. W. Simmers, Aberdeen House, Ramsgate.

November 25-26.—Ilford and District Photographic Society. Sec., W. N. Beal, 155, Thorold Road, Ilford.

November 26-December 3.—Glasgow Eastern Amateur Photographic Association. Secretaries, John Brough, 68, Dalmar Street, Park Head, Glasgow; and Geo. R. Johnstone, 591, Alexandra Parade, Leinstown, Glasgow.

December 2-8.—Southsea Photographic Society. Hon. Sec. F. J. Lawton, 20, Clarence Square, Gosport.

December 5-17. First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102 West 161st Street, New York.

December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.

December 13-20.—Southampton Camera Club. Hon. Secretary, G. Kimber, Oakdene, Highfield, Southampton.

December 28-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 138, Glasgow Road, Wishaw.

January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

January 20-21, 1905.—South Essex Camera Club. Hon. Secretary, T. Michell, 180, Browning Road, Manor Road, E.

January 28-February 12, 1905.—Photographic Society of Marseilles. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.

February 6-11, 1905.—Blairgowrie and District Photographic Association. Hon. Secretary, Wm. D. M. Falconer, James Scott Cottage, Blairgowrie.

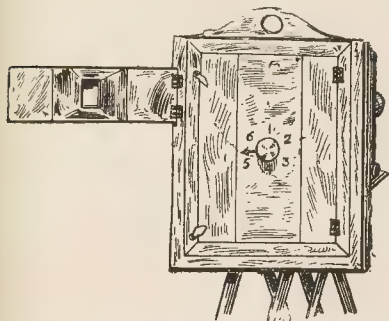
February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

March 4-11, 1905.—South London Photographic Society. Secretary, H. Creighton Beckett, 44, Edith Road, Peckham, S.E.

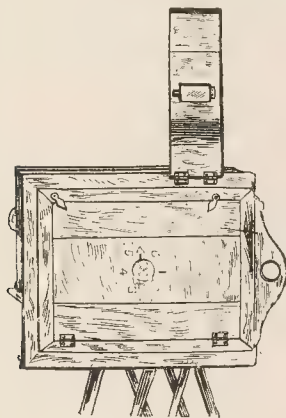
June, 1905.—Northern Photographic Exhibition. Secretary, F. Issot, 62, Compton Road, Harchills, Leeds.

New Apparatus, &c.

Stamp Midget Camera and Printing Frame. Sold by H. Tress, 33, Oxford Street, London, W. This camera is made to produce either six or twelve negatives of great sitters with one lens. Only one dark slide used for both



pictures; therefore, without any further outlay for extra slides fittings, the operator is able to produce pictures $2\frac{1}{2}$ ins. by 1 in. at will; either vertical or horizontal. Size of plates



$2\frac{1}{2}$ 5-16ths by $1\frac{1}{2}$ ins., which is a standard size, and can be used in all makes. Size of bromide paper $6\frac{1}{2}$ by 4 $\frac{3}{4}$.

is a well-made piece of apparatus, and should be extremely useful to those photographers who make a special line of stamp and get photographs.

"PHOTOGRAPHING British Mountains" is the title of an interesting article in the current number of "Cassell's Magazine." It is written by Mr. George O. Abraham, the well-known mountaineer. Illustrations are excellent, and show that the aspiring climber does not seek the Alps for arduous struggles and exciting adventures. Abraham relates many of his experiences, both amusing and serious, and disposes of the popular fallacy that "climbing" photographs always make the difficulties appear greater than they are. He says:—"It is scarcely ever possible to make a photograph show the actual difficulty of the leading climbs, for in nearly every case the camera has to be tilted upwards, and thus the idea of height is lost. The ideal position is on a level with the subject, and how often one yearns to be swung out twenty or thirty feet from the crags into space. But the days of aerial locomotion are not yet. In some cases it is possible to climb up a steep buttress and waylay a friendly party in an adjacent gully; but plans need to be arranged beforehand, otherwise one party may be out before another arrives, and the two parties often lose each other."

Commercial & Legal Intelligence

ESME COLLINGS, LIMITED (Photographers, London, Brighton, and Liverpool).—A first mortgage debenture, dated August 12, 1904, to secure £1,000, charged on the company's undertaking and property, present and future, including uncalled capital, has been registered. Holder—Mrs. S. A. Fentum, 78, Westow Hill, Upper Norwood.

THORNTON, Limited (Photographers, Altrincham).—Issue on August 26 of £250 five per cent. debentures, part of a series created same date to secure £1,000, charged on the company's property, present and future, including uncalled capital. Holders—Mrs. E. M. Thornton, Rokeby, Altrincham; and J. E. Thornton, Rokeby, Altrincham. No trustees.

SCOTT'S STUDIOS, LIMITED.—This company has been registered with a capital of £2,000 in £1 shares. Object, to carry on the business of photographers, photo-mechanical printers, manufacturers of and dealers in articles used in the photographic trade, optical appliances, scientific instruments, electrical goods, etc. No initial public issue. The first directors are W. T. Scott, C. T. Fox, and R. S. Dick.

MIDLAND COUNTIES PHOTO COMPANY, Limited.—This company has been registered with a capital of £5,000 in £1 shares. Object, to acquire from H. Spencer the entire interest in the business carried on as the Midland Counties Photo Company, and to carry on the business of photographers, photographic artists, portrait painters, etc. No initial public issue. Registered without articles of association. Registered office, County Chambers, Corporation Street, Birmingham.

ROTARY EXPANSION.—The Rotary Photographic Co., Ltd., notify us that the growth of their business is forcing them to vacate their premises at 14, New Union Street, Moorfields, and that they are now in process of removal to 12, New Union Street, precisely opposite to the quarters which they have found insufficient. No. 12 is one of the large and solemn, if not ornamental, City blocks, and the Rotary Company are occupying the whole of it, seven floors. Concurrently with this expansion, a second floor is being placed on the company's factory at West Drayton.

PARR AND COMPANY, LIMITED.—This company has been registered with a capital of £2,000 in £1 shares. Object, to acquire the business carried on by C. J. Parr and G. J. Jack, at 130, Westminster Bridge Road, S.E., as Parr and Company, to adopt an agreement with the said vendors, and to carry on the business of manufacturers of sensitised photo printing papers, draughtsmen, designers, specialists in art metal designing, colouring, and photo printing, etc. No initial public issue. The first directors are C. J. Parr, A. T. Howe, and G. J. Jack. Qualification one share. Remuneration £30 per annum.

AXTON, Limited.—This company has been registered with a capital of £10,000 in £1 shares. Object, to acquire the business carried on at 47, and 49, Newington Butts, S.E., as the Axton Company, to adopt an agreement with F. E. Coe and W. E. Scott, and to carry on the business of manufacturers of and dealers in machines and instruments, for musical entertainment, instructive, surgical, and scientific business and other purposes, including phonographs, autoscopes, biographs, mutoscopes, cameras, automatic machines, etc. No initial public issue. The first directors are F. E. Coe and W. E. Scott. Qualification 100 shares. Remuneration as fixed by the company.

PHOTO DEVELOPMENT SYNDICATE, Limited.—This company has been registered by Jordan and Sons, 120, Chancery Lane, W.C., with a capital of £2,000 in £1 shares (one founder's). Object, to adopt an agreement with E. Falla, A. Eldridge and F. J. Wood, and to carry on the business of manufacturers of and dealers in photographic apparatus, materials and accessories, printers, lithographers, publishers, bookbinders, booksellers, stationers, etc. No initial public issue. The first directors (to number not less than five nor more than seven) are E. F. Collins, W. A. Eldridge, E. Falla, G. Reeves, F. J. Wood, and L. F. St. John. Remuneration 10 per cent. of the net profits, or £100 per annum (whichever is larger) divisible. Registered office, The Company's Works, Park Road, Tunbridge Wells.

WALTURDAW COMPANY, Limited.—This company has been registered with a capital of £10,000 in £1 shares. Object, to acquire

the business carried on at 3, Dean Street, Holborn, as Turner, Dawson, and Howard, and to carry on the business of manufacturers of and dealers in cinematographs, animated picture machines, photographic apparatus, photographs, and films, photographers, art dealers, printers, publishers, public entertainers, and caterers, installers of electric gas, lime and other light, magic lantern manufacturers and dealers, opticians, manufacturers of and dealers in scientific instruments, etc. No initial public issue. The first directors (to number not less than two nor more than seven) are J. D. Walker, E. G. Turner, G. H. J. Dawson, and E. Howard (joint managing directors with £250 each per annum), G. H. Turner (chairman with £100 per annum) and L. de Beaumont-Klein. Qualification 25 shares. Remuneration of ordinary directors, one guinea each per board meeting. Registered office, 3, Dean Street, W.C.

A PHOTOGRAPHER'S DOWNFALL.—At the Guildhall Police Court, on Thursday last, Henri Tradeau (30), of 11, Woodstock Road, Shepherd's Bush, a photographer in the service of Mr. Green, 81, Aldersgate Street, was charged on remand on a warrant, with stealing, during the last twelve months, seven lenses, a half-plate camera, and other property, to the value of £105 9s. The accused pleaded guilty. A quantity of the goods were traced to an auction mart. A strong appeal was made for mercy on the ground that the prisoner had not given way to any kind of vice, that he was a sober, industrious man, and that he had made all the reparation in his power, and that were any sentence passed on him he would find it very difficult to again hold up his head or get anything to do. The Alderman said he would give weight to the appeal, but he had a duty to perform—painful though it was. He hoped the justice of the case would be met by sending accused to prison for three months with hard labour. The goods recovered were ordered to be given up.

AN "ART" PHOTOGRAPHER'S FRAUD.—On Thursday, at Frodsham Sessions, William Nichols, a well-dressed and educated young man, who described himself as an art photographer, was charged on remand with obtaining money by false pretences from George Morris, Mary Ann Howard, and Annie Jones. His *modus operandi* was to visit houses, preferably large residences, and to prey upon servants, soliciting work in enlarging or taking photos. In all cases he demanded some payment on account, and gave a receipt which bore the address of 56, Bewsey Street, Warrington. Prisoner, however, once hold of the money, made himself scarce in that locality and was never again heard of. He was eventually arrested at Sligo and brought back. His excuse was that he was hard up and could not get work, and took small amounts from each individual, so as to enable him to travel from town to town in his futile endeavours to obtain employment. Having a previous conviction recorded against him he was sentenced to nine months' hard labour, three months for each indictment.

THE DARK-ROOM LIGHT.—A recent issue of the "Photo Gazette" gives a formula for staining paper to be used as a filter for the dark-room light. It is, according to the "Bromide Monthly":—"Alcohol, 1,000 ccs., or 35 oz.; auramin O, 5 grms., or 80 grs.; safranin (Merck) 5 per cent. alcoholic solution, 100 ccs., or 3½ oz. The paper is to be soaked in this spirituous liquid for five or ten minutes. The formula and others of a like kind should be useful to bromide workers, to whom plenty of light in the developing room is of the first importance. The small lamp with a glass of about 10 by 8 inches is much too small a size, and usually the light is too red and deep. A bright yellow can be used with safety for bromide work, and the better the illumination, so long as it is safe, the better the work will be. The home-made lamp—constructed from a disused sugar-box or packing-case—is more suited to practical requirements than any commercial lamp. One form of lamp which we have seen was made from a couple of child's hoops, or, more correctly, from a hoop and a half. The half of one hoop was sprung into a complete and somewhat smaller hoop, so as to form the skeleton of a dome, which dome was covered, base and all, with canary fabric. An incandescent lamp was hung in the interior, and the whole concern suspended close to the ceiling of the dark-room, whence it filled the apartment to every corner with a safe and agreeable light. The same plan might be adapted to oil or gas.

News and Notes.

LAST DAY for the R.P.S. Exhibition.—Pictures for the Photographic Society's Exhibition will be received at the Gallery, Regent Street, up to 6 p.m. to-day (Friday) if delivered by hand.

THE Lantern Slide Exchange Club.—The secretary of this has asked us to announce that there are some vacancies for members. Full particulars will be supplied by Mr. J. S. Hammett, Mutley House, Plymouth.

THE Prospectus and Entry Form of The Glasgow Eastern and Fife Photographic Association's Exhibition is to hand, and we note efforts are being made to secure a big show. There are three classes (any subject), and the judges will be Messrs. Wm. C. and Arch. Cochrane. The last day for entries is November 14.

A NEW Method of Mounting Prints.—Messrs. Bayer have introduced a new method of mounting prints, demonstrated by Mr. at a meeting of the French Photographic Society. A very powder—"colle en poudre"—contained in a wide-mouth bottle, a sieve-like top, is evenly dusted over the moist print, which is laid on the mount and rubbed down in the ordinary way.

THE Exhibition of Process Engraving, to be held in the autumn at the Victoria and Albert Museum South Kensington, will in photogravure, photo-lithography, and kindred processes of reproduction by means of photography, as well as a special section devoted to the half-tone colour process, limited to four printings. The time for the reception of exhibits has been extended to the 30th inst.

ON Tuesday morning at nine a fire broke out in a shop window in the Victoria and Albert Museum, High Street, its origin being somewhat unusual. The rays of the sun played on a magnifying glass in the window, with the result that some celluloid photographic development dishes became ignited. The shop was shut, but the flames in the window were noticed by passers-by, one of whom got through skylight and extinguished them.

SALE of the Late Dr. Isaac Roberts's Observatory.—The telescope and general apparatus used by the late Dr. Isaac Roberts, F.R.S., for the production of his famous celestial photographs, is to be sold; also the observatory, house, and grounds (about 4½ in extent), Starfield, Crowborough, Sussex, which is 800 feet above sea-level. The whole is to be disposed of as it stands or the scopes and apparatus may be sold separately.

JARROW Camera Club.—The members of the Jarrow and District Camera Club inaugurated their winter session at the club on Saturday last, Jarrow, last week. Mr. E. W. Penman, the President, occupied the chair, and there was a large attendance. Twelve members of the club organised a very successful exhibition of photographic works in the Mechanics Hall, and the arrangements are in progress for a similar display during the coming winter.

THE Hull Photographic Society paid a visit to Flamborough on Saturday afternoon last. Shortly after arrival the wind grew strong and a heavy sea prevailed for about three hours, and in consequence the visitors were in their element, taking advantage of the fine and the wave studies. The next outing is to Paul, September 16, and the last to Barrow Haven October 1.

THE South London Photographic Society are starting their winter evenings on Monday, October 10th, and this year have decided to admit free of charge anyone who likes to make application to the secretary. The members who take charge of these evenings have thorough knowledge of their own particular subject, and will attempt to show "How it is done" in a simple and practical manner. Secretary, H. Creighton Beckett, 44, Edith Road, Peckham, will be pleased to send programmes and full particulars.

THE Frome Photographic Society have arranged their exhibition to be held at the Mechanics' Hall on Thursday, Friday, and Saturday, November 3, 4, and 5. There are eight open classes and one special class, open only to residents of the town and neighbourhood. Mr. C. Barrow Keene, of Derby, and F. M. Sutcliffe, of Whitby, have been retained to appraise the exhibits and silver and bronze medals or plaques will be placed at their disposal to be awarded in

Schedules and all other particulars may be obtained on application to the hon. sec., B. J. Mitchell, 3, Willow Vale, Frome.

LEOPOLD as Art Patron.—The Board of Education have informed, through the Foreign Office, that an exhibition of arts, under the patronage of the King of the Belgians, will be held in a special pavilion within the exhibition grounds of the Universal and International Exhibition, to be held in Liege in 1905. Full particulars as to the conditions attaching to exhibits will include paintings, sculpture, engravings, photography, architectural designs—are given in the official regulations, which have been obtained on application to the Consul-General for Belgium, at St. Helens, E.C.

Death of Captain M. Horace Hayes, the well-known authority on photography and their management, has occurred at Southsea. Captain Hayes was employed by the Government during the South African War, and was the writer of many books on veterinary subjects, and was the author of a "Student's Manual of Tactics." He was at one time Major in the Royal Artillery and saw considerable service with the Bengal Artillery. Captain Hayes will be remembered by many of our readers as having devoted special attention to photography, on which he had several papers before the Royal and other societies.

Grief having to report the death of Mr. Austin Joseph King, etc., who died at Tenby on August 28. The deceased gentleman's deep love of science bespoke him an attentive hearing at the London societies—photographic and otherwise. From the time of his formation and continuance of the Bath Photographic Society in 1903 he was probably the most active worker and largest contributor, scientifically and socially, to its work. He was not unknown to the public, and it is doubtful whether the Bath meeting could have been held in 1891 without the active co-operation the members obtained through his assistance.

OUR writes: "Your correspondent, 'Amidol,' appears to be suffering from a rather widely spread, shall I say disease, at the present moment. I myself have been consulting a doctor and various remedies over a like complaint, and the only alleviation I can find from the use of burning and irritation of such lumps on my face, hands, and the cream sold under the name of 'Icilmia.' I may state that it does not appear to quite cure the spots, but it takes away the pain. I might mention that I know at least a dozen people who are suffering from this complaint, and not one of them has anything to do with chemicals of any description."

We have received a second edition of "Ferric and Heliographic Processes," by George E. Brown, F.I.C. The text has been largely revised and brought up to date. Plans for printing copies on blue paper are a new feature of chapter 3, and the chapters on the new process embody the recent advances in this process. It is hoped that before the volume will be found useful both by photographers interested in the iron processes and architects, draughtsmen and others who superintend the copying of drawings and prints. A number of actual prints are issued as supplements. The work should be in the hands of everyone interested in this branch of photographic printing.

THE ENLARGING EASEL.—Those who are undertaking enlarging, but inexpensive methods of preparing an enlarging outfit make a note of a very simple plan of fixing the easel in position recommended in the "Bromide Monthly." Not the least of its merits is that it permits of the easel being set up or taken down in a moment. A "screw eye" is screwed into each side of the easel about an inch from the top, and through each is passed a stout wire. The two ends of each rubber are fastened to the table on which the easel stands, being secured in each case to points about a foot in front and behind the easel. The latter is thus held firmly in position in pretty much the same way as the supporting poles of a camera are secured.

PRELIMINARY VISIT.—The "Johannesburg Star" states that on a Saturday afternoon two policemen, standing near Cartwright's Capetown, noticed smoke issuing from a window on the floor of Duncan's Chambers, in Sheridan Street. Rushing into the building, they dashed into a room through an open doorway, from which smoke was still issuing, and there found a number of ladies sitting quietly waiting for a group photograph. It appeared that an enterprising amateur was taking a flashlight photo of the group, and that the smoke given off from the burning magnesium

wire had gone out of the window. Further excitement was caused by the arrival of the fire brigade, much to the amusement of the crowd which had collected.

THE Committee of the Northampton Museum and the Photographic Section of the Natural History Society are discussing the holding of a very important photographic exhibition, of a competitive character and open to all the world, early in 1905. The exhibition will take place in the Municipal Galleries from February 17 to 25, 1905. A very strong executive committee, under the presidency of Mr. H. Manfield, J.P., has been appointed, consisting of Alderman Campion, J.P., Councillors Hannen and Gribble, Messrs. G. Scriven, C. H. Dorman, A.R.I.B.A., with Messrs. E. J. Felce and W. J. Lewis as the hon. secs. The last occasion on which such an exhibition took place was in 1899, and every effort will be made to ensure even a more enjoyable, representative, and successful show than on that occasion.

We have recently seen specimens of the new Rotary Stripping Pigment Film for three-colour photography. The process seems to be simplicity itself, and the results achieved appear to be as good as could be desired. In addition to this, no costly apparatus for the production of either the original negatives or the resultant prints is necessary—a fact that should make this method of producing photographs in natural colours extremely popular. We understand that Mr. Sims, whose name is already well known to most of the English photographic societies as an able demonstrator and lecturer on behalf of the Rotary Company, intends demonstrating the new process during the coming winter season. Secretaries of societies should take note of this, and as Mr. Sims still has a few vacant dates, should endeavour to secure his services for a very interesting item in their list of fixtures. A line to the Rotary Company, New Union Street, Moorfields, E.C., will bring all particulars.

THE Hon. Sec. of the Photographic Club writes from 49, Princes Road, Wimbledon, London, S.W.:—Owing to the removal of the club to premises where there is no accommodation for a library and museum, the committee have decided to dispose of the club's unique collection of books upon photography, and of apparatus and specimens illustrative of photographic progress. Should this fact interest you I shall be pleased to forward you a complete catalogue of the books, etc. The library consists of between 400 and 500 volumes, and includes bound sets of the *BRITISH JOURNAL OF PHOTOGRAPHY*, "The Photographic News," "The Amateur Photographer," "The British Journal Almanac," "The Year Book of Photography," and other periodical publications, Daguerre's "History of Photogenic Drawing, 1839," "Fox Talbot's Pencil of Nature, 1844," "Archer's Collodion Process, 1854," etc., etc. The library is particularly rich in early books on photography. Among the objects in the museum are a complete set of Daguerreotype apparatus, an original Daguerreotype, by Daguerre, and many fine specimens of the same process, some fine examples of ceramic photography, by Lafon de Camarsac and by Joubert, calotype negatives, experimental reliefs, and other relics of the Woodbury type and Stannotype processes, by Woodbury, and many other historically interesting specimens.

A new photographic club has been formed in Victoria, Australia, named the "East Malvern Amateur Photographic Club." Its membership is open to ladies and gentlemen interested in photography, and its object is the study and practice of artistic and technical photography by means of papers, demonstrations, camera outings, lantern nights, competitions, and such like. The first general meeting of the club was held at St. John's Schoolroom Finch Street, East Malvern, on July 22, and was well attended. The rules of the club were adopted, and the election of office-bearers for the ensuing year resulted as follows: Patron, Hon. Wm. Knox, M.H.R.; president, Rev. J. B. Gason; vice-presidents, Councillors Alexander McKinley, C. D. Lloyd, and F. Stone, Esq.; committee, Messrs. D. H. Fox, J. S. Mercer, F. J. Muirhead, A. E. Walcott, and S. H. Wilson; auditor Mr. H. Spittle; hon. secretary and treasurer, Mr. Sydney Fox. Monthly meetings of the club will be held on the first Friday in each month, for which an interesting syllabus, contributed to by well-known experts in photography, is in course of preparation by the committee. The subscription has been fixed at gentlemen 5s., and ladies 2s. 6d. per annum. The hon. secretary's address is "Almalea," Dandenong Road, East Caulfield, Victoria. Literature syllabus, etc., forwarded by kindred institutions to the hon. secretary would be deemed a favour.

Correspondence.

* * Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.

* * We do not undertake responsibility for the opinions expressed by our correspondents.

A BENEVOLENT FUND FOR PHOTOGRAPHERS.

To the Editors.

Gentlemen,—Mr. Snowden Ward's suggestion to resuscitate the Photographers' Benevolent Association is one which supplies a good subject for thought and discussion. It is no credit to the craft that the two attempts which had hitherto been made to provide a permanent agency for the relief of distress amongst those who practise photography professionally should have failed by reason of the neglect of photographers themselves. I began subscribing to the association when Mr. Harland was secretary, as far back as 1888; on more than one occasion I have passed the hat round for it; and for some years I acted as an officer. My case is not solitary. There are many who, like myself, helped the association from purely unselfish motives, and had been mortified at the futility of the earnest efforts made to persuade photographers to keep the thing alive. It is, however, a consolation to know that the money subscribed was always well administered; that many deserving cases of distress were relieved, and that there are still to be found non-professional photographers able and willing to assist the bread-and-butter man if only he will evince some disposition to help himself. The work, I think, is to Mr. Lang Sims, a prominent member of the P.P.A., whose keenness in the good cause remains, I hope, unabated.—I am, yours, etc.,
A WELL WISHER.

September 4th, 1904.

To the Editors.

Gentlemen,—I have read your able articles on the above subject, and as an old member of the late Benevolent, I quite agree with you that something should be done at once to reform the same; but it is a question if it would meet with much success, unless photographers and assistants put more heart and soul into the affairs of such a society. I myself advocated some years ago, in the *BRITISH JOURNAL*, the formation of the same on sick benefit society lines, and I still feel sure that if this could be done success would attend any efforts that were made by a committee formed for the purpose. My reason for writing is, with your kind permission of space in the *BRITISH JOURNAL*, to put before my fellow professionals and assistants the working of a society in Stroud, of which I have been for some years a member. It was founded by the late George Holloway, M.P., and a small band of working men in, I believe, 1875, and year by year has made rapid strides, and, as you will see by the balance sheet enclosed, is at the present time in a very flourishing condition. The same is called the Conservative Working Men's Benefit Society, but is not in any sense a political society, as any person of good character can join, irrespective of politics. Young men may join at 17, and can pay for one share till 21, when they can obtain two shares. Members can have as many as three shares, but must be earning its equivalent as wages. Members pay 1d. per day per share till they are 30 years old, when their contributions are increased ½d. per share per year for the remainder of the time they are members. Sick pay is paid them as follows: Half share, 5s. per week; one share, 10s. per week; one share and a half, 15s.; and two shares, £1; three shares, 30s. The moneys of the society are invested by an investment committee and the interest equally divided annually among the members and re-invested at 4 per cent. after payment of sick pay, management expenses, etc. £1 5s. per share has for some years been paid as dividend. Should a member die before he has accumulated £10 in the society this is made up by levy among the members. Should a member's wife die this is also made up by levies. Members cease paying member's levy on having £10 standing to their credit, but all pay wife's levy. Should a member wish to withdraw his fund he can do so by forfeiting his last two years' dividends, but can still remain a member on satisfactory proof of good health. On attaining the age of 65 members must either withdraw all their funds from the society, or,

if preferred, can purchase an annuity for the rest of their life. John Dorington, I believe, has done this on his own life incentive to the members to become thrifty. The working society was, I believe, brought before Parliament by Sir John Lubbock, M.P. for Tewkesbury, and Mr. Cripps, K.C., M.P., as one of the old age pension scheme then before the House. To members out of employment, a small levy could be made, members, or a sum could be set aside for this purpose. Objections may be taken that many photographers belong to Foresters' Oddfellows. True, but many do not; and what about the young assistants? I myself have been the means of getting four of my assistants to join this society. Among the many hundreds of thousands of workers in photography, including dealers, assistant plate makers, etc., surely such a society could easily be formed on a good, sound commercial basis. I should much like to have the opinion of your various readers on the matter, and I am of opinion that such a society could be formed. I should like to do all in my power with others to help it on. May I copy the motto of this society to photographers' notice: "God help those who help themselves"? I should like also to say there is a society on the same lines for women.—Thanking you in anticipation of the insertion of this letter, I remains, Sirs, yours respectfully,
J. H. SIMS.

Gloucester, September 5th, 1904.

PATENT EXAMINATIONS.

To the Editors.

Gentlemen,—The Board of Trade has just issued an order, brought into force on the first day of January next, the Government examination system for patents set forth in the Patent Law of 1900 from January 1st, 1905, reducing the period of provisional protection from nine months to six. The system of examination thus introduced is much less perfect than those of other countries, as the examination has merely to search through the British patents of the immediate preceding fifty years to see if in these there be, in his opinion, anticipation of the invention set forth in the complete specification. This report is forwarded to the Comptroller, and if the Comptroller is of the opinion (from this report) that the invention is partly or wholly anticipated, the applicant is informed of the anticipation, and of the option of a personal hearing, or of amending the specification to the satisfaction of the Comptroller, or in default of either, the Comptroller determines whether a reference to any, and if so, what prior specifications must be made in the specification by way of notice to the applicant. Against his decision there will be an appeal to the Law Office. The Examiners' reports will be kept strictly secret from all but the applicant and his agent, but this examination must not be held in the case of a guarantee in any way the novelty of the invention or the validity of the patent, as, of course, the prior publication of the invention in other documents open to the public in England prior to the date of application, or the prior public use of the invention would be fatal to the validity of the patent as the publication of the invention in a prior British specification.—Yours truly,

W. P. THOMPSON AND CO.,
Chartered Patent Agents.

6, Lord Street, Liverpool,
September 1st, 1904.

PHOTOGRAPHIC COPYRIGHT.

To the Editors.

Gentlemen,—As the question of photographic copyright is so much brought before your readers under its various aspects, I cannot think that the following extract from the "Tatler" regarding recent pretty child competition may be interesting in showing progress which has been made in establishing the rights of photographers in work taken at their own initiation and expense. In giving various particulars, the editor goes on to say that:—"Photographs may be taken either by professional or amateur photographers, but in all cases they must be non-copyright. The benefit of those who perhaps do not understand what this means, repeat what I said in a previous issue. Roughly speaking, concerning photographs is this: If you have a photograph taken by a professional photographer and pay him for it the copyright is

to say, you can dispose of it for publication as you wish. If not pay for the taking of the photograph the copyright is the property of the man who took it, and he can refuse permission to have it published. We reserve to ourselves the right to publish without payment any photograph or photographs received in connection with competition, and the sending to us of a photograph by any communication must be taken as implying full permission for us to publish it."

Thanking you in advance for your kind courtesy, I am, Sirs, yours truly,
A MEMBER OF THE P.C. UNION.

I have a suggestion to offer our correspondent. It is that he should make a rule of informing those persons whom he photographs to inform them that the copyright is vested in him, and that if the use of the photograph parts with it for reproduction to a third party the latter runs the risk of being pounced upon for fees he did not contemplate incurring. Quite recently we reproduced in these columns a photograph of a gentleman by his permission, and subsequently received a demand for payment from the author of the above letter. I am sure that if the original of the photograph had been made that it was not his copyright he would have told us so, and we should then have used another photograph of him which was in our possession, and for which we need not have paid. There is a splendid situation: the Journal and its present Editor, staunch supporters of the Photographic Copyright Union for years, being severely penalised under one of the rules of that body!!!—EDS.

STALE PLATES

To the Editors.

Gentlemen,—A few days since, being out of a certain size plate, I called on a local photographic dealer for some. They turned out very bad plates, a foggy, miserable image. The work I went to do was an absolute failure, and it cannot be done again. What is my remedy? The dealer says he is not responsible, as no warranty is given. He acknowledges the plates are 14 or 15 months old. The work was done by one of the best makers and backed.—Yours truly,

ENQUIRER.

September 2nd, 1904.

I shall be glad to have the opinions of our readers on this knotty question.—EDS. B.J.P.]

Patent News.

Following applications for Patents were made between August 1st and August 27, 1904:—

1. Stereoscopic Camera.—No. 18,331. "Stereoscopic Camera." Complete specification. Theodor Schroter.

2. Improvements in or relating to shutters for photographic cameras.—No. 18,454. (Frank A. Brownell, United States.) Kodak, Limited.

3. Improvements in or relating to focusing devices for photographic cameras. (Frank A. Brownell, United States.) Kodak, Limited.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Name of Society.	Subject.
Nelson Photographic Society....	Lantern Slides by Reduction.
Cricklewood Photo. Society.....	Annual Meeting.
North Middlesex Photo. Soc.	Three-colour. Lantern Slides.
	J. W. Cook.

Answers to Correspondents.

* * All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.

* * Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.

* * Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.

* * For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

A. WILDMAN and Co.—We advise you to accept the guinea offered.

POSTCARDS.—"AJAX" says: "Please let me know the address of a postcard firm who print imitation P.O.P. postcards from customers' own negatives or blocks." In reply: Try Morgan and Kidd, Richmond; or Wyndham and Co., Acton, W.

BOOK WANTED.—"T. L. F." writes: "I shall be very glad if you will recommend a complete practical book on picture-framing, mounting, etc." In reply: "Mounts and Frames, and How to Make Them," by Lambert. No. 20 of "The Photo-Miniature" on "Trimming, Mounting, and Framing."

MOUNT MAKING.—"MOUNTS" write: "We should be glad if you would give us the address of a firm which supplies machinery for making photographic mounts, blocking, etc.?" In reply: We should surmise that any of the houses that make a speciality of bookbinders' appliances would supply your wants.

COLOURING PHOTOGRAPHS.—"PHOTO-ARTIST" asks: "Will you kindly let me know what medium is used for painting photographs, both on matt, enamel and burnished prints?" In reply: Colours for the purpose are sold by all the large dealers. No medium is required with them. Or ordinary water colours may be employed.

EMULSION.—F. LLOYD says: "I should be greatly obliged if you could inform me if you know of any firm or person from whom I could obtain a bromide or other emulsion readily mixed for immediate use?" In reply: We know of no firm that supplies ready made gelatine emulsion.

DICTIONARY OF PHOTOGRAPHY.—F. ESSAM asks: "Kindly let me know what the price of 'Dictionary of Photography' is, and who are the publishers. Does it contain good formulae?" In reply: E. J. Wall's "Dictionary of Photography" is published by Messrs. Hazell, Watson, and Viney, Long Acre, W.C., price 7s. 6d. The formulae will be found very useful.

DESCRIPTION WANTED.—"D. R. M." writes: "Would you kindly tell me the kind of paper the enclosed photo is on, also the manner in which it is toned?" In reply: The print seems to be a platinum toned one, on collodio-chloride paper. We could not say for certain, however, without injury to the print by testing. It has been returned to you as desired.

DISPOSAL OF NEGATIVES.—"JUDITH" asks: "Could you tell me the best way of disposing of a large quantity of old negatives from quarter-plate to 15 by 12?" In reply: The only suggestion we can offer is that you advertise them for sale. If they are negatives of portraits you have been paid for taking you have no right to dispose of them without the sitter's consent.

RETOUCHING.—"RETOUCHER" asks: "Will you let me know what you think of the retouching of the enclosed prints, and what class of work would you call the prints on the whole?" In reply: The work is fairly good, supposing the likenesses have not

been altered. Of that we cannot judge, as prints from the untouched negatives were not enclosed for comparison.

DAMAGED PLATINOTYPE.—A. G. NEWACK asks: "Will you be good enough to tell me what is the best way to prevent the surface rubbing in sepia platinotype prints, as the enclosed; is the use of too strong acid likely to cause this?" In reply: With careful handling in the manipulations the surface will not be damaged. The use of too strong an acid bath would have a tendency to render the surface of the prints tender.

PHOTOGRAPHING CLOTHS.—"ALEXANDRIA" writes: "Is there any kind of stretching frame procurable, or method in use, whereby I can hang up cloths of a large size, say 9ft. by 7ft., so as to have them perfectly tight and even over the surface, in order to photograph them?"—In reply: We know of no such stretching frame. We expect you will have to get one made—such as a background frame—and strain the cloth on it. Could you not back them on a wall of the studio?

RESTRAINER.—A Correspondent writes: "Re reply to 'Restrainers,' page 779, bromide ammonia is chiefly used with pyro-ammonia developer, and doubtless this is what 'H. B. C.' uses, and, of course, if he uses with pyro soda he will liberate free ammonia, which will accelerate instead of restrain. Bromide of potassium, of course, is right enough for either developer—pyro-ammonia or pyro soda—but not bromide of ammonium, which only does for the former."

REDUCER WANTED.—"W. H." says: "I enclose a print, which lacks detail in the apron and collar. Will you kindly give formula of the best reducer—i.e., one that will reduce the high lights without touching the shadows? The negative is very thin, but too dense in the apron, etc." In reply: One of the best reducers for the purpose is a solution of persulphate of ammonia; about a 5 per cent. solution is a suitable strength to use.

RETOUCHING.—"A. H. D." (Wilts) asks: "(1) Would you kindly pass your opinion of the retouching on the enclosed prints? I have had only a few lessons and would like to know how I am progressing. (2) Could you recommend me a useful book of instructions?" In reply: (1) Our opinion is that the retouching, like the photography, is about as bad as it well can be. Could you not realise this yourself? (2) The "Art of Retouching," by Robert Johnson.

ARTIFICIAL LIGHT.—"ONE IN THE DARK" asks: "Is it possible to make a good negative of full length figures in the studio at night time with mixed gas? If so, how many jets would be required for taking a group?" In reply: We do not think you would be very successful in taking groups with the lime-light, unless, indeed, you had a good number of jets. We think you would do better to employ magnesium, which yields a more actinic light.

CAMERAS.—"M. E. N." writes: "I would feel very thankful if you would kindly let me know what kind of camera it would be best for me to get to make a start for taking photos of persons in the house, and also for taking sketches outside for sale." In reply: Almost any portable camera will suffice for the work. We should advise you to get catalogues from two or three of the dealers, and from them select what will suit your purse the best for the size you desire.

STRIPPING FILMS FROM BROKEN NEGATIVES.—"P. R. D." asks: "How can I strip a film from a broken negative?" In reply: We have given this information on many occasions in this column. Soak the negative in a 10 per cent. solution of formaline for ten minutes, rinse, and then immerse in water, 1 oz.; alcohol, 1 oz.; glycerine, 20 drops; hydrofluoric acid, 40 drops. Allow the negative to soak in this till the film lifts at the corners, then transfer to a dish of clean water, coax the film off, and transfer to a sheet of glass coated with gelatine. An unexposed fixed plate may be used.

VARNISHING FILMS.—A. W. WOOD asks: "Can celluloid films (negatives) be varnished, if so, how, and can they be retouched?" In reply: The best way of varnishing celluloid films is to use

an aqueous shellac varnish and dip them bodily in, and hang up to drain and dry. Such a varnish can be made as follows: Shellac (bright orange), 4 ozs.; water, 20 ozs.; heat to boiling point, and add saturated solution of borax, stirring well till the shellac has nearly all dissolved, then to stand for two or three days and filter, or else filter through animal charcoal. The films can be retouched in exactly the same manner as glass negatives.

SPOTTY PRINTS.—W. BELL says: "I shall be grateful if you kindly examine the enclosed prints. When I received a sample of paper I complained as to the colour. The firm that the same is the natural tint, which finally tones out seems to me the paper has some kind of impurities to do with. The spots on the finished prints appear in a few time. I have used C. C. for years and have never had an experience. I may mention that the paper is the product of the firm. I think I shall be quite justified in refusing to print this sample, as my mounts this week will all be wasted, one cannot tell where such results will finish. I may say I always take care about the washing, and superintend the printing. In reply: Spots such as those on the prints may arrive several due to the manipulations. We think it improbable that they are due to the paper itself, which seems all right."

STUDIO QUERY.—"STAMPS" asks: "Will you please advise me what kind of portable studio I ought to put up in the yard, and of which I enclose. Owing to building rules of Corps I think I shall only be able to use a space of about 13 feet. Do you think this will be ample for general portrait work, and how would you advise building it—the at the garden-wall end, or the coal-place end? I intend the north-west side will be the side to light from. The amount of window space would you advise, and can groups in so small a studio, or shall I be limited to cabinets? I also want to use it for stamp photos by a light." In reply: Eighteen feet will be very short for groups, unless you can take the camera out of doors, perhaps, you would be able to do so. We should recommend you to get Bolas' book, "The Photographic Studio, its construction, etc." That will give you much practical information on the subject.

A CURIOUS state of things was revealed at Cambridge in connection with the N-rays supposed to have been discovered by M. Blondlot. The German physicists have failed to find the N-rays, and Lummer, of Charlottenburg, distinctly threw doubt on their existence. Speaking in the Physics Section, he asked those who had tried to detect these rays to hold up their hands, and fifteen members responded to the invitation. The doctor then asked how many had attained a positive result; one hand only was held up. The case is strange, if not unprecedented. In France the event has been accepted, the original investigators' experiments have been repeated, and the French Academy of Sciences has awarded a medal to M. Blondlot; meanwhile, in Germany, and, we believe, in every other country, the experiments have had negative or doubtful results, and scepticism prevails in regard to the whole matter.

NOTICE TO ADVERTISERS.—Blocks and copy are received to the approval of the Publishers, and advertisements are inserted absolutely without condition, expressed or implied, as to what appears in the text portion of the paper.

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THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1905.

Edited by THOMAS BEDDING, F.R.P.S.

A forty-fourth annual issue of THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC will be published on December 1st. This year's ALMANAC reached a total of 1,604 pages, the entire edition of 25,000 copies was sold out before publication. Of no other photographic book ever issued two such unique facts be recorded. The edition for 1905 will also consist of 25,000 copies.

The striking favour with which past ALMANACS have been received is the surest proof that the lines upon which the publication is produced meet the requirements of its readers and supporters. Upon such lines we propose continuing the volume for 1905. At the same time, we shall be pleased to receive and consider suggestions for increasing the value of the ALMANAC in directions which may occur to our readers as susceptible of improvement.

The ALMANAC for 1905 will appeal to photographers all over the world as a daily reference guide in practical work. The standard matter and formulae will be revised and added to where necessary, the year's advances in theory and practice will be recorded.

The frontispiece of the ALMANAC will consist of a portrait study specially taken by Mr. Furley Lewis, a member of the Royal Photographic Society's Exhibition, 1903.

* IMPORTANT NOTICE.—The attention of advertisers is specially directed to the announcement that this year's entire edition of the ALMANAC (25,000 copies) will be placed in the hands of dealers and the trade on December 1st—next—a fortnight earlier than usual, so as to be well in advance of the Christmas publication season.

EX CATHEDRA:

Aggressive Amateurs.

We hear little now in photographic circles of the amateur taking the bread out of the mouth of the professional, or of expressions to that effect; and we are glad to know that peace and harmony prevail between the two bodies of workers. The amateur more often brings grist to the professional mill when he attempts to set up a rival mill on his own account, and although there may occasionally occur cases in which the professional may feel aggrieved, they are certainly not common. We must remember that in nearly every occupation the amateur element exists, and very often it treads very heavily upon the toes of the professionals. The musical amateur turns up everywhere, and as to the histrionic amateur, he, and also she, is a positive menace to the existence of the professional actor and actress. People of means are actually paying managers for the privilege of acting small parts, and the manager, finding it far more blessed to receive than to give, makes no objection to such a comfortable arrangement. He gives no heed to the claims of the far more competent professional round the corner who may perhaps be on the verge of starvation for want of a job. It is a form of heartless selfishness which prompts a man or woman of leisure to thus step into a crowded profession, to compete on such unfair terms with those who depend for their bread and butter upon finding a place "on the boards."

* * *

Who Invented Picture Postcards?

There is no question that the production of picture postcards has developed into a big industry all over the world, and the question has now arrived as to who was the first inventor of them? It was claimed for a German that he was the first, in 1872, to reproduce pictures and portraits on the back of postcards. Now it is claimed, according to the "Standard's" Paris Correspondent, that the credit is due to a Frenchman, who, in 1870, during the war, issued them as a "Souvenir of the National Defence." Be this as it may, it is only of late years that picture postcards have become popular and assumed the proportions they have as an industry. This country was perhaps the last country to catch on with the "craze." A friend tells us that when he was in Germany six years ago the shop windows were full of them, albums were sold for containing them, and they were being hawked round in all the restaurants. At the request of friends there he promised to send them some from London on his return, and he had the greatest difficulty in obtaining them, and when he did, he found that they were crude things, all "made in Germany." He would have no such difficulty now. The majority of the picture postcards now made in England, particularly the photographic one, will hold their own against those of every other country. But no matter to

whom the credit of the invention may be due, credit should also be given to those who have developed the picture post-card into the important industry which it has now become, not only in the country of its origin, whichever that may be, but throughout the world.

* * *

False Trade Descriptions in Photography.

A case of interest to some photographers—although it had no connection whatever with photography—was tried one day last week at the County of London Sessions. It was this. Two persons were tried for affixing false trade descriptions to certain wines, i.e., bottling inferior wines and labelling them as the genuine wines of well-known brands. One of them, the principal, was fined £40 and £20 costs or six months' imprisonment in the second division, and the other £10 or one month's imprisonment in the same division. The formal indictment was for conspiracy. It is the practice with not a few unscrupulous photographers to foist off on the public silver prints of the gaslight, or bromide, type as platinumotypes, although they have charged such an extra price for them as would have enabled them to supply the genuine thing at a very good profit, even much more than they would get on their ordinary silver prints. We have also heard of silver prints being supplied as carbons. This is, of course, a fraud on the public, and brings them within the False Trade Descriptions law, and renders them liable to very substantial penalties and costs, just the same as with other false trade descriptions. In the case just cited the prosecution was instituted by the firms aggrieved, and we have been somewhat surprised that the makers of platinum papers have not, before this, taken action against photographers who palm off silver prints as genuine platinum ones, both in their own interest and for the credit of the platinotype process. If silver prints which have been foisted on customers as platinotypes fade the idea will get abroad that platinum pictures are not permanent, which they unquestionably are. Unscrupulous photographers will do well to take warning.

* * *

Disposal of Negatives.

In the "Answers" column last week, we replied to a correspondent who wrote asking the best way of disposing of old negatives, presumably by sale. But the question arises has a photographer the right of selling negatives of portraits he has been paid for taking? They are undoubtedly his property. That point has been settled, both in Minor and Superior Courts, but has he the right to deal with them as he likes? Surely, some may say, anyone has a right to do as he likes with his own property, but that may not be the case with portrait negatives. It has been ruled in the Court of Chancery on more than one occasion, when injunctions were granted, that the photographer has no right to make use of a customer's negative for any purpose of his own—they were held in trust, as it were, for the customer. Therefore, has the photographer the right to sell them any more than has he the right to sell prints made from them? We should say, decidedly not. A sitter who would object to his or her portrait being sold or exhibited by the photographer who took it would certainly be still further annoyed by seeing it shown by any other photographer who might have purchased the negative from the one who took it. We sometimes see advertisements for portraits and negatives, to be used as specimens, but it is obvious from the decisions already given in the Law Courts that the sale of such is illegal—supposing, of course, that the photographer was paid for taking the picture in the first instance. This opens a very wide question because in the disposal of a business the negatives

go as a part of the good will. As the question, as have just said, is a wide one, we may have something more to say upon it on some future occasion.

* * *

Meteorology. Though we do not suggest that subject that plays so important a part in photographic plans and arrangements and their realisation, meteorological vaticinations, is, to use a common expression, going to boom, it cannot but be noted that every indication the trend of events shows that it is likely to become increasing practical value. Recently we showed that officialdom was being moved in the right direction, reports from various parts of the world show the increasing usefulness of meteorological stations. For example, Meteorological Report of the Service in Canada for 1903 was recently issued, and from its pages may be gathered results of forecasts over a large area—from Newfoundland, Bermuda. Most of the telegraphic reports go to Washington, and from there sixty-eight of them to Canada. This is thus a comprehensive series of observations of the state of the weather over a very wide range of territory for which the Canadian Office compiles forecasts for all parts of the Dominion lying east of the Rockies. A series of percentages of success is given, and from them we observe that 86.6 per cent. were successful. Storm warnings, which, however, perhaps, cannot be considered germane to photography, were 88 per cent. fully, and 95 per cent. partially, successful. Then, again, the results for the same period from the Perth Observatory and other places in Australia are to hand. The newspaper is catered for by morning and evening reports, made specially for the purpose, being issued with great success. Complete failure is most rare occurrence. The Government Astronomer (W. E. Cooke) states that the predictions of rainfall for the interior, given several days in advance, were entirely successful, and that the experiment indicates a forward step in practical meteorology.

* * *

Photography in September.

Autumn is now with us, and some of us may be thinking of relinquishing outdoor photography very soon. But why should they? This is perhaps the best time of the year for landscape work, and the foliage is still at its full, though generally changed in colour. The cast shadows are longer and more transparent than they are in the summer, while they are short and heavy, while the light is still good and fairly actinic. Indeed, autumn is considered by many the leading landscape workers the best time in the whole year. The majority of the best pictures (12 by 10 and 15 by 12) of the late Mr. Vernon Heath, both by the plate process and with gelatine plates, were taken in early autumn, and his work still requires beating, although orthochromatic photography was not then in vogue. With autumnal tints on the foliage orthochromatic plates, with a pale colour screen, is a decided power at command, and they will prove a great advantage. About the time of the autumnal equinox there is generally fine cloud effects about, and these with orthochromatic plates and a colour screen can usually be obtained in the landscape negative. This is also an excellent time for securing a stock of cloud negatives for printing into pictures taken in the summer when there were no clouds about. Stale plates that one would not care to use for other work may be utilized for the purpose, so that old plates may be turned to good account instead of being wasted. Many cloud negatives it may be mentioned, are spoilt through the camera being pointed too much to the zenith, so that they do not accord with the lighting of landscape. In taking cloud negatives the camera should be directed more to the horizon,

would be in taking a landscape. With "cloud studies" the case is different, then the camera can be pointed to the clouds in whatever direction they may be.

* * *

Photography. London is, at the moment, again in the throes of one of her periodic upheavals, on all sides evidences of the British navy and his methods are to be observed. From the photographers' point of view, however, the present chaotic state of some of the leading thoroughfares, owing to the delving of the aforesaid navy and his companions, and the consequent congestion of vehicular traffic, adds a picturesque touch to the streets, of which possessors of hand cameras would take full advantage. The recurrent groups of way men manipulating seething cauldrons of fluid cooking pitch, while others tear up or relay the wooden blocks that constitute the roadway, are subjects worthy the most skilful treatment, while the grouping to be observed during the laying of electric cables is always of great consideration. The attention of the camera user is only to be drawn to the striking effects observable in him to make the utmost of the opportunities that present themselves. The procedure is, in most instances, no more difficult than that of ordinary street snap-shot work, while the results will undoubtedly be infinitely more interesting, and amply repay the expenditure of time, plates, and money. The same sort of thing occurs at intervals in nearly every provincial town and city, although London appears to hold her own in the matter, and it may be interesting to those who think from the aspect of some of our busiest streets at the present moment that London has never finished rebuilding since the Great Fire, that the royal proclamation ordering this to be done was dated September 13, 1666, and that, we are told by a chronicler of the time, "to the astonishment of all Europe, and by the vigilant vigilance of all parties concerned, London was rebuilt in the short space of four years." It will be to the astonishment of all Europe, judging from the criticisms of our foreign visitors, if in four years more the various cities concerned will have ceased tearing up the streets, whenever one or another of them wants to put a tube or a pipe of some sort underground. Our readers can therefore in the meantime console themselves with the reflection that admirable material is being supplied on all sides for a species of snap-shot to be found in probably no other city in the world with such prodigality.

* * *

Photography. It is almost a truism that men who do the best work, either in photography or any other branch of intellectual labour, are content with simple apparatus. Some of the most remarkable discoveries in science have been actually worked out with the aid of cigar boxes, glass tubes, sealing-wax, and the like. Indeed, the early workers had to be self-dependent for their apparatus, for the optician as we know him to-day, the clever artificer, who can compass anything from mere verbal description, had not yet been evolved. Even such comparatively recent experimentalists as Professor Helmholtz was content to design his own apparatus, and we well remember that when he gave his memorable demonstration of the powers of the microphone, the odds and ends on his table, consisted of fragments of carbon and coils of wire, the intrinsic value of which was nil. Microscopists have long been divided into two distinct classes of men. The dilettante, or "brass and glass" gentlemen, and the more earnest workers who have earned the somewhat vulgar, but in reality complimentary, sobriquet of "bug and slug" men. It is a great comfort to the ex-

perimentor to have first-class apparatus ready to his hand, and he does not always get it. At the same time we all know that its possession does not guarantee success; the right description of brain must be behind it. The Sultan of Morocco some time ago ordered from a London dealer a most elaborate photographic outfit, in which mahogany was superseded by the noble metals, but we have not yet heard that any extraordinary things have been achieved with that gorgeously-adorned camera. And we may suppose that we shall be hearing of similar extravagant outlay in apparatus before those remarkable sales at Anglesey Castle shall have been numbered with the past. For we may be quite sure that the noble owner must have included photography in his wide list of accomplishments. When we read of a leather dog-collar, set with turquoise, amethysts, carbuncles, pearls, and other trifles, we can imagine how much could be done with the wider area presented by the leather bellows of a camera. With such bellows jewelled, and with lenses mounted in 18-carat gold, even a marquis might be contented. And then there is the tripod stand. If simple walking-sticks can afford opportunities for the jewellers' skill, how much more should the tripartite support for the camera arouse his artistic enthusiasm. Then the tripod head might be made of Lapis lazuli, mother-of-pearl, ambergris, radium, or something else extremely costly. Really there is no end to the possibilities before the individual of photographic tastes with abundant means, who aspires to be "soon parted" with his money.

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Radium Everywhere.

By means of a new form of electroscope, a modification of the instrument called after Exner, the main features of which are the separation of the aluminium leaves by means of amber, and the production, by the use of metallic sodium, of a dry atmosphere, Messrs. Elster and Geitel have been measuring the radio-activity of soils, and the mud of thermal springs. Taking, for example, the hot springs of Batuglix, they were able to show that its activity was due solely to the presence of radium. In a recent number of "Terrestrial Magnetism and Atmospheric Electricity," they put forward the view that the conductivity of the atmosphere is largely, if not entirely, due to a radio-active emanation proceeding from the earth's crust, their argument being that the electric conductivity of air in closed cellars and in deep holes or walls is sometimes fifty times as great as in normal air. They also endeavour to prove that when the atmospheric pressure is low there is a tendency for the emanation to escape from the earth's crust, it being a fact of observation that the conductivity of air is greatest during low barometric readings. The possible photographic bearing of these observations is highly interesting. Thus, for many years we used to hear of the occasional bad qualities of certain plates out of batches of one or other excellent brands, and, though we hear less of the matter now, the complaint does crop up from even experienced workers. The cause is most probably some undiscovered fault of working by the complainer, leaving aside the bearing of the old saw of "a bad workman," etc. The point we would make is the possibility that there may be a hitherto unknown factor to be considered, and that to radium emanations, brought about as above described, the defective results referred to may be attributed. Lest this should be considered as a mere fanciful idea, we will narrate a special experience lately submitted to us by a well-known contributor. The penetrability of many solid and optically opaque bodies by the Röntgen rays is well-known, but some of its bearings are liable to be lost sight of in practice. In the case we refer to there was a general condition of frequent fog, more or less modified,

without apparent cause. No experiment could reveal any cause for some of the plates out of a particular batch developing with fog, while their predecessors were perfect. But the defect was frequent, and always visible upon the finished negatives. We were personally appealed to in the matter, and were eventually enabled to give the probable cause of the mysterious trouble. The owner was in possession of a large Ruhmkorf's coil, which he used for producing the Röntgen rays, and when working it the coil and the tube were kept on one side of a wall behind which were the stock of plates. It was quite evident that the rays from the vacuum tube, when in action for some time, penetrated the wall and acted upon the plates.

* * *

Photographs of the Pleiades. That beautiful little cluster of stars which has always been an object of interest to the star-gazers—it is mentioned in the Book of Job—has often been photographed, and, as might be expected, the photographs show much more than any visual picture can afford. Any person possessing average eyesight will pick out six or seven stars as constituting the cluster. A good opera-glass will detect about one hundred, while a telescope will reveal several hundred separate orbs. Twenty years ago, the brothers Henry, of Paris, as well as the late Dr. Roberts in this country, secured photographs of the Pleiades which showed that the principal stars composing the group were surrounded by wisps of nebulous matter, and in 1893 Barnard, using a large portrait lens and giving an increased exposure, proved that this nebulousity was of enormous extent and completely enveloped the principal stars of the cluster. More recently, Mr. G. W. Ritchey, who holds the post of assistant professor of practical astronomy at the Yerkes Observatory, has, by means of the two-foot reflector belonging to that institution, succeeded in obtaining an image of the group of stars which shows minute details of structure of the nebulous masses. This picture, with photographs of other stars, he has utilised as an illustration to an article on "Photographing the Star-Clusters," which appears in the current issue of "Harper's Magazine."

There is one feature in this remarkable photograph which appears to be unique, at least it presents something different from anything found elsewhere in the heavens. The dark background upon which the stars are spangled is intersected by a number of nearly straight and parallel streaks of luminous matter. It is assumed without question that these lines are part and parcel of the Pleiades system, and we may suppose that they have been detected in different photographs so as to obtain corroborated proof of their reality. We assume this, for it is easy to see how such streaks could be produced by accidental light access to the plate during such a prolonged exposure, and it would be by no means conclusive if the same appearance were exhibited by different photographs taken with the same instrument and under the same conditions. Mr. Ritchey states that extremely sharp negatives of the Pleiades have only been obtainable during the past five or six years, and that such pictures have been taken with reflecting telescopes of such comparatively small focal length that the scale of the resulting pictures has been small. He considers that when a really big reflector is constructed for the work, and employed systematically for a term of years in a fine climate, a great addition to knowledge concerning these mysterious objects will be gained, and that much may be learnt about the development of nebulae and stars generally. But there is one remarkable feature of the photograph of the Pleiades reproduced in the article, to which he does not call attention, and probably for the very good reason that it was not in the original picture, which of course he would have before him as he wrote the article. The principal stars

of the cluster are each surrounded by so much nebulous matter that they have the appearance of street lamps in a fog, and, apparently, in order to give pictorial effect to them, someone, in preparing the picture for the block-maker, has added radiating lines of light, like the spokes of a wheel, to each orb. This would perhaps be justifiable if the pictures represented a display of fireworks, but to touch up in this way a representation of the starry firmament is quite inexcusable, and is akin to pencilling details into a photomicrograph. Many pictures are improved by skilful use of the brush and pen before they go to the blockmaker, but a photograph of any natural phenomenon in which interest centres upon points of structural detail should be left severely alone. The proprietors of "Harper's Magazine" are generally so jealous of the excellence of their illustrations that it is a matter for wonder that the "retouching" of this star picture should have eluded their vigilant eye. The author of the article would certainly be one of the first to protest against it.

REVIVAL OF THE OPTICAL LANTERN.

THERE are indications that the optical lantern is likely once more to make its way into prominent popular esteem as a means of entertainment, amusement, and instruction, a position from which it was ousted a few years ago by the cinematograph. It is no secret that the optical lantern trade has for a long time reflected public taste, or the lack of it, in this respect. The sale of lanterns, in short, experienced an unmistakable slump before the advance of the omnipresent animated photograph. But is the latter in possession of such a degree of favour as it enjoyed, let us say, two or three years ago? It is hard to reply with any definite approach to absolute accuracy, although in our opinion the evidence points to a negative conclusion. For, wherever the seal of vulgarisation attaches itself to any popular craze it may safely be expected that the neglect of the better or cultivated classes unfailingly follows. How long, then, may it be asked, will the animated photograph boast its present supremacy as a manifestation of lenticular agency in the representation of life and movement, in view of its falling into the groove of filling a turn at a theatre of varieties or a travelling fair temporarily located in a country hamlet?

We are, of course, no enemy to the animated photograph, let it be shown wherever you will. To-day the fascination of the movement as illustrated on the screen is as great to us as it was nearly ten years ago, when Messrs. Lumière startled the West End of London and ourselves with the results of their early experiments in cinematography. But we confess to a feeling of regret that it should so long have eclipsed the immobile lantern transparency in general esteem. There are properties in this kind of photograph which have been perhaps overlooked whilst the pendulum has been swinging so far over towards movement on the screen, with its concomitant drawbacks and defects. You can examine and study the still image at leisure; and the fact that it was not necessarily produced against time, in either its negative or positive form, admits of the introduction of purely technical beauties rarely possible in long strips of tiny pictures blended by mechanical and retinal agency into one large view. True it is that the animated photograph tells its own story, but your lantern-slide gives the lecturer an opening, and it is precisely because this essentially human element is mostly absent from cinematograph displays that we think the lantern lecture stands just now a very good chance of revival, with consequent benefits to the lantern industry. Indeed, we hear from various sources that lantern manufacturers are anticipating a return to the prosperous times of former days when the

sale of instruments was more satisfactory than it has recently been.

The American worker, Mr. Burton Holmes, whose travelogue lectures in the early part of the year greatly attracted London pleasure-seekers, met with such success that we are justified in assuming the public is quite ready to receive more of the same sort of thing. Mr. Holmes gave a mixed cinematograph and lantern entertainment; but he was a facile lecturer, and his pictures were so good that in all probability his audiences would have been quite contented with single photographs singly shown. Good lecturers are, however, scarce, a fact which may, in some measure, account for the comparative desuetude of high-class optical lantern entertainments. The example of Mr. Burton Holmes may not, it is to be trusted, be lost upon capable exponents of this undoubted art. Nothing is more painful to one than to have to sit out a display of good transparencies accompanied by the monosyllabic ambiguities of an indifferent talker at the lecture desk. A happy combination of good oratory and good photography never fails to secure public applause.

We would therefore put it that the time is ripe for a revival of interest in the optical lantern. Our thoughts are not now occupied with its use in the somewhat restricted field of photographic society endeavour, but rather with the larger and greater world beyond it.

There is no question at all that a paying public exists for good entertainments of which lantern transparencies form the bases. But subject and subject-matter must be of irreproachable excellence. The half-educated globe trotter with his collection of streaky and spotty slides from incorrectly exposed and developed negatives has done much to kill public interest in optical lantern entertainments. These people should not be permitted to adorn the platform any longer. The success of the cinematograph is due to the fact that it arouses the interest and holds the attention of the audiences gathered together to contemplate the results on the screen. The cinematograph has admittedly passed into its ultimate sphere of being a companion of, or supplement to, the newspapers, best studied after dinner at variety theatres. In that respect this branch of photography admirably serves its purpose. But there is an enormous public which seeks its relaxation, and to some extent its instruction, in the town hall, the lecture room, and the "lit. and phil." Is it not worth the while of competent lantern lecturers to cultivate that public? We should not look to this cause directly to resuscitate interest in the optical lantern; but it would undoubtedly do so indirectly, for it might reasonably be trusted to stimulate those persons who have recently neglected this system of projection to once more add it to their home diversions. Aside of all these considerations, we are convinced that a good time is once more in store for the lantern trade—for the dissemination and popularity of the instrument *per se*—and we believe that makers will be well advised, now that the cinematograph has found its final place, to make efforts to popularise optical projection apparatus amongst amateur workers all over the country. In a season or two we shall expect to hear fewer complaints on this score than those to which we have recently been habituated.

"THE STUDIO" will shortly publish a Special Autumn Number devoted to the work of two of France's greatest humorous draughtsmen—Daumier and Gavarni. "The Studio's" special will contain, as usual, a large number of coloured plates and photogravures, as well as full-page facsimile illustrations in black and white.

A SIMPLIFICATION OF THE GUM PROCESS.

WHILST I have not the slightest faith in the future of bi-gum as a printing process, except for those who wish to veil in murky mud their incomplete technique and want of knowledge of the main principles of art, and appeal to the love of the eccentric, the following modification may be of some interest, as it certainly presents some elements of novelty and some advantages, in that the gum worker can prepare any number of sheets beforehand, and then pigment them with any desired colour. The novelty lies in the application of the chromate first, then drying, and the subsequent application of the pigment.

The process is described by Herr Renger-Patzsch in a recently published work entitled "Der Eiweiss-Gummidruck."

A stock solution is first prepared as follows:—

Distilled water	100 cc.
Ammonia bichromate	15 g.
Manganese sulphate	8 g.
Boric acid	3 g.

This will keep, and to every 15 cc. of it before immediate use is added—

Absolute alcohol	2.0 cc.
Formaldehyde	0.5 cc.
Fish glue (clarified)	2.0 cc.

The mixture will not keep well; it should be thoroughly mixed and applied to the paper with a brush as evenly as possible, and then thoroughly dried, and in this state it will keep in the dark some time.

The pigment solution is prepared either with dry powder colours, or tempora, or water colours in tubes, the quantity of pigment varying of course according to the form of colour used, and whether one or more printings are resorted to. The following solutions are also required:—

1.—Egg albumen.	
2.—Gum arabic	50 g.
Water	100 cc.
3.—Metol	0.2 g.
Glacial acetic acid	3 drops.
Water	100 cc.

The actual pigmenting solution is composed of—

Pigment	0.5 3 g.
Albumen	12 cc.
Gum solution	5 cc.
Metol solution	12 cc.

This mixture is applied with a brush to the previously chromated paper and evened out with a soft brush and dried.

The exposure for paper thus prepared is said to be very short; for instance, under a thin negative in the sun in April it is stated to be less than a minute, but equally good results are obtained by exposing in diffused light, unless a very large amount of pigment is used, when sunlight is preferable.

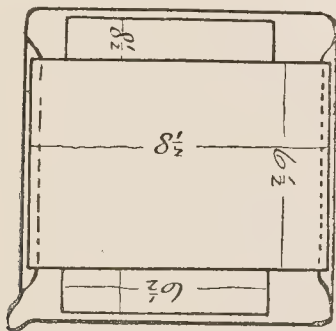
Development may be effected in any of the usual ways, though it is strongly recommended to place the print face up in a dish and flood with water, the mechanical attrition of the water being usually enough, but a fine water spray may be directed on to parts of the print whilst still lying under the surface of the water, the thin layer of water breaking the force of the spray. Sawdust soup or brushes may also be used.

E. J. WALL.

A SUMPTUOUSLY printed brochure is the latest thing in catalogues from the firm of Newman and Guardia, Ltd., Shaftesbury Avenue, W. It dilates upon the many admirable qualities of the N. and G. Reflex Cameras, and points its remarks with beautifully printed half-tone illustrations showing in a practical manner what can be undertaken and what can be achieved with these splendid instruments. Every photographer should obtain a copy of this catalogue.

NOTES BY THE AMATEUR OPTICIAN.

I HAVE during the past three weeks felt the want of something new in the way of dishes. The small sketch herewith shows a design which I commend to makers in the firm and confident belief that it will meet a long-felt want. I required to do some developing away from the usual dark room, and the conveyance of solutions, dishes, etc., became a weariness to the flesh. It was necessary to develop and fix and transfer to a dish of clean water a whole-plate negative, for conveyance afterwards to the usual washing arrangement. There was not much space at command, and the ordinary dishes measuring 9 by 7 and 10 by 8, and so on, took up a lot of room and only carried one negative at a time. To secure the desired relief a wood tray was made to hold two negatives, one of which was placed upon the bottom of same and the other about half an inch above the first, resting upon two ledges fixed in the tray, and running parallel, of course, to the sides of the bottom negative. If a dish be made square—and a square dish would be just as useful as one of oblong shape—it is obvious that with the provision of a ledge of half an inch or so width, there is plenty of room for two plates in the dish placed as in the sketch, whereby there is a great economy of space.



The wooden tray referred to answers the purpose, but I should be glad to make a purchase of two or three porcelain dishes of similar design.

Many readers will have remarked a note which recently appeared in the Press with reference to the Wireless Telegraphy Act. The editor of the "Model Engineer" wrote to the Secretary G.P.O. to ascertain how the new Act would affect people who are using wireless telegraphy apparatus for experimental purposes and for private use. The reply received indicates that an official licence is requisite practically in every case, and that each application will be considered on its merits." For my part, I made application at once, and am now—waiting results. I shall be surprised if many licences are granted, whatever may be done at present and for a year or so. One is able to get strange and marvellous results with only a very small and insignificant coil, and even putting on one side a piece of mechanism for purely telegraphic purposes, what about the use experimentally of a Hertz oscillator? This is by no means an "Oliver Lodge" transmitter, and still it acts similarly upon a coherer. I have illustrated and tested this on numerous occasions, and can easily understand that a few of these working here and there might seriously interfere with official apparatus.

THE hon. secretary of the Darwen Photographic Association announces that the second annual exhibition will be held on November 17, 18, and 19, with Messrs. Percy Lund and C. F. Inston as judges.

A PHOTOGRAPHER AT THE SEAT OF WAR.

THE Holiday Number of "Collier's Weekly" is a most interesting production. It is a matter of common knowledge that Robert L. D. who was specially sent out by the proprietors as photographer, the only correspondent in time to get through before the closing of Port of Korea by the Japanese. As a matter of fact, he was established at Chemulpo before the Japanese arrived, and, to quote his own words:—

The war had not begun. There was evidence on every hand it would start shortly. The harbour of Chemulpo was studded with war ships, nearly every nation being represented. The port closed. The mails stopped. The wires became silent. Tidings from the side world were not to be had. The air was feverish with suppressed excitement.

On the momentous night of February 8, the Japanese transports landed their first 3,000 soldiers on the bund of Chemulpo. The excitement was intense. In my ulster I carried a magnesium flash lamp. Upon my shoulder was carelessly strapped my Kodak. When the excitement was at its height, and the soldiers in absolute silence were lighting the huge log fires, a cry went up, "The Russians!" The cry came from the Koreans, who had packed the wharf to watch the landing. They had seen the flash of my light as I hurriedly made a picture of the scene.

After making flash after flash of this most remarkable midnight landing, I hurried to my quarters in the filthy Chinese hotel, and there with my developing machine spent the rest of the night in turning out what proved to be the most successful lot of flashlight films soldiers landing ever taken.

The next day I hurried by first train to Seoul. Seoul presented many scenes picturesque—the arriving soldiers, the school children massed into line to meet them, and the heavily laden bulls carrying towering loads of supplies for the army corps.

It was just at the stroke of twelve that a dull boom sounded, miles away; another and another, and yet another. The war had begun. The first battle was on at Chemulpo, twenty odd miles back. The war I had come to see had started, and I was not at the starting line. Hurrying into a jinrikisha I shouted to the "Kurumaya," "Five yen if you get me to the station in ten minutes." The coolie did not understand the language, but he comprehended the "five yen" and flashed in his face. He called two men, and the three went through the streets as though mad. They certainly earned their money. There was no train. Afar off the cannonading sounded, louder and louder. My Kurumayas were tired. Leaving them, I started on the long journey with one big, strapping coolie. Inside of a block I had gathered seven others to assist. This crowd of eight hurrying fleeing coolies excited the town. On and on and on we went over frozen rivers, through heavy ice-crusts, rice fields, and, worst of all, the great sand plains. I rode, then I walked, then I ran.

Arriving at Chemulpo I hurried to the water's edge. Sampanns were plentiful, but no sampanians. The Koreans had taken to the hills, and it required the liberal use of "gilt" and a club to get one. I got four and through the choppy rough sea I hurried out to the U.S.S. "Vicksburg."

From the "Vicksburg" many scenes were to be had. The "Korietz" the "Sungui," and the "Varing" of the Russian fleet, and warships of nearly all nations. The "Varing," powerful as she was when I photographed her the day before, now rolled with every wave of the in-coming tide. Her funnels were perforated, her decks strewn with wreckage, her guns twisted, and almost completely dismantled. While I was making picture after picture a flickering light appeared on the "Varing." From this light and from the curls of smoke flamed a huge torch. The cruiser was afire. The fire seemed to have broken out in the exact spot where the hurriedly fleeing sailors had placed their forty-two dead. With these bodies cremating, the ship burned, and at 5.30 she was seen to totter and list heavily to starboard. As she listed the flames rose higher and higher. At six her decks touched the water, then her funnels, and, with one loud, deafening sound, she sank.

The onslaught of the Japanese upon the little Russian fleet was sudden, terrific, overwhelming. It could have but one result, and when the smoke of battle had cleared away and the great guns were once more silent, the smoke stack of the sunken "Korietz" marked her burial spot, standing like a monument upon the field of battle to

mark the first epoch in the struggle between the Japanese and the Russian for supremacy in the Far East.

With my Kodaks never so full of valuable films I worked all night developing. I had over 100 exposures. They represented one of the most valuable collections of war scenes ever photographed.

After the battle of Chemulpo the first detachment of Japanese soldiers headed for Ping Yang, the former capital of Korea. With my cameras, films, developing machine, and provisions carefully arranged on pack ponies, I started with the first troops for the North. For days I travelled with this overland draft of soldiers. I won't say with them, for I didn't. They occupied the roads, and I hobbled across the frozen fields.

There never was a time when good photographic scenes failed to present themselves. At every turn of the Kodak key I could make an interesting exposure. There were the tired, weary, footsore soldiers trudging along the icy roads, the lame, overworked horses dragging a towering load of army supplies. Exposing a film was easy, but developing and finishing in the open field was another problem. In fact, it was one of the hardest, most trying problems I had. First of all, the thermometer was always hovering around zero mark. The next problem was water. Cleanliness and water are foreign to the Korean nature. One well to a village is the rule, and water in plenty one must have when there are dozens of films to be developed.

And so each afternoon found me driving ahead at full speed to secure, if possible, one small Korean room for myself, horses, and entire army of helpers. The moment I entered the village and was able to secure any sort of a filthy room, the entire population was sent scurrying to the town's only well for water.

The primitive method by which I obtained my water supply is well illustrated by the picture of a Korean girl with a big jar of water on her head. It would tax a man to lift such a weight to his shoulder, yet this mere child, inured to hardship, carried it without difficulty. Indeed, the opportunity to earn a little money was so attractive to her that she followed our little party from place to place for what she could get in this way. Sometimes she could keep pace with us, and for a few days we would not see her; then she would again appear on the scene, ready to help in the carrying of water for my developing machine. By the time my helpers with the packs arrived, water in every conceivable pot and pan in town was in readiness for the developing.

After carefully fastening the gum end of the film I started on the process of developing. To say it was an anxious process does not half explain the trying moments I watched and waited to see if the changing temperature of the water should make my work a failure. A single failure would have meant the loss of a film never to be replaced. One can easily imagine the value I placed on each film, or, in fact, each developing powder when they understand I was the only photographer in Korea with a very limited supply of material, and did not know how soon the port would open. I was getting exclusive scenes daily, making pictures against the wishes of the Japanese Government, and each picture showed the progress of a nation going to war.

For a strong personal reason I cannot but praise the Japanese for closing the port of Korea when they did. Had the port remained open only a few hours longer, I certainly would have had company in the picture line. As it was, I remained absolutely alone for over two months as the only war photographer in Korea.

While crossing a mountain a pack pony carrying my precious developing outfit disappeared over the side of the cliffs. Hurrying to the top I perceived him turn over and over until he finally touched bottom—that is, what was left of him. Cautiously descending the slippery wall of ice, I found piece after piece of his hide, in fact, pieces enough to make a fair sized crazy quilt. At the bottom my scattered pack and badly crushed case of powders were located. The boy had secretly hidden a bottle of whisky in the box of powders, and for a moment I thought the whisky-soaked wrappers would prevent any further picture taking; but Fate was with me. Thanks to the care of the Kodak people the oiled wrappers saved the chemicals.

Then there was the worry of getting the photographs out of Korea. To have put all of them in the post office would have been like burning them up. Each and every film, to assure its arrival here, had to be posted at Chee Foo, China. Sunan, one of the most northern points in Korea, is the place from which I had to send films overland to

Chemulpo, from Chemulpo by junk, or small sailing craft, to China. Sunan is over two hundred and fifty miles from Chemulpo, the route is overland, mountainous and very dangerous. I sent a messenger almost daily for over a month. These messengers were Korean coolies, generally the ones who had worked for the missionaries, and could be fairly well trusted. It took a coolie, travelling very hard, on foot, about six days and half the nights, to arrive at Seoul. At Seoul arrangements were made with foreigners to see that the films and correspondence got the first available craft for China. Many of the runners were badly treated by the Japanese. They would get perhaps half the way when the soldiers would see them crossing a mountain. These soldiers, as I have said, were tired, footsore, and weary, simply marching along like sheep. They would take the messenger and turn him back to carry their kit; if he refused he was cuffed and beaten. Some messengers were turned back so frequently that they more than covered the distance three times, and took about three weeks to arrive. Some were turned back so often they never did finish the trip. These soldiers paid nothing for the service of the messengers, not even giving them a bite to eat.

With all that has been said against the Koreans not working, lying, and stealing, there is still one good trait in them—they are not deceitful. I tried dozens of Japanese and dozens of Koreans, side by side, and if I did not want to be deceived I never trusted the Japanese as far as I could see him. I had two Korean boys with me; they proved exceptionally smart and bright. It took only two or three days before they were able to run the developing machine, and, in fact, mix all the chemicals for developing. They learned to dry the films, clean the developing machine, and very often would take a Kodak and make a fairly good photograph. Not being desirous of getting credentials from the Japanese Government at Tokio, whereby I would be dictated to, I hustled into Korea before war was declared. With the declaration of neutrality by Korea I was then absolutely out of the jurisdiction of the Japanese forces. This does not mean, however, that they made no attempt to interfere with me. To the contrary, on several occasions they made it rather warm. This even went so far as arrest and imprisonment. Being stopped and detained for hours at a time got so common that shortly I quit protesting.

At Chemulpo, shortly after the first landing, I was stopped, searched, and cross-examined for at least an hour, and, with the familiar phrase, "I am very sorry for you," was permitted to depart. The Kodak dangling from my shoulder was always to a Japanese soldier what a red rag is to a bull. They pretended not to notice the Kodak when they stopped me; however, their awkward searching process led them to ask me what it was and to request to see it. They knew a Kodak as well as I; they simply wanted to see it opened, hoping thereby to ruin a film.

Had not the Fourteenth Regiment, on its arrival opposite Ping Yang, been such a thoroughly tired, frozen, and worn-out lot, I never would have been able to remain among them long enough to get a picture. The moment I suddenly appeared on the hill several started for me, explaining, "Very, very sorry," but their feet were so badly frozen I had finished and was ready to depart before they got near enough to tell me I could not make any pictures. After the regular process of questioning and searching I was taken to the Captain, re-questioned, re-searched, and detained for hours. During this time I was held on the ice while they kept the wires of the field telephone hot between Ping Yang and Seoul. They talked, questioned me, re-talked, re-questioned, and talked again, only to find they could not hold me, and with the same refrain I had heard so often, "Very, very sorry," told me I could depart.

The picture of the troops at rest tells of the miserable condition the men were in. Nearly every soldier was frost-bitten, yet all were so exhausted that they threw themselves upon the snow, and, with dogged patience, awaited the order to march across the river into Ping Yang. As a partial protection from the biting wind, a trench was dug in the snow along the side of the road, and here the poor fellows remained for hours together, ready to march on or to be taken to the field hospital for the amputation of either toes or feet.

To turn back is something of which the Japanese soldier knows nothing. The picture of the "Footsore Stragglers in the Rear of the Japanese Army" tells the story. They may be treacherous, dishonourable, falsely polite, but every inch of the five feet in height that goes to make up the Japanese soldier is pure pluck. The stragglers which my Kodak shows going down the mountain side should have every

one been in hospital. But to be wounded or sick, that is a disgrace. Death or a victorious return to the island home—these are the only desirable ends to the struggle possible from the Japanese standpoint. All these stragglers knew was to plod along until tired Nature refused to take them further, then to sink down in the snow for an hour or so of sleep, and at the first awakening, on again in the painful struggle to come up with the main body of the army miles ahead.

The excitement among the Koreans as they hurriedly crowded the top of the historic gates of Ping Yang to watch the arrival of the first Japanese soldiers was certainly intense. They huddled together like sheep in a storm. They were frightened, badly frightened; in fact, too frightened to clear the entrance when the soldiers started through the gates. They were clubbed with the butts of guns, and viciously treated by the soldiers, who hurried into the town.

Naturally, the development of films had to be done in some out of the way place. A hut, if possible, was located at the extreme side of a village, where the soldiers could not interfere without going far out of their way. With the aid of Korean boys I worked hour after hour in the cold to develop my work, that I might be able to renew my tedious journey. The water had to be warmed, so had the machine, and by working rapidly we were able to develop the roll before the developer would get too cold. Frequently, after development had ceased, the developer would freeze before we could pour it off and add the fixing. Constant movement of the films in the final wash had to be carefully watched lest the water should freeze solidly about them. Frequently my fingers became so numb I could not handle the films long enough to hang them up to dry, making double work every time I dropped one by having to re-wash it.

Sometimes I was more fortunate, and would find time to do my developing during the day, and no dark room being necessary with the machine, it was a comfort to be able to operate in the open air instead of in the filthy, vermin-infested, huts of the natives. With a Korean boy to turn the crank of the machine I was at liberty to attend to the mixing of my chemicals and to the washing and drying of the films.

And speaking of the chemicals, I actually cornered the photographic market in Korea. Realising soon after my arrival there that I was the only correspondent actually "at the front," and that practically the only other photographic apparatus in the country was in the hands of the missionaries, I desired to make certain of a "scoop" for my paper by making the other cameras useless. To this end I bought all the photographic supplies in sight, whether I could use them with my apparatus or not. Of course, I could make most of them of value in some way. At one place I obtained a supply of "Brownie" developing machine powders. One of them would not make solution enough for my 5in. by 7in. machine, but it did not take many seconds to figure out that five of them would make up the forty ounces of developer required. Of one missionary I might buy a little pyro, somewhere else I would get hold of a few pounds of hypo. It was not long before I controlled the photographic situation, and had thus doubled many times the value of the pictures I was taking, to say nothing of having added materially to the stock so necessary for my own work.

With my Kodak under my saddle and the saddle for a pillow I turned in each evening about midnight. In the small filthy room was my entire outfit; from every inch of hanging space was adjusted a drying film. I got little sleep, however, fearful lest someone should enter and destroy my most valuable collection of views. About three o'clock I had to turn out and caption each picture, then arrange for messenger service back to Seoul. Daylight found me pushing ahead of the army.

I tried usually to keep ahead of the army, for in that manner I could reach the villages and become supplied with food before the soldiers arrived. I found this necessary, in order to get enough food, for it was almost impossible to carry sufficient to supply my wants while journeying over the country with the thermometer registering below zero.

My hardest task was to get bread. Often for weeks I ate none of it at all. I struck a province full of missionaries, and I spent two days riding around among them, trying to buy what bread I could. Finally, I collected ten loaves, and, delighted with my success, packed it all on the back of one horse and went on my way. A few hours later I reached a river, in which the ice had broken and carried off the pontoon bridge. I loaded my horses and men in a sampan and started across. We were half way over when a young iceberg struck the boat, and the horse carrying the bread fell overboard, and neither the horse nor my precious loaves ever came to the surface.

With every member of the Japanese army throwing obstacles in one's way at every turn, with the Koreans stealing one's horses, the constant struggle against filth and vermin, with all food scarce and bread a luxury, with absolutely no convenience for picture making except such as can be carried on the miserable pack ponies, the life of the war correspondent in Korea is far from a happy one. With all these trials and tribulations I succeeded in sending my pictures that have been universally pronounced the best war scene ever published. Through the courtesy of "Collier's" hundreds of them have been reproduced from New York to San Francisco, and from England, Germany, and France.

THE DUNDEE WORKS OF MESSRS. VALENTINE AND SONS, DUNDEE.

THE fame of the original firm of Valentine has spread the wide world over, and the name is one which in many lands is "familiar in the mouths as household words." Mr James Valentine (writes a correspondent of the "Dundee People's Journal"), the founder of the firm, started business in Dundee between sixty and seventy years ago as a lithographer, but the exigencies of the business generally induced him to take up photography, which he did with conspicuous success and was honoured with the designation of Photographer to the Queen. Discovering in the course of an ever-increasing business that there were as great, if not greater, possibilities for the photographer in the publication of the many beauty spots of our own Scotland as in the counterfeit presentment of the faces of "its honest men and bold ladies," Mr. Valentine turned his attention to this particular branch of photography with which his name has been so long associated.

Books of local views were thus issued, and these in turn were succeeded by fancifully framed photographs, more than one of which to be usually found in the majority of our homes. As the business prospered its varied branches of light and easy work necessitated the employment of many girls, and provided an opening for them in days when suitable and profitable occupations were decidedly uncommon than in the present day. Valentine's works have been located in the Perth Road, but the introduction of the collotype machine and the ever-increasing business demanded an immediate extension of premises, so a new and up-to-date building on the west side of St. Mark's Church, and in close proximity to the original, has been recently erected, and affords employment for nearly 600 workmen. More than half of these are girls and women, so that, including those who find work in the firm's branches in London, Dublin, Edinburgh, Glasgow, York, Birmingham, Plymouth, and Manchester, there are at least 400 female employees.

The other day I was conducted all over the premises by Mr. W. Valentine, the son of the founder of the firm, and the chief manager and director of Valentine and Sons, Ltd. There was quite a number of clerks and typists in the various offices, in one of which is to be found the private post box, the contents of which are regularly collected several times a day. It goes without saying that the correspondence of such an establishment has attained very large proportions, and I understand there is only one other business in the country privileged to possess a private post office. As already indicated, the majority of the employees are girls and women, some of whom have occupied situations there for a longer number of years than they naturally might care to confess to! Their work in photography varies considerably. They are engaged in retouching, spotting, and colouring; the toning of silver prints, which are fast being ousted here; in the manufacture and colouring of lantern slides; and in the numerous other more or less intricate processes connected with the art.

Unmounted photographs are practically at a discount meantime, but the demand for framed photographs is as large as ever. The work of suitably mounting and framing these is chiefly carried on in the firm's establishment in Edinburgh. Then the books of local views require binding, and this task affords a pleasant form of employment to many of the girls, who, seated at long tables, either deftly apply the gold leaf for the titles or finish the tartan and other characteristic Scottish covers which appeal so strongly to the tourist element, particularly the Americans on a visit to "Caledonia stern and wild."

Naturally, I found most to interest me in the new Westfield Works, which are entirely given over to the preparation and publication of postcards. There they lay in piles and stacks of hundreds, thousands

and millions I should imagine—a sight calculated to make a collector break the Tenth Commandment to an unlawful degree. It would be a mistake to suppose that Valentine's series include only Scotch, English, and Irish views. They have artists and photographers engaged in every part of the globe, even in the most out-of-the-way and little-known corners thereof, who forward negatives to headquarters to be developed, printed, and evolved as the popular postcard. One order, which was being completed on the occasion of my visit, consisted of a magnificent set of hand-coloured postcards of Kimberley, South Africa, destined as the means of conveyance of kindly Christmas greetings to friends near and far. No doubt many of them will find their way back again over the waste of seas to Dundee.

The collotype machines on which the majority of the postcards are printed are mostly of English and German origin, and are marvels of mechanical skill, scientific accuracy, and artistic beauty. The process is highly intricate and rather too technical to be adequately mastered by an onlooker in the space of a few minutes, but here is a general outline of the *modus operandi*:—Large squares of thick plate glass, having bevelled edges, are chemically prepared and coated with a gelatinous substance, which, after several processes, is sensitised. The negatives of a group of postcards are finally printed thereon, the plates are then firmly wedged into the centre of the machines, enormous rollers are set a-going, and the impressions are taken with wonderful celerity. The machines are controlled by men, who are assisted by the girls in the feeding in of the paper and the throwing off of the sheets of say 18 or 20 postcards, so that the work of the latter is particularly easy and pleasant. From one machine a stream of black and white cards may be seen issuing, whilst at an adjacent machine the sheets emanate in the faintest of tones, but these are in an unfinished state, and are submitted to another machine, which cleverly touches them in with black, and they finally emerge complete, and beautiful. The edges of the sheets are trimmed and the cards separated by means of a guillotine.

One of the newest things in photography is three-colour printing, and I was shown several fine specimens thereof in a new set of postcards, depicting the engines and expresses of the different well-known railway companies. Apropos of postcards, it is rather a curious fact that Mr. James Valentine was the first to issue illustrated envelopes. These are of a topical nature, and dealt with such important movements as the abolition of slavery and the dissemination of temperance principles. Valentine's establishments are controlled by the Factory Acts, so far as the hours of daily employment, the weekly half holiday, and trades' holidays are concerned; their scale of wages compares favourably with other large employers of labour in the city, and their employees belong to the superior class of working girls. A local medical man, in his official capacity under the Factory Act, pronounces them far and away the healthiest lot he comes across—a fact accounted for, no doubt, by the hygienic surroundings of Westfield Works, and their employment, which takes many of them out into the fresh air and the sunshine, obtainable on the roof of the buildings, from the top of which the marvellously fine and extensive view of the river and the bridge is calculated to act as an inspiration to the workers.

THE NORTHERN FEDERATION AND THE AFFILIATION WITH THE R.P.S.

THERE appears to be a feeling among the members of the photographic societies of Northumberland and Durham that the Federation is antagonistic to the affiliation of photographic societies which is connected with the Royal Photographic Society. Mr. Arthur Payne, in the "Federation Record," says that this is not so, a fact well known to all those who are well acquainted with the aims and objects of the Federation, but the rapid growth of its membership naturally brings into its ranks many who are not so well informed, and it may possibly be of interest to these new members if I briefly explain the reasons for the existence of these two separate organisations. Both are equally worthy of support. Their interests are identical, and yet they do not clash. They each confer benefits and privileges to their members which cannot readily be given by only one of these two societies.

Whilst the Federation only extends over the counties of Northumberland and Durham, the area covered by the Affiliation extends

over the whole of the British Empire. They, with their vast organisation and large membership are enabled to confer benefits upon their members of such a nature that the Federation are incapable of undertaking; but the very vastness of this work prevents it possessing that element of personality which is of so much importance at the present day. And it is on that one point of "personality" that our Federation justifies, and maintains its position.

For instance, the Affiliation provide an excellent series of lectures for circulation among their members, and when these lectures are delivered by their authors they are worthy of, and attract, considerable attention, but unfortunately in the great majority of cases they must, for obvious reasons, be read by deputy, and when, as is frequently the case, the person who undertakes this task is one who has no knowledge of the subject of the lecture, and who very possibly has not had the opportunity of reading the lecture previous to the meeting, the result is, as everyone knows who had heard a lecture delivered in such a manner, chaos.

It must be admitted that when a lecture is delivered by the author, not only is it made more interesting, because it is delivered in an intelligible manner, but the fact that the audience is brought into personal contact with the lecturer is in itself beneficial to those who are fighting their way to the top, for strange though it may sound, there is undoubtedly some mysterious, or mesmeric, influence (whichever you may be pleased to term it) induced by contact with a notability, which in some inexplicable manner not only excites in the beginner a desire to do only the best work, but also enables him to understand the principles, and really appears to help him to do it in a thorough manner.

I feel sure that it is this element of "personality" which is conducive to the prosperity of the Yorkshire Union. The Affiliation also offers the use of a Board of Judges, who are prepared to judge the affiliated societies' exhibitions, but the distance of our district from the Metropolis naturally debars their usefulness in this part of England. Though the Affiliation, so far as we are concerned, fails to satisfy upon these points, there are still many advantages they offer to their members, which are well worth the nominal subscription of one guinea per year, charged to each society, and which are equally valuable to photographers all the world over.

Among the benefits conferred on members of an affiliated society that which stands out most prominently is the Red Book, a copy of which is issued annually to each. This book, besides serving as a permit to photograph in several cathedrals, parks, and open spaces, is also useful as an introduction should you meet with photographers, or desire to use a dark room, when away from home. They have also a valuable collection of fifty-four pictorial photographs by leading workers, which are available for circulation amongst the affiliated societies. The opportunity of viewing these pictures is in itself equal to a visit to a London exhibition, and, as they are framed and glazed with celluloid, they are an acquisition to any provincial photographic exhibition.

In conclusion, I would ask all the members of our societies to seriously consider the advisability of joining in with the affiliated societies in their good work of encouraging photographic progress and improving the status of photographers generally. Not only do you receive many benefits in return for your support, but the moral force of your sympathy contributes in no small degree towards the attainment of their ideals.

Societies affiliated with the R.P.S. are entitled to the following benefits and privileges:—The loan of illustrated lectures on photographic and kindred topics, sets of lantern slides, lantern lectures, pictures for exhibition, etc. Permission to photograph in the places specified above upon production of the Photographic Red Book, without special application to the various authorities. Two copies of each issue of the "Photographic Journal," in which are published the proceedings of the Affiliation Committee and the transactions of the Royal Photographic Society of Great Britain. Reduced rates for wall space and admission at the annual exhibition of the Royal Photographic Society of Great Britain. Members of affiliated societies joining the Royal Photographic Society of Great Britain receive exemption from the payment of entrance fee provided they have been for at least two years members of an affiliated society. The secretaries and delegates of affiliated societies are empowered to propose and second the nominations of such candidates. The services of a Board of Judges in respect of small society competi-

tions. Temporary use of the accommodation provided by the various societies to members away from their own districts.

Every affiliated society has a voice in the management of the Affiliation through the two delegates which each is entitled to appoint. The general body of delegates meets at least twice a year, the business in the meantime being conducted by an executive committee appointed under the provisions of Rule 6. The two delegates appointed by each society need not necessarily be members of the society they represent. The Royal Photographic Society of Great Britain reserves one-third of the amount of the subscriptions for secretarial, clerical, and incidental working expenses. The Affiliation Committee have the remaining two-thirds entirely at their disposal.

THE LATE JAMES ALEXANDER FORREST.

THE death of Mr. James Alexander Forrest, which took place on Friday, September 9, in his ninetieth year, removes perhaps the oldest link between the past and present of English photography. Exactly three months ago, in the Jubilee number of the JOURNAL we



The late James Alexander Forrest, one of the Editing Committee of the "Liverpool Photographic Journal, 1854-1856," died September 9, 1904, aged 90.

gave a brief account of Mr. Forrest's connection with the "Liverpool Photographic Journal" and general photographic affairs in the great city on the Mersey. It is with deep regret that the duty of chronicling his decease should so soon have followed upon the pleasure we felt at knowing that he was alive to witness the completion of fifty years' existence of the JOURNAL he was partly instrumental in founding. The respect in which he was held in Liverpool is evidenced by the following extract from the "Liverpool Mercury" of Saturday last:—"Mr. Forrest was at one time a member of the Liverpool Town Council, representing Lime Street Ward for several years in the Conservative interest. He was first elected to the Council in 1873, succeeding Mr. H. Hornby, deceased. In the following year Mr. Forrest was returned without a contest, but three years later he was opposed by Mr. C. J. Crosfield, whom, however, he defeated by a majority of 78. After serving the city in this capacity for eight years, during which time he did excellent work on many of the committees—including the Watch Committee—he retired from public life. He was the

principal of Messrs. J. A. Forrest and Sons, glass manufacturers Lime Street, which firm, it will be remembered, executed the stained glass windows in St. George's Hall. Mr. Forrest was a gentleman of artistic tastes, and his work as a pioneer of photography will long be remembered. He was not only distinguished in the use of the camera but his contributions to magazines on matters appertaining to his favourite pursuit were recognised as from the pen of an author. He was for a long period a prominent member of the Liverpool Photographic Society, and was greatly respected both in public and private life." The late Mr. Forrest was an early President of the Liverpool Amateur Photographic Association, of which he was a member from its foundation. In conjunction with Mr. James H. Rupp, of Bidston, he took great practical interest in the application of photography to astronomical purposes, and was the author of many communications to the Liverpool Association. He supplied in his personality the unique spectacle of more than half a century's continuous devotion to the practice and encouragement of amateur photography—a record, we should say, of its kind. Of very high character of heart and mind he will long be remembered with affection and esteem by those who follow him in the work of aggrandising photography in public practice and esteem.

BIRD-NESTING WITH A CAMERA.

At a meeting of the Rotherham Photographic Society held on Tuesday, September 6, Mr. J. W. Stamp, vice-president, gave an illustrated lecture on the subject of bird-nesting with a camera. Mr. Stamp commenced by saying that bird-nesting was regarded by the majority of individuals as simply a boy's pastime, but it was something more than a useless amusement. It possessed great possibilities of interest, enjoyment, and information. He knew of no hobby that brought an individual into such close touch with Nature, and revealed to him more of the hidden nooks and crannies where she stowed away her loveliness as bird-nesting. Commenced in a right spirit and prosecuted in an intelligent manner, it opened out avenues of recreation and pleasure hitherto closed. There was bird-nesting and bird-nesting. There was bird-nesting of the professional egg collector, who swooped into his net every egg of every species and regarded it as so much filthy lucre. There was the bird-nesting of the heartless lad who scoured every hedgerow, stream side, and woodland within walking distance with the sole object of stringing all the eggs he could find on a thread, and not content with this villainy, he pulled out every nest he met with to use as a football. With neither class had he (the lecturer) the slightest sympathy, and he considered that the strongest and most repressive measures that could be brought to bear none too strong. It was owing almost entirely to these two classes of individuals that many of the rarest and most beautiful species of birds had become or were rapidly becoming extinct. Some had already gone, never to return, and others were rapidly following in their wake. It was impossible to say how much they owed to birds. Not only did the birds in spring and early summer provide some of the sweetest music that could possibly greet one's ears, but they cleansed the air, irrigated and fertilised the soil, and served in various ways to make life more beautiful and enjoyable. Imagine, if they could, the condition of the atmosphere without the swallow, the martin, or the flycatcher, or the state of the fruit trees without the tit-mouse family. Those little scavengers would commence at one end of the orchard and taking the trees in rotation, would pursue their labours as orderly and methodically as a party of human beings, destroying insects, grubs, and larvæ as they went, and if in their onward march they did destroy a few fruit buds, well, they had it on the highest authority that the labourer was worthy of his hire. Then the rook family followed the ploughman up and down the furrow, and, as he turned up the soil, cleared away the slugs and filth in a manner that no human contrivance could accomplish. In those and many other ways the birds worked cheerfully, willingly, and incessantly, and they should regard him as an enemy of his race who did anything to destroy or exterminate them. There was, however, one style of bird-nesting that not only needed no justification, but, on the contrary, had much to commend it, namely, that which was prompted by a sincere and earnest desire to increase the knowledge of the birds, the nests they built, the eggs they laid, the lives they lived, their habits, and their uses. If an individual actuated by those motives would start out on the crisp mornings of the early spring, and pursue his wandering in an intelligent and systematic manner, he would soon find his cor-

tions of birds and bird life undergo some radical changes, while ideas of Nature and Nature's ways would be considerably increased and enlarged. In a particularly striking way Mr. Stamp proceeded to describe from his own experience many of the habits of birds had made a point of studying—the wonderful construction of their nests, the beautiful markings of their eggs, etc., and the places where they established their homes. Proceeding to describe his photographic outfit, Mr. Stamp said it was of the ordinary amateur's variety, and quarter-plate in size. He had confined his attention to subjects that would be found on the ground or within a few feet of it. If, however, the bird-nesting photographer intended to climb the top of the tallest tree with his camera and tripod strapped to his back, or had a desire to tempt Providence by dangling at the end of a rope 200 feet from everywhere, he (Mr. Stamp) had no advice to offer. Mr. Stamp concluded his lecture by showing an extensive series of lantern slides, made from negatives of birds' nests. They were excellently produced, and their charm was enhanced by the racy descriptions which were furnished.

Exhibitions.

KODAK EXHIBITION.

This exhibition of prize pictures and others sent in for the last Kodak Amateur Photographic Competition is now open at the Kodak Gallery, Strand, London, and will remain open until December 17. About 100 pictures are exhibited and the whole series makes a most interesting collection. This widely-advertised competition was probably the largest photographic prize scheme ever inaugurated, and brought in 25,000 pictures from all parts of the world. They were adjudicated on by Sir Wm. Abney and Messrs. J. Craig Annan and Frank Atcliffe, and the work throughout was held by them to be of a very high standard. We have already published in these columns a full list of prize winners, which included names of prominent workers from all countries, speaking well for the ubiquity of the Kodak. Prints of every shape, size, and colour are exhibited in remarkable profusion, and what is particularly interesting to note the excellence of the smaller prints produced by the Kodak cameras of the Brownie type. This fact should prove distinctly encouraging to the beginner with these little cameras.

The collection of prints is admirably displayed on a series of easel partout mounts, and the entire display reflects great credit on the energies of Mr. B. Alfieri, to whom, we understand, the trying out of this part of the work is due. The entire results displayed are produced throughout entirely with Kodak products, and must serve as a striking advertisement for the firm.

Particularly interesting are the prints that have been specially produced to show the orthochromatic qualities of the Kodak plates and the N.C. film. These examples show all the usual practical tests applied, in the shape of flower groups, colour charts, and cloud effects, etc., and the results are extremely striking and conclusive. Numerous attempts at something more than the usual snapshots are also in evidence and pictures with distinct artistic feeling are strongly represented. Another excellent idea, due to Mr. Alfieri, is the grouping of the whole of one competitor's work (although entered in many classes) in one frame when the average has been consistently good and thought worthy of this attention. In this way groups of first-class work by well-known workers are to be seen in a manner that permits adequate comparison.

Among those we noted whose work had been thus treated were Messrs. C. Cadby, whose delightful studies of weeds and flowers are always acceptable, Will. A. Cadby, and Mrs. Barton, whose characteristic figure work deserve special praise. Some small nude studies by P. S. Greig and E. B. Vignolas, taken with the Brownie camera; some wonderfully luminous groups of Algerian children by Emil Lechon (Breste), and other work worthy of note by S. R. Carter, Ward Muir, Fisher Ward, J. C. Warburg, Eustace Calland, E. R.

Bull, C. J. Reade, F. W. Gregg, A. Miller, W. Deeley, Miss Tomlinson, W. A. Hensler, A. Richmond, Miss Kate Smith, Walter Clutterbuck, A. Bedding, Walter Zimmermann, T. Brogden, Herbert Bairstow, Miss M. C. Eames, and H. Ledermann, while excellent comparative results of experiments with the orthochromatic qualities of the Kodak films are exhibited by Fred H. Evans with a series of photographs of backs of books; D. J. Cartwright, of Boston, whose examples of cloud work should be conclusive for the landscape worker; André Callier (Ghent), W. J. Mitcheson, H. G. Lancaster, and Dr. E. J. Rose (Charlottenburg).

All the pictures that were awarded the bigger prizes are really fine examples of modern photography, and nobody inspecting the exhibition will have much fault to find with the awards, from the larger prints which take prizes in the enlargement class, to the smallest—a tiny blue print measuring $1\frac{1}{2}$ in. by $\frac{3}{4}$ in. (E. Hoppé), looking much like a postage stamp. The gallery will be open to the public from 10 a.m. to 6 p.m., and on Saturdays from 10 a.m. to 2 p.m., and no charge will be made for admission. Every country visitor to London bent on seeing the Royal and Salon should certainly include this third exhibition in their programme.

EXHIBITION AT NEWTON ABBOT.

MR. PASSMORE EDWARDS, the Cornishman, is famed in his native county for acts of similar character to the famous Scot, Mr. Andrew Carnegie, in that he is the donor of many public buildings, mainly free public libraries and other edifices associated with education. In memory of his mother, who was a Devonian, and born at Newton Abbot in that county, he has presented the town with a free public library, and under the same roof the Urban District Council have, by arrangement with him, placed the technical schools of the town. The premises are a very fine, imposing pile, of which the late Mr. Silvanus Trevail, of Truro, was the architect. They opened last month. A committee asked Mr. Charles R. Rowe, of Cockington, Torquay, to get together a representative exhibition of pictorial photography from well-known workers. The show was the best yet seen in that part of Devon, and was a great education to the many photographers who visited it, and a surprise to the general public, which had up to the present not had opportunity of looking upon high-class work. In association with the same object Mr. F. W. Geary, of Newton Abbot, a very skilful amateur with a reputation locally for fine work on Dartmoor, invited amateurs of the town and neighbourhood to form a section, and the result was in every way satisfactory.

Naturally, the loan exhibition proved a great attraction, because the contributors to it were, many of them, unknown locally, but the work shown speedily commanded attention. To this we will first refer.

Dr. Grindrod was represented by some very charming examples of artistic work, all of which drew marked attention and observation from visitors, especially "Going to the Meadow," a man driving a flock of sheep, the arrangement of which was altogether admirable and enjoyable. This picture was, perhaps, the most popular in the exhibition, and deserved this expression of favour. "Cutting Oats" was also a very much appreciated picture, vieing with "Hauling Timber" in general esteem. "The Village Scholar" was a figure study of an oldish man reading, very capably thought out and of excellent work. There was fine vigour and life in "Wracking in a Spring Tide," a shore study. "Below the Weir" was a study of a fisher, the strength and quality of which was somewhat marred by the patch of light near the fisherman's head. A. J. Anderson contributed some very artistic works, standing out among which was "The Close of a Stormy Day," a group of fishermen on the quay at Plymouth when the grey of the day had come. It was produced in gum, and this medium had given the artist scope for strong work. "Twixt Mist and Freeze" and "The Mists of Dawn" were two studies of the sea and fishing craft, of strong pictorial quality and excellent atmospheric effect. He had a clever study of a child—"In Deadly Earnest"—busy at work lacing her boot, an experiment in local toning on platinum, and a very interesting example of good technique. His "The Pine Branch" was quite Japanese in treatment and very clever in selection, a pine branch silhouetted against a soft distant landscape and sky. "In the Mist of Dartmoor" was a skilful study of this famous Devon moorland, giving very fully the feeling of space and distance, and

the clever way in which a group of cattle had been dealt with shows Mr. Anderson to be a master of the craft. Arthur Marshall was represented only by two works, unfortunately, but these were greatly admired. The subdued religious tone and character of "Prie Dieu" deeply impressed everybody, and especially those who were either of artistic temperament or were sons of Sol or Photos. It was, as we have always thought, a work of great skill and ability. "The Love Letter," a study of a quaintly dressed lady, who is utilising the solitude of a glade to read her missive, is highly pictorial, the pose natural and easy, and the composition a fine lesson in such ways. Mr. Marshall is to be complimented upon his fine taste in harmonious and well-thought-out mounting, to which many excellent photographers do not give that attention which is due, and to their own interest. Rev. H. R. Campion's high reputation as an architectural photographer ensured that his contributions would be worthy. They were a splendid lot, of which, perhaps, the most artistically perfect, in the matter of composition and arrangement, was "Quomodo Delixi" (ps. 119 v. 97), with its memorials of the dead, the pathway to the church door, and the figure of the priest within the porch. His "Norman Work, a Contrast," in which dark contrasts with light, with splendid gradation in all, is a fine cathedral interior study. "Lux Benigna," a quiet, reposeful study of windows and tombs in a great church, is a very fine example of judicious selection and fine technique. His other contributions are "The Dog Gates, Haddon Hall," and "A Memory of Bygone Days," both charming pieces of work. The fine technique of this worker was a great lesson to local photographers. A. M. Fellowes-Pryne is represented by excellent work; of them "Qui Vive?" a study of two terriers on a sandy seashore in the wet sand, of which they are reflected in a silvery soft way. The work is very happy. "Homeward Bound" and "Overhauling" are two shore studies, the last in which figures occur. His "Evening" is perhaps a little choked up in the shadows, but is an interesting scene. Miss Rodway's "Grey" is a quiet grey study of a quiet stream passing by the walls of an ancient church, over which a fine fir throws its shade. Her "Where Erme Flows Silently" is a very striking scene on a well-known Devon river, charmingly chosen. She is also represented by an interior church scene, "Pulpit, Dittisham Church," a very beautiful example of carved work, photographically of the best technique. Miss Marillier's flower studies are very fine, especially the studies of "Chrysanthemums." Carslake Winter Wood has several very excellent and artistic things—"Kenton Church," a study of the south door, very beautiful; "Church of Our Lady and St. Denis, St. Marychurch," a beautifully graduated example of interior work; and "Midday Quiet," a study of a country village at the noontide, when things are still, an artistic selection. Miss G. Rodway has a very pretty study of child life on the Riviera, "Un Soldo?" and a "Schopper"—a German student's beer jug, in which the half tones and modelling are very well rendered indeed. C. J. King's contributions, representing sea-bird life and scenes in the Scilly Isles, are characterised by great care and very fine technique. Artistically, "On a Summer Sea" and "The Approaching Storm" are the most enjoyable, and the latter is a fine striking view of strong sea, rocks, and a very stormy sky. Graystone Bird was represented by his very well known and successful "Good Morning," "Good Night," and "The Order of the Bath," all very charming child studies.

In response to Mr. Rowe's request, Kodak, Ltd., were good enough to send some very fine enlargements, some of the most striking of which were John H. Avery's scenes in Morocco (which attracted a great deal of attention). Others were fine architectural work, good portrait and figure studies, and some striking work done by the Panoram. This collection did much to enhance the value of the pictorial character of the exhibition.

The work contributed by residents of Newton Abbot and neighbourhood was got together by Mr. F. W. Gerry, and are a very fine even lot of praiseworthy artistic quality, as a whole, and certainly creditable to all concerned. W. W. Palmer's Alpine scenes and a landscape with sheep are probably his best, though he has a study of a fishing fleet that is strikingly original. C. L. Vicary's snapshot work is good, and shows the eye of an artist. He has a clever lot of the "South Devon Hounds" and of a "Hurdle Race." A. W. Searley's range of subject is very wide, and he is very successful in most of his work. He has scenes in Switzerland, Germany, Austria, Italy, Norway, Spitzbergen, and Iceland; and in mountain work he has

certainly managed to do well with difficult subjects. Of these, pictorially, may be cited "The High Hills are a Refuge for the Wild Goats," and "Brigue, Simplon Pass." He has church interiors of good merit. B. T. Nunn's "South Devon Folgoat, Brittany," and "Carved Work, Cathedral of St. Leon, Brittany," are most creditable and very attractive examples of architectural work. Of E. Brook's contributions, the best scenes in "Bradley Woods, Newton Abbot," each of which, he would gain in quality by being of larger size. G. Bell is a very considerable contributor, and the best of his work is seen in the "Old Mill, Ogwell," "Combe-in-Teignhead," and "Old Yarn," the latter a transcript of one of the delightfully picturesque narrow streets in that city. F. B. Wily has some dainty little lantern slides of many of the scenes represented in his prints. Gerry also contributed a splendid lot of slides of flowers, sea, Dartmoor, and of other places in Devon. He gave each evening lantern exhibition, including, besides these named, some examples of the best-known lantern-slide makers.

FORTHCOMING EXHIBITIONS.

- September 14-15.—Cambridge Photographic Society. Hon. Sec., T. J. Sowden, "Sunny Side," Guest Road, Cambridge.
- September 16 to November 5.—Photographic Salon, Dudley G. Egyptian Hall, Piccadilly. Hon. Secretary, Reginald Craigie, Photographic Salon, 1904, Dudley Gallery, Piccadilly, London, W.
- September 20-28.—Newbury Photographic Society. Hon. Sec., E. J. Forster, Guildhall Club, Newbury.
- September 22 to October 29.—Royal Photographic Society's Ninth Exhibition, New Gallery, Regent Street, London. Sec., A. W. W. Bartlett, 66, Russell Square, London, W.C.
- September 29.—Beverly Photographic Society. Hon. Sec., Morley.
- October 4.—Whitehaven Y.M.C.A. Zoar Photographic Exhibition. Hon. Sec., J. Hayward, 14, Albert Terrace, Whitehaven.
- October 15-29.—Coatbridge Photographic Association. Hon. Sec., Geo. W. Campbell, Ailsa Cottage, Coatbridge, N.B.
- October 18, 19, 20.—Kettering Church Institute Photographic Exhibition. Hon. Secretary, E. Claypole, 112, Hawthorn, Kettering.
- October 19-20.—Isle of Wight Photographic Society. Hon. Sec., J. Howard Burgess, 53, Pyle Street, Newport, I.W.
- October 19-22.—Rotherham Photographic Society. Hon. Sec., C. Hemmingway, Tooker Road, Rotherham.
- October 26-28.—Watford Camera Club. Hon. Sec., H. G. Foot, 3, The Parade, Watford.
- November 2, 3, 4, 5.—Newark Photographic Exhibition. Sec., L. C. B. Appleby, Barnbygate House, Newark.
- November 2-23.—Plymouth. Hon. Sec. Photographic Society, Chas. R. Rowe, 2, Walnut Villas, Cockington, Torquay.
- November 3.—Frome M.I. Photographic Society. Hon. Sec., B. J. Mitchell, 3, Willow Vale, Frome.
- November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Sec., James Dunlop, Myrtlebank, Motherwell.
- November 9.—Hackney Photographic Society. Hon. Sec., Walter Selfe, 70, Paragon Road, Hackney, London, N.E.
- November 15-19.—Sunderland Camera Club. Hon. Sec., Selby, 52, Frederick Street, Sunderland.
- November 17-18.—Braintree and Bocking Camera Club. Sec., W. H. Tilston, 81, High Street, Braintree, Essex.
- November 17-19.—Darwen Photographic Association. Hon. Sec., J. G. Thomas.
- November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.
- November 22-23.—Ipswich Camera Club. Hon. Secretary, R. Sutton, 37, Henley Road, Ipswich.
- November 23-25.—Hove Camera Club. Hon. Secretary, A. Sargeant, 55, The Drive, Hove.
- November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., G. W. Simmers, Aberdeen House, Ramsgate.
- November 25-26.—Ilford and District Photographic Society. Sec., W. N. Beal, 155, Thorold Road, Ilford.

November 26-December 3.—Glasgow Eastern Amateur Photographic Association. Secretaries, John Brough, 68, Dalmarnock Road, Park Head, Glasgow; and Geo. R. Johnstone, 591, Alexandra Road, Dennistoun, Glasgow.

December 2-3.—Southsea Photographic Society. Hon. Secretary, J. Lawton, 20, Clarence Square, Gosport.

December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104, West 101st Street, New York.

December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.

December 13-20.—Southampton Camera Club. Hon. Secretary, S. Kimber, Oakdene, Highfield, Southampton.

December 28-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 138, Glasgow Road, Wishaw.

January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.

January 20-21, 1905.—South Essex Camera Club. Hon. Secretary, Michell, 180, Browning Road, Manor Road, E.

January 28-February 12, 1905.—Photographic Society of Marseilles. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.

February 6-11, 1905.—Blairstown and District Photographic Association. Hon. Secretary, Wm. D. M. Falconer, James Street Stage, Blairstown.

February 21, to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

March 4-11, 1905.—South London Photographic Society. Hon. Secretary, H. Creighton Beckett, 44, Edith Road, Peckham, S.E.

June, 1905.—Northern Photographic Exhibition. Secretary, F. G. Cot, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

September 30.—"Photographic News." Quarterly Competition. "Photographic News," 9, Cecil Court, Charing Cross Road, London, C.

October 1.—Thornton-Pickard. £100 cash prizes for pictures taken with Thornton-Pickard cameras and shutters. Thornton-Pickard Manufacturing Co., Altrincham.

October 10.—Luna paper. £240 cash prizes for prints on Luna paper. Lucien Allegre and Co., 59a, New Oxford Street, London, C.

October 15.—Belgian Association Lantern Slide Stereogram Competition. Secretary, M. Vanderkindere, 97, Avenue Brugmann, Brussels.

October 31.—Coxia. 68 prizes for users of Coxia. Judging twelve pictures. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.

November 1.—The "Graphic." £50 in cash prizes. Manager, Photo Competition, the "Graphic," Tallis Street, Whitefriars, London, E.C.

December 31.—Barnet. Nineteen classes. Prizes valued at £500 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

March 15, 1905.—Ilford. £750 in cash prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

THE Observatory of Harvard University will soon possess the largest telescope in the world—namely, the 5ft. aperture reflecting instrument constructed by the late Mr. A. A. Common. Before Mr. Common's death, Prof. Pickering, the director of Harvard Observatory, had some correspondence regarding the telescope, but the price was prohibitive. A few weeks ago, the professor learned that it could be secured below cost, and a recent anonymous gift of \$4,000 the university made the purchase possible. The negotiations were conducted with Mr. Common's son through Prof. Turner, of Oxford, and preparations are now being made to send the instrument forward. It is nearly twice as large as the famous Lick telescope, which has an aperture of 36in.

New Apparatus, &c.

The Dai-Cornex Cameras. Sold by Messrs. R. and J. Beck, 68, Cornhill, London, E.C.

Under the name of the Dai-Cornex Cameras Messrs. R. and J. Beck are placing upon the market a series of nine models of magazine plate hand cameras, differing in their lenses, shutters, and various adjustments, but all as far as the essential novelty goes designed on a new principle whereby they can be loaded and unloaded in daylight. Like most lasting inventions the idea is simple, the plates are held in sheaths of thin metal as in other magazine hand cameras, but each

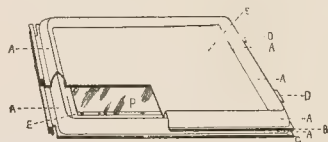


Fig. 1.

sheath (see Fig. 1) is provided with a channel or groove which fits the one behind it in such manner that if a number are placed on top of each other the pile may be exposed to light without any fear of fogging the enclosed plates. Twelve plates placed in a dozen sheaths, and provided with a thirteenth sheath in front to protect the foremost plate, are held together with a band, and are thus placed into the camera (see Fig. A).

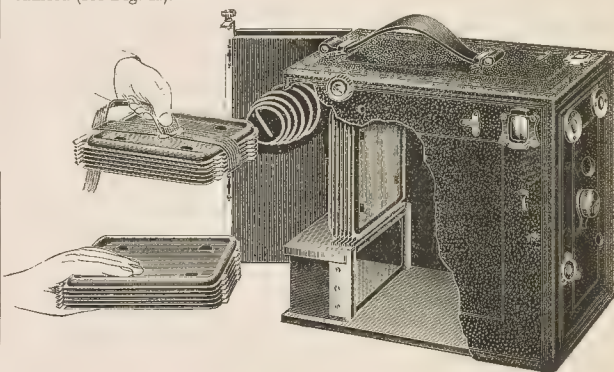


Fig. 2.

The band is pulled off (see Fig. 3), the door of the camera is closed, and the camera is loaded. The plates are changed one by one by turning a handle at the side of the case. As soon as the dozen plates have been used the camera may be opened in daylight, and the pack of exposed plates removed in safety and the band replaced, which holds them together as a pack (see Fig. 4). Three sets of sheaths accompany

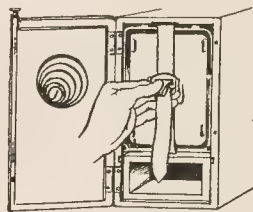


Fig. 3.

each camera and as many more as may be required can be obtained. The Dai-Cornex has no disadvantages as compared with the ordinary box model plate cameras and has the additional quality that they can be loaded in daylight. Models A, B, and C are fixed focus cameras, models D, E, F, G, and H are supplied with a focussing adjustment and the Cornex Index. Model A has a single achromatic lens, model

B a periscope lens, models C and D the Beck symmetrical lens, model E a Beck double aplanat lens, model F a Beck biplanat lens, model F1 a Beck-Steinheil unifocal F/6, model G a Beck-Steinheil orthostigmat F/6.3, model H a Beck-Steinheil unifocal F/4.5. By this system of daylight loading a dark room can be dispensed with as a sufficient number of plates can be carried in their sheaths for an entire holiday,

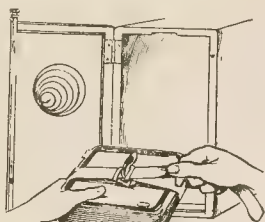


Fig. 4.

and for those who do not develop their own plates it is of special value, as the sheaths can be sent with their plates to be developed to the dealer, who will return the sheaths reloaded with plates. Such a complete series of cameras can scarcely be fully described in the space at our disposal, but a postcard to Messrs. R. and J. Beck, Ltd., will obtain a full illustrated description by return.

"Seltona" Court postcards. Sold by the Leto Photo Materials Co., Ltd., 9, Rangoon Street, London, E.C.

These dainty little cards are prepared with the same emulsion as the well-known "Seltona" self-toning papers, and print out in precisely the same manner, giving, with very little trouble, excellent prints of a good colour. The cards are $3\frac{1}{2} \times 4\frac{1}{2}$, and have rounded corners, and on the back have the usual postal announcement and a space for a message. The cards are printed either under a mask, or the entire sensitive surface can be utilised if thought necessary. The printing is carried considerably deeper than the finished print is to be, and for warm brown tones soak the prints for a minute or two in clean water, and place in the fixing bath as follows:—Hypo, 1 oz.; water, 10 ozs. Fix for about ten minutes, then wash for one hour in running water or eight to ten changes. For purple and blue tones soak the prints for a minute or two in clean water, and place for seven to ten minutes in the following:—Common salt, $\frac{1}{4}$ oz. (or a good teaspoonful to $\frac{1}{2}$ pint of water); water, 12 oz. Rinse in clean water and fix as above. To ensure permanence, a fresh solution of hypo should be used for each batch of prints. Should there be any fear of the hypo being acid, add a pinch of bicarbonate of soda to the solution. The real colour and brilliance of the print is only arrived at when quite dry, it cannot be judged while still wet. The makers state that the surface of "Seltona" is sometimes apt to discolour a short time after manufacture, due to the gold contained in the emulsion. This discoloration, however, makes no difference whatsoever to the finished print, as the yellowness disappears entirely in the fixing solution.

Patent News.

The following applications for patents were made between August 29 and September 3, 1904:—

Stereoscopic Photographs.—No. 18,672. "Improvements in the process of making line composite stereoscopic photographs." (Date applied for under Patents Act, 1901, September 17, 1903, being date of application in United States.) Complete specification. (Frederic Eugene Ives.)

Lens Stops.—No. 18,694. "Improvements in stops and diaphragms for photographic lenses." (Theodore Brown and Ernest Osman Brown.)

Cameras.—No. 18,815. "Improvements in photographic cameras." (George Russell Nicholls.)

Paper.—No. 18,890. "Method of production of photographic paper and the like." Complete specification. (Paul von Garainow-Trauttenberg and Max Leopold Fabian.)

Slides.—No. 19,010. "Improvements in and relating to photographic change slides for daylight loading." Arthur Augustus Brooks and George Andrew Watson.)

Film-packs.—No. 19,038. "Improvements in or relating to photographic flat film packs, and in the packing of such films, and cases or holders for said packs." (Newton Livingstone Scott.)

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Sept.	Name of Society.	Subject.
19.....	Southampton Camera Club	<i>Some New Photographic Instruments.</i> Mr. F. G. Ward.
19.....	Ilford and District Photo. Soc.	<i>A Holiday on the Norfolk Coast.</i> Part I. Mr. E. A. Gollidge.
19.....	South London Photo. Society	<i>Photographic Methods of Ilford.</i> Mr. W. T. Wilkinson.
20.....	Croydon Nat. Hist. & Scien. Soc.	Ordinary Meeting. Exhibition of Lanterns with Periscope.
20.....	Sheffield Photographic Society	<i>The Norman Churches of the Ilford District.</i> Mr. James R. A.R.I.B.A.
20.....	Blairgowrie and Dis. Ph. Assoc.	<i>Bromide Printing.</i> Demonstration by Mr. D. G. Monair.
20.....	Nelson Photographic Society	Members' Print Evening.
2.....	North Middlesex Photo. Soc.	<i>Intensification and Tinting of Prints.</i> Mr. F. A. Haylett.
21.....	Everton Camera Club	<i>Bromide Enlargements.</i> Demonstration by The President.
21.....	Watford Camera Club	Competition—"Eventide."
22.....	London and Provincial P.A.	Discussion on C.C. Papers.

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION

A MEETING of the General Committee was held at 51, Baker Street, W., on Friday, 9th inst. Present, Messrs. F. A. Bridge, Alfred S. H. Fry, Wm. Gill, Wm. Grove, H. E. Hull, Percy Lankester Mackie, E. Scamell, and Lang Sims. Mr. Alfred Ellis presided in the chair. The date of the annual general meeting was fixed for Friday October 21, the meeting to be held at the London Photographic Society at 8 o'clock. It was arranged that in addition to the ordinary business of the meeting a tentative scheme for the granting of certificates to operator's assistants, etc., should be laid before the members and their opinions taken thereon, also that a discussion should be invited upon the suggestion of Mr. H. Snowdon Ward contained in the September number of "The Photogram" of the Institution of a benevolent fund for photographers. Report was made of the numerous applications for advice and assistance received during the recess which had been dealt with by the Emergency Committee. Further consideration was given to the Examination of Assistants scheme.

M. PAUL RENOUARD's love of truth has often made him suffer from physical discomfort. When making sketches at the Paris Exhibition he squeezed himself into all sorts of uncanny hiding places where he could observe and portray the various types in all their natural characteristics, and the result was a wonderful series of life pictures of the people who stood out strongly among the thousands of visitors. Whatever subject he has in hand no trouble is spared that he may get the absolute effect of light and atmosphere, and realise and distinguish individuals in relation to their environment. In the current number of the "Studio" an example is given of his enthusiasm and love for actuality. In the private chapel of the Invalides lie, under triple lock and bar, the hat and sword which Napoleon wore at the battle of Austerlitz. These precious relics are so highly valued that foreign Sovereigns are practically the only strangers admitted to the chapel, which is situated in the basement of the Invalides. When the Emperor and Empress of Russia were in Paris they visited this sacred place, and the scene supplied Renouard with the material for a splendid picture. In the foreground of this canvas the Emperor and Empress stand examining the relics, Felix Faure waits by, and beyond this group rises the huge statue of Napoleon. The execution of this notable painting severely tried the artist's courage. For many hours at a time he was locked in the chapel, "the living occupant of the vast edifice. It was winter, and in order to keep even moderately warm he had to work muffled up in blankets from head to foot. There was no means of escape until the official charge of the Invalides returned in the evening with the keys and released his voluntary prisoner." Such artistic fervour is rare these days of photography and the indolence it engenders.

News and Notes.

THE Metatype Company, of 238A, Seven Sisters Road, London, N., announcing the introduction of a new series of metatype plaques and papers.

Mr. F. F. DOWET, of 33, Fumival Street, Holborn, London, E.C., has been appointed sole agent for Monckhoven's carbon tissues, transfer papers, etc.

THE proceedings and transactions of the Croydon Natural History Scientific Society for the year ending January 19, 1904, have been issued. Reports of the various sections are given, and many of the papers read from time to time are reprinted, the volume being several admirable illustrations.

THE prospectus and class time-table of the twenty-third session (1904-5) of the Polytechnic Technical and Continuation Schools have been sent us. The Photographic School opens on Tuesday night, October 18, in the large hall, when a lecture will be given by Mr. Edward Farmer, entitled, "The Making of a Photograph." There will be no charge for admission.

WATFORD Camera Club's second annual exhibition will be held at Corn Exchange, Watford, on October 26, 27, and 28. There will be five open classes, and medals will be placed at the disposal of judges, Messrs. J. H. Gear and J. A. Hodges. Particulars and entry forms can be obtained from the Hon. Sec., H. G. Trayfoot, The Parade, High Street, Watford.

WE have received from the Crown Photo Mount Works, Percy Street, Rotherham, some tasteful specimens of greeting cards. These, in addition of photographic prints, which may be either pasted or "slipped in," are intended to form substitutes for the conventional Christmas card during the approaching season for such things. They are excellently adapted for the purpose, and we can recommend readers to apply for price lists and specimens to the above address.

SECRETARIES of photographic and other societies should send for a copy of the list of lectures supplied by the Lecture Agency, Ltd., of the Temple, Strand, London. It will be strange if they cannot find their winter programmes at least one item amid the galaxy of what therein available. The agency publishes each year this list of leading popular lecturers and entertainers who are available for engagements. It contains portraits, details of subjects, and all other necessary information.

THE London County Council announces that the evening classes held at the various polytechnics, technical institutes, and schools of art will be reopened towards the end of the present month. The evening classes previously conducted by the School Board will be reopened the enrolment of students on Monday next. Scholars under sixteen are admitted free to all schools, and in sixty-five schools no fee will be charged to any students. Any persons who desire to make themselves acquainted with further particulars of the classes are invited to ask for a pamphlet from the schoolkeeper of any of the Council's schools.

CRIPPLEGATE Photographic Society.—This Society commenced their season in their well-appointed room in Cripplegate Institute, September 5 with a demonstration of "Cross Swords" pigmenter and Paget's self-toning, given by Mr. H. Gordon Stollard. The very good results were shown, and especially for those who have gone beyond the P.O.P. stage. The demonstrator laid special stress upon the ease with which local development and suppression of unnecessary detail could be obtained, and in this respect the paper somewhat resembles "gum," although the ease with which it can be worked is much greater.

PHOTOGRAPHY to Beautify Public-houses.—The Central Public House Association has received through Mr. R. E. Macnaghten, of the Manian Public House Trust Association, the sum of £25 from an anonymous donor who wishes the money to be spent in decorating one of Earl Grey's Trust public-houses with framed photographs of Tasmania. The object of the donation is both to give a refined tone to the public-houses and to bring before the customers in a striking manner the beauties and advantages of the Colony for would-be

emigrants. The photographs will probably be placed in the Huts, Wisley, Surrey, and the Plumes, Park Royal.

THE Private View at the Twelfth Annual Exhibition of the Photographic Salon yesterday disclosed many novelties in photographic eccentricity; much that calls for a second inspection; and some really clever work in multiple gum printing. We understand a greater number of works than usual was submitted but fewer have been hung. The tone of the entire show, however, with the exception of occasional gleams of sunlight, and colour for which we are grateful, is rather depressing. It is worthy of note that of the 223 pictures on view (by 97 exhibitors) no less than 83 are American—having been selected by the American members of the Linked Ring, and 27 are from other foreign sources. The remainder are English.

THE Free Portrait Scheme in Ceylon.—A correspondent writes to the "Ceylon Advertiser":—"The Island has lately been flooded by prospectuses of a French firm, promising to the holders of these documents a life-size crayon portrait for the mere acceptance of the same as a present. The old proverb "Le monde veut être abusé!" evidently seems to be the motto of these gracious donors, and it is, I think, the duty of the Press to warn the too credulous public, on possible and almost certain frauds, in this matter. Any one who has remarked the absolute silence on the framing question will not be surprised if on receipt of a nasty caricature by post or agents, a claim is made on him "for the frame," which will render the whole adventure a too expensive one.

THE Royal Photographic Society's Exhibition at the New Gallery opens its doors to the public on Thursday next. The private view and soirée are on Wednesday. We hear that this year's show constitutes a record in the way of entries. Over 2,000 photographs have been sent in for competition in the pictorial section alone. We extend our sympathy to the members of the Selection Committee. It is interesting to note that the new regulation limiting the number of entries by each competitor to six has had just the opposite effect intended. Instead of curtailing the total number of entries it has had the effect of considerably augmenting them. Every exhibitor has apparently felt it a matter of duty to send the full number. We understand, also, that the quality of the work submitted is above the average, and a great many good things, particularly in the invitation section, will meet the gaze of the visitor to this year's exhibition.

PHOTOGRAPHY is admitted to be of great value to the sciences, especially to astronomy, but the debt may be repaid by the accurate knowledge gained by the labours of workers in this science. The "Observatory Magazine" for the current month states that an astronomer at Harvard University is making a very patient investigation of small photographic details, and finds, for instance, that there is a difference in photographic action depending on the temperature at which the plate is exposed, and, secondly, that the sensibility of the plate increases in a slight degree with its age. One great difficulty that astronomers have to surmount is to find a scheme of correlation between photographic and visual brightness—the brightest star does not always give the largest image on the photograph, as might indeed be expected, since it is the blue end of the spectrum which is most effective in photography, whereas the rays of all colours go to make up the visual image.

"I HAVE been reading some scientific lightning stories with the keenest interest. It seems," writes Dagonet in "The Referee," "that a woman struck by lightning while looking at a cow had a photograph of the cow reproduced on her chest by the lightning. A man standing near a sacred picture was struck, and the picture was reproduced on his back. The new method of photography is hardly likely to be popular with private sitters. But imagine the possibilities. Think of the thrills now available for sensational romance. Fancy the joy of the melo-dramatist who for four acts has allowed the innocent man to be falsely accused of the murder of the lock-keeper's daughter, when he arranges for the hero to tear aside the villain's waistcoat in the last act, and point to the picture of the murdered girl on his shirt-front. N.B.—This situation is registered at Stationers' Hall and in the United States of America according to the Act of Congress. Pirates, beware."

THE prophecy of Sir William Ramsay, speaking to the members of the Society of Chemical Industry at St. Louis on September 8, that science was on the eve of discovering the "origin of the ordinary

elements," if it be fulfilled, would appear to bring us very near the solution of the Riddle of the Universe. Since the discovery of the properties of radium, its power to transform itself into helium, and so on, it has been evident that a new direction has been given to scientific thought. But if this expected discovery really comes about we shall be rather sorry for science. It will be in the position of the old sportsman, to whom a solitary jack-snipe afforded food for powder for years. At last, one unlucky morning, the bird flew into the shot, and the sportsman wept bitterly: his sole joy in life had gone from him. However, we can console ourselves with the thought that, if this scientific mountain top be scaled, endless peaks will yet be seen from its heights to stretch ahead of the ardent climber after knowledge.

To Save Thames Scenery.—It was announced on Saturday last, on the authority of Alderman Charles Burt, J.P., the Surrey County Council's representative on the Thames Conservancy Board; that the Board of Trade have refused their consent to the plans of the Thames Steam Tug and Lighterage Company of building a dock and other works on Lot's Eyot, opposite Kew Gardens, for the repair and building of barges. Residents of the Lower Teddington Road, Hampton Wick, have petitioned the Conservancy to do all in its power to prevent the carrying out of a proposal to convert a portion of the grounds of Cambridge House, Hampton Wick, into a wharf. Cambridge House is situated immediately opposite the Canbury Gardens at Kingston, in one of the prettiest reaches of the Thames. The Hampton Wick Urban District Council are expected to take the matter up, as also are the Kingston Corporation, who spent a large sum some years ago in laying out the Canbury Gardens, which are among the finest on the Thames.

A New Beauty Spot for London.—The new Tube railway, which is to run from Charing Cross *via* Euston to Hampstead, is a commendable enterprise in so far as it will make the northern heights accessible to all at the most moderate outlay. Fortunately the owners in the present case, whose land the County Council desires to ransom, are the Eton College trustees, and, meeting those who are working for the public in a generous spirit, they have agreed to sell some eighty acres of the debatable land for the sum of £39,000. Towards the total purchase money about £33,000 has already been collected, and the Council are very anxious to secure the comparatively small remaining amount before the term expires during which they have option of purchase. With the eighty acres added to the Heath and public property a beautiful view would be saved for all time to a city not too rich in such possessions, and the thousands who will doubtless use the new Tube, especially on great holidays, would find themselves on arrival at once in the midst of a splendid playground teeming with as many photographic possibilities as the famous Heath itself boasts of.

A PHOTOGRAPHIC Competition.—The Architectural Association Camera and Cycling Club is holding a photographic competition which closes on October 1, before which date all photographs should be sent to Mr. Gilbert H. Lovegrove, the hon. secretary, at the offices of the Association, 18, Tufton Street, Westminster. The competition is confined to sets of photographs adapted for the purpose of architectural study, and is open to members of the architectural profession and all members of the Architectural Association. Each set should consist of not more than twelve prints, and should illustrate one subject or class of subjects. A competitor may submit any number of sets. The photographs will be approved by the Committee of the Camera and Cycling Club as having reached a fair standard of technical excellence, and will then be finally adjudged by a gentleman, not a photographer, who is an expert in architectural tuition, and who will be chosen by the President of the Architectural Association. His name will be declared before the end of March. Copies of the winning prints by a permanent process must be deposited with the Architectural Association before the prize of three guineas in the form of books or apparatus is presented to the winner.

BEN Nevis Observatory.—Ben Nevis Observatory will be closed next month. The directors explain that their reason for this decision is lack of funds. The annual cost of maintenance of the Ben Nevis and Fort William Observatories is about £1,000, towards which £350 is granted by the Treasury. The directors have communicated with Mr. Balfour on the subject, the committee appointed to inquire into the adminis-

tration by the Meteorological Council of the Parliamentary grant of £15,300 per annum having stated, it appeared, that only £3 required to ensure the continued maintenance of the observatory. A grant of £600 was asked for from the Government. Mr. Balfour, in his reply, expressed regret that the Lords of the Treasury could not entertain any proposal which would involve the placing of the charge for the maintenance of the observatories on the public. The Council was prepared to continue the grant of £350, provided that some public body in Scotland was willing to undertake the support of the observatories on their present footing. The directors, in their reply, pointed out that they neither knew of any public body in Scotland able to do what was suggested; nor could they make a fresh application for funds to the general public.

The Chancellor of the Exchequer has appointed the following men to serve as members of a committee to inquire into the duty-free alcohol for industrial purposes:—Sir Henry Primrose, K.C.B., C.S.I., chairman; Professor Sir William Crookes, F.R.S., Sir W. H. Holland, M.P.; the Hon. J. Scott-Montague, M.P., Lothian D. Nicholson, Esq.; Dr. W. Somerville, Dr. T. E. Thorpe, C.B., F.R.S.; Thomas Tyrer, Esq. The terms of reference are:—"To inquire into the existing facilities for the use, without payment of duty, of spirits in arts and manufactures, and, in particular, the operation of section 8 of the Finance Act, 1902; and to report whether the powers conferred upon the Commissioners of Customs and Revenue by this section permit of adequate facilities being given for the use of spirits in manufactures and in the production of power, or whether further facilities are required; and, if it appears to the committee that the present facilities are inadequate, to advise what further measures could be adopted without prejudicing the safety of the revenue derived from spirits and with due regard to the interests of the producers of spirits in the United Kingdom." All communications should be directed to Sir Henry Primrose, K.C.B., at Somerset House, Strand, W.C.

FILM Notes.—The current number of the "Barnet Record" contains the following useful hints in reference to film manipulation. The film which has been soaked in water will take much longer to develop than one which is placed dry in the developer. This is due partly to the dilution of the developer, and partly to the fact that, as the gelatine is saturated with water, the developer penetrates it but slowly. The wetted film will take at least half as long again to develop as one that is dry. If there are any sections to be under-exposed, when a complete spool is being developed, an attempt should be made to force development. The film should be rinsed and fixed as soon as the correctly exposed sections have been developed. Those which have been under-exposed will be in the best condition for intensification. Forcing the development will spoil all the exposures. Development of the complete spool is carried out in a special dish made for the purpose, or in an ordinary dish with a movable porcelain bridge standing in it. The principle is the same in all cases; the roller or bridge, whichever is employed, holds the film under the surface of the developer. The celluloid of the film is kept next to the roller, and by alternately raising and lowering each end, the whole surface is wetted in turn. When the film is cut into sections, a convenient way of holding each section flat in the developing dish is to place it face upwards on a plate of glass of the same size, and to clip it at each end with a narrow india-rubber band.

MR. FREDERIC GEORGE KITTON, well known as a writer on Delineation and his illustrators, died in London on Saturday at the age of eighty. Mr. Kitton was born at Norwich in 1856, and was the son of the late Mr. Frederic Kitton, hon. Fellow of the Microscopical Society. He received his education at a private school at Norwich and was trained as a draughtsman and engraver on wood by the late Mr. W. L. Thomas, of the "Graphic." He adopted literature as a profession, and more especially that branch of literature which is concerned with the illustration of books. One of his earliest publications of this nature was a memoir of Hablot Knight Browne, entitled "Phiz," which appeared with reproductions of Browne's work in 1882. "John Leech, Artist and Humourist," followed in 1883. The chief work of his lifetime was devoted in one way and another to Dickens, the Autograph Edition of whose works he edited. "Dickensiana" were published in 1886, and among other books

one subject were "Charles Dickens, by Pen and Pencil," which appeared in 1889, "Dickens and His Illustrators," 1898, "Charles Dickens, his Life, Writings, and Personality," 1902. Mr. Kitton published a memoir of his father, Mr. Frederic Kitton, in 1895, a centenary memoir of the musician Zechariah Buck in 1899. He was a frequent contributor of both articles and drawings to the "Journal" and the "Magazine of Art," and had been honorary secretary of the Hertfordshire Art Society since 1900, and one of the secretaries of the Hertfordshire County Museum.

DEPARTURE in high-power microscopy which is the invention of J. W. Gordon merits more attention than it obtained at its exhibition at the Royal Society. When high magnification is attempted by a series of lenses arranged in the conventional manner, the emergent beam of light which enters the eye of the observer is so small that vision is deficient, owing to the fact that the pupil of the eye is not entirely filled with light. It is consequently apparent that in order to obtain satisfactory results in high magnification the emergent ray should be expanded in such a way as to fill the pupil of the eye. This result is achieved in J. W. Gordon's microscope. It comprises an ordinary microscope with an eccentrically-rotating glass screen, with a finely-etched surface placed in the view field. This is viewed through a microscope which has an object glass of half an inch, by means of which a further magnification of one hundred diameters is rendered possible. The transmitted emergent beam is expanded by a ground glass screen, so that it fills the second microscope; and there are no imperfections in the magnifications. Mr. Gordon has divided a diatom to ten thousand diameters, and its structure is perfectly clear and defined right to the edges. A comprehensive view of the extent of this excessive magnification may be gathered from the fact that if the eye of an ordinary house-fly were magnified on the same scale it would cover an area of three hundred and twelve square feet. The purpose of revolving the ground grained screen is to prevent the grain thereon from becoming visible and thereby interfering with the magnifying of the object under observation, as it is not in contact with either of the microscopes, there is complete absence of vibration.

PHOTOGRAPHY on the Norfolk Broads.—A good many readers will regard the Norfolk Broads district as a holiday resort, and it will be painful to them to notice how in the last few years public opinion, and amongst them those of the photographer, have been misled, writes a correspondent to the "Oxford Chronicle," whose pledge of them dates back at least twenty years, when most of the waterways were as free as the seashore to the fisherman as was the yachtsman, but since that time there has been a terrible change. The "Broads" were first brought into repute by the publication of a boys' holiday book by Christopher Davies, entitled "Swan and her Crew," and in the succeeding year I made a visit, which has been regularly followed up with very few exceptions, to this delightful quarter. Since that time the Broads have been gradually closing up to the public, South Walsham being the last to go, and soon there will be nothing left except rivers to sail on, fish in, or photograph over. There was a beautiful sail in the northern portion, up the Bure or north river, through Heigham Sounds and Meadow Dyke, across Horsey Mere up Waxham Dyke, which runs in close contiguity to the beautiful dunes beyond which lies the sea. It was the orthodox programme to take this course to reach the sea, either landing at South Walsham Bridge or at Palling for the short walk across the sand-dunes to indulge in a sea bath. Picture my horror last week when I discovered Waxham Dyke deserted and a notice board intimating that it was now considered a "private canal" (according to the line), and that one was not allowed to moor a boat, land, tow, or navigate to the aforesaid "private canal." Some wag has signed at the end of the notice "or breathe" and really that conveyance will have to be taken into account later on. It is a sparsely populated district, and the bucolic mind is sluggish, but I know of districts where such notice boards would not have survived. Waxham Dyke is as much a public highway as Fleet Street, the Strand, and is, indeed, the only waterway by which the villages of Waxham and Palling can be reached at all. Why doesn't somebody take the matter up?

Correspondence.

- * * Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.
- * * We do not undertake responsibility for the opinions expressed by our correspondents.

THE PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

To the Editors.

Gentlemen,—Will you allow me space to say that at the annual general meeting of the Association, which will be held at the Royal Photographic Society, 66, Russell Square, by kind permission of the Council of the Society, on Friday, October 21, the committee will submit the outlines of their scheme for the granting of certificates for photographic operators, assistants, etc. The difficulties of meeting the requirements of employers and of arranging for the attainment of certificates by employees without almost prohibitive conditions have been found to be very great, and the Committee would feel obliged if members who are interested in the subject would make it their business to attend and assist in deliberating upon the matter. They would welcome also communications from non-members. At the same meeting Mr. H. Snowden Ward's appeal for the institution of a Benevolent Fund for photographers will be discussed, especially in its bearing upon the legitimate work of the Association.

May I add a reminder to members that the annual subscription is now due.—I am, etc.,
September 12, 1904.

WILLIAM GROVE,
Hon. Secretary.

"THE FUTURE OF PROFESSIONAL PHOTOGRAPHY."

To the Editors.

Gentlemen,—Your correspondent, Mr. Arnett, writing under the above heading in your last issue, raises some points with which some of your readers—especially those who happen to be employees—may be at variance. With the main portion of Mr. Arnett's ably written communication the writer agrees most cordially; these are certainly truths that "he who runs may read." The construction, based upon the continued appearance of an advertisement by an eminent firm, is certainly one way of looking at the matter. There may be, however, other points of view, quite as likely to be the right.

Is it not possible that a firm, known by its continual advertisements, would be avoided by operators of the best class? They may reasonably suppose that such firms do not keep their men very long, and would prefer to remain in a house less eminent but more reliable. Another reason for this curculation of advertisements on the part of the leading firm may have been that pressure of business caused them to forget to withdraw the ad. The same pressure might have also induced them to forget that they had engaged two men instead of one for the same position; and, further, the said pressure of business may have been the cause of sending on one of their old employees to fill the vacant post! The uninitiated may think that the leading firm might have done this at first, saving themselves trouble, and the employees in question a good deal of injustice. But, alas! the uninitiated were ever ignorant. (Please, gentlemen, describe the last paragraph as a Joak, or some of your readers may take it quite seriously.) In the second instance quoted by your correspondent, surely plenty of good retouchers are to be found for a salary of 45s. per week? Perhaps the noted firm wished to secure a special man and would have lured him by an increased offer—not quite what he asked maybe. The writer fears that the lack of competent assistance in the photographic profession is largely caused by some of the principal houses who take apprentices, with premium, and fail to give them any real knowledge of the business. Because a lad has served his time at So-and-so's, he is taken on by another firm much less eminent, which firm is greatly disgusted to find that their acquisition can varnish negatives and change plates, his other knowledge being practically nil. If a really good operator is difficult to find a first-rate employer is a much greater variety. When double dealing, meanness, and lack of true business principles have disappeared from the high places of photography, then, and only then, will the talented and faithful worker be found to match the altered conditions of employment.—Yours faithfully,

September 9, 1904.

OPERATOR.

PHOTOGRAPHIC COPYRIGHT.

To the Editors.

Gentlemen,—I cannot help thinking it unfortunate in the interests of the photographic profession that you should have appended your editorial note to the letter under the above heading in the issue of September 9. It has always been the policy of the B.J.P. to defend the photographer against those illustrated papers who reproduced his work without fee, or permission, and if I mistake not the statement has many times been made, in reply to queries, that it is not necessary to state on a photograph whether it is the producer's copyright or not, and that reproducers reproduce it at their own risk. The number of invitation sittings is now so great that this risk is not a small one. I do not see that the strong and loyal support the B.J.P. has always given to the P.C.U. should be allowed to cover any accidental breach of the Union's rules or of the copyright laws, and it seems to me that many of the illustrated papers will, and all of them might, say that the "splendid irony" lay in the B.J.P. preaching one doctrine when they chanced to be the aggressors, and another when itself stumbled.

A further point comes to my mind whilst writing. So many of the best photographers, those who produce individualistic work, are liable to suffer at the hands of customers who get these portraits copied at cheap rates, that the tendency in such businesses must eventually be for the photographer to reserve the copyright to himself by agreement signed at the time of sitting. This, of course, could only be done by men sufficiently strong, and is only worth while to those who charge relatively high prices. The artist selling a portrait may not, perhaps, reserve copyright, but he has no interest in reproduction unless a painted replica is required, and then he is usually given the commission. Quite recently a case came under my immediate notice, a chemist and dealer showing me some pictorial postcards he had been doing from the carbon photographs a local firm supply at three guineas a dozen. The price he charged was 4s. 6d. a dozen, but I must admit that in this case the quality of the work was so poor that the scheme must have proved a failure. But the possibility is there.—Yours truly,

C. H. HEWITT.

Gateshead-on-Tyne, September 12, 1904.

[It is true that the BRITISH JOURNAL OF PHOTOGRAPHY has always defended the photographer against those illustrated papers that reproduce his work without fee or permission, and always will, but it has never been an advocate of the system of "invitation sittings." Our correspondent entirely misses the point of our append, which was written solely in the interests of photographers themselves. It simply amounted to the suggestion that they should make their non-paying sitters acquainted with the rudiments of copyright law. Any risk of newspaper aggression would, or should, then be removed and much of the antipathy towards the invitation sitting system which to our knowledge is felt all over the country and reacts upon the whole of the photographic profession, would, no doubt, disappear. If this matter had been handled with greater tact years ago we in all probability should not now contemplate the spectacle of the great newspaper concerns being as far as possible their own photographers, and doing a vast amount of work which need not have been diverted from legitimate professional sources. Our strong and loyal support of photographic copyright by no means blinds us to the instances in which it has not been worked to the best interests of the photographic profession.—Eds. B.J.P.]

To the Editors.

Gentlemen,—Reverting to your remarks annexed to my letter which you were good enough to insert in your last issue, I cannot help thinking that your own case is an exceptional one, really between yourself and the firm holding the copyright of the photograph in question, so I am sure you will not expect me to refer to it beyond regretting that any misunderstanding should have occurred. Nevertheless, I feel I must take exception to what you say as to the "Illustrated Press Editors running the risk of being pounced upon for fees they didn't contemplate incurring."

My experience is that they are quite capable of taking care of themselves, as the circular which I quoted clearly demonstrates; besides, I have seen several similar ones which are sent when asking for photographs from celebrities direct.—I am, Sirs, yours faithfully,

A MEMBER OF THE P. C. N.

September 12, 1904.

THE GOLDSMITHS' INSTITUTE PHOTOGRAPHIC SOCIETY.

To the Editors.

Gentlemen,—I very much regret to have to advise you that society will cease to exist on the 29th instant owing to the fact the Goldsmiths' Company will discontinue its technical and recreative work here on that date, the building having now been handed over to the University of London for other purposes. I should feel exceedingly obliged if you would be kind enough to notify this fact to the University of London for other purposes. I should feel your columns for the information of our various friends and correspondents in photographic circles. Any further communications in reference to the society may be sent to me at my private address: The Laurels, Slaithwaite Road, Lewisham, S.E.—Very faithfully yours,

September 10, 1904.

A. H. DOWNEY, Hon. Secretary.

THE NEW "STEADMAN" SYSTEM OF EXPOSURE AND PLATE SPEED MARKINGS.

To the Editors.

Gentlemen,—In Mr. Alfred Watkins' remarks re my new system as outlined in this paper on August 5, I fear that he has not considered the real meaning of the word "system." If he will in some dictionary he will find that it is not a series of new truths but rather, as mine gives it: "An orderly combination, or arrangement, as of particulars, parts, or elements into a whole." In assuming that I claim newness for the different truths he assumes more than I. And even in the arrangements of the parts of the system I claim newness only for those parts which differ from the old systems now in use. Any one should know that the parts which are similar could not be new, and this I considered so self-evident I must confess I did not think that any one would come out to contend for it. I realise fully the good qualities of Mr. Watkins' methods, and especially along the line of factorial development do think, however, that although his method of exposure is sufficiently exact to save every plate exposed, it is so because of very great latitude of all emulsions, and not because of its grasp of the truths of light and subject, especially the latter. It is not sufficient to not lose a plate or film in exposing. On the contrary, it is absolutely essential for the worker to be able to know exactly what would be a normal exposure (in the sense of a correct exposure for a certain subject in hand), and then he is able to vary the exposure as to draw down the half-tones of the subject into the shadows of the finished photograph, or raise them up close to the high lights by a predetermined amount of under-normal or over-normal exposure. The fact of exposure is logically the first place for fixing the tone curve of the finished photograph, and time it shall be so used by all who claim at all to have grasped the truths of photography.

Mr. Watkins thinks that my subject-table (which is the arrangement in the system) is too complex. Is it as complex as Nature, from whose face the vibrations come to the lens? The system is as nothing. The question is: "What is the character and condition of Nature, with which we have to deal?" The subject-table only divides each class of subjects into three divisions, as, for example, regular exteriors. When there are light-colored objects in the picture-field the divisions are only between "bi-eye," "objects in middle distance," and "objects in foreground." Surely this is not too complex. In my opinion it is the limit of simplicity, and, in truth, necessary to the development of the worker who is commencing the practice of photography along the line of seeing Nature, and discriminating between the different structures of picture-fields. It will lead to a closer study of the foreground and middle distance, and with the other subjects the same. Surely the subject with objects in the middle distance would require only one-half the area of diaphragm with the same time of exposure as would a subject with objects in the foreground. And a bi-eye view would only require one-half that of the middle-distance view. In fact, I only intend by this differentiation to suggest control of the subject by the mind through giving each its exposure of diaphragm, which sticks to it permanently so long as the same plate or film is used. And when any worker has the system in hand he will discriminate still more finely than I have in the arrangement of the system.

As to using the "first-appearance" method for measuring activity of the light, it is all a question of using it until a cer-

confidence is inspired. It is simply a "fixed amount of work" for light to do, and this constitutes a measurement of that light. Practice gives absolute control and confidence. The strong point of all the established systems is the differentiation of the speeds of emulsions by giving to each speed a diaphragm which is supposed to be correct (with the intensity factor as exposure), and is to the strong point, for each emulsion. This is done notwithstanding the ordinary worker uses the same plate for years at a time. They do so, by incorporating the "comparison" method of tinting, select arbitrary paper and tint as standards, and it is necessary to the meter in order to use the method. The strong point of the new "arrangement of truths," or system, is that a subject-table may be provided which is correct for the especial plate that the worker uses, and once in his possession he need not alter it until changes to some other emulsion. This table differentiates between subjects for the logical reason that the subjects change in character most with every exposure. My system agrees with Nature, therefore.

Furthermore, by accepting the "first-appearance" method of tinting, I obviate the necessity of a meter which will do much toward bringing light measurement into more common practice. The standard is established, then, not by any arbitrary act which would have to be harmonised to obtain a standard, but by Nature itself, when one colour is distinguishable from another, can be seen by the whole world with like precision. The acceptance of the standard of paper that is in use, moreover, tends to accept the possible and present "practical" rather than to hank for the too dimly in the future "theoretical." I know that any man who has devoted himself to investigation as Mr. Watkins has receives his greatest pleasure in the intellectual, and not from the commercial, side of his business. I have felt this to be true in reading Mr. Watkins' books and articles, and I take the liberty of assuring the reader that I shall not condescend to the discussion of the small things of photography, as has too often been done in the pages of this journal. While seventy-five per cent. of the work of all beginners is absolutely lost, there is no time for such discussion. The question to-day of photographic thinkers is, and must be, along higher lines. From A to Z photography needs unification and numerical expression. I believe that I have arranged these matters in a manner that will be acceptable to mathematicians and physicists, and shall present the system to the public probably in the coming year in the form of a school text-book, arranged for the last two grades in the common high schools of the United States. I am looking more for co-operation and sympathy in Europe than in the United States, for the public mind is more studious, and I shall hope that every one interested in the advancement of photography, and the raising of it to the dignity of an exact science, will refrain from hasty and unjust criticism until I may bring to light this complete system. Any differences of opinion, however, may be discussed with benefit, and I shall feel honoured in answering any criticism that can lead to a better understanding of the truth.—Sincerely yours,

September 1, 1904.

FRANK MORRIS STEADMAN.

STALE PLATES.

To the Editors.

Gentlemen,—I do not think there can be much doubt as to the answer to "Enquirer's" query. The case is provided for in Sec. 14 (1) "The Sale of Goods Act, 1893," which states: "Where the buyer, expressly or by implication, makes known to the seller the particular purpose for which the goods are required, so as to show that the buyer relies on the seller's skill of judgment, and the goods are of a description which it is in the course of the seller's business to supply (whether he be the manufacturer or not), there is an implied condition that the goods shall be reasonably fit for such purpose."

Further, in the same Section, under Sub-section 2, it is provided that: "Where goods are bought by description from a seller who deals in goods of that description (whether he be the manufacturer or not) there is an implied condition that the goods shall be of merchantable quality."

Obviously the sale of plates is within the ordinary course of a photographer's trade, and the presumption is that a purchaser requires them for the purpose of taking photos thereon. The dealer, therefore, I think, is justifiably held to imply that the plates he sells are

reasonably fit for photographic purposes. I do not see that he could escape this liability by pleading they were sold under their trade name, as it is very doubtful whether this defence could be held to apply here at all.

As regards a warranty on the part of the manufacturers, it is the custom of dry plate makers to enclose a slip inside each box of plates, stating that they are sold without a warranty of any kind. In a recent case it has been decided that manufacturers cannot, by simple notice apart from express contract, escape liability under implied warranties; but, apart from this, "Enquirer" would have, probably, no case against them, as their relationship to him, he having bought through a dealer, is too remote. His remedy is to sue the dealer for breach of implied warranty of fitness and claim damages. Since, apparently, he entered into no special contract with the dealer his measure of damages would only amount to the price of the plates.—I am, Sirs, yours faithfully,

ARTHUR V. KENAH.

2, Eliot Hill, Blackheath, S.E.

September 11, 1904.

Answers to Correspondents.

* * All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.

* * Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.

* * Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.

* * For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

E. Allen, Ash Villa, Rustington, Worthing. Photograph of Sir H. Harben.

J. T. McNamara & Sons, 32, South Street, Romford. Photograph of Dagenham Cycling Carnival.

J. P. Tilley, 28, New Briggate, Leeds. Photograph of twenty-five of the Bolton Wanderers Football Club.

R. Thirrell, 21, Bridge Road, Stockton-on-Tees. Photograph of Group of Sunderland and Norton Cricket Teams combined. Photograph of R. H. Spooner. Photograph of J. T. Bosanquet. Three photographs of R. H. Spooner, J. T. Bosanquet, and G. L. Townsend together.

D. Murray, 49, Queen Street, Wolverhampton. Photograph of casting pig-iron, Springvale Works, Staffordshire.

A. E. Gompertz, 248, South Frederick Street, South Shields. Two photographs of W. A. Purvis.

F. Poppleton, 64, Urban Road, Hexthorpe, Doncaster. Photograph of the Doncaster Rovers Football Team, 1904-1905.

P. Greenhalgh, 223, Eccles New Road, Weaste, Manchester. Photograph of view in Sordley Park, Salford.

J. N. HAGGITT.—Two hundred grains is correct.

WILKINS.—Very sorry, but the answer to your question is beyond us.

J. A. C.—How is it possible for any one to give an opinion of apparatus they have not seen? All we can say is that it seems a lot for the money.

C. C. W.—Messrs. J. J. Griffin and Sons, Ltd., 20-26, Sardinia Street, Lincoln's Inn Fields, London, supply the camera you mention. It is known as the Pocket Poco A.

RED TONES.—"LIGHT" asks: "Can you tell me of a paper that will give red tones matt. surface not carbon, and also the formula by which it must be toned or developed?" In reply: The "Carbona" paper will yield red tones. It requires no toning—simply fixing.

SILVER STAINS.—A. FISHER asks how to remove silver stains from a negative. In reply: To remove silver stains from a negative immerse the negative for five minutes in salt, 2 oz.; hydrochloric acid, $\frac{1}{2}$ oz.; water 20 oz. Then wash well and refix, or use thiocarbamide, 5 grs.; citric acid, 10 grs.; alum, 10 grs.; water, 1 oz. Rub the surface of the negative with this, and well wash.

METOQUINOL.—"L. M." says "In making up this formula, a thin, flaky deposit is formed after dissolving the Hq. metol, and

sulphite. Of what is it composed, and may it be filtered off or is it of any value in development? I notice that it is soluble, and I therefore take it that if I made up my formula in a more dilute form it would not appear?" In reply: If the solution is of the ordinary strength there should be no deposit. Probably it is undissolved metal. Dissolve the metal first, using warm water if necessary, and then add the sulphite and hydrochinone.

USE OF NAME.—"STIGMATIC" says: "I shall feel obliged if you will kindly answer the following query. I have an engagement with a firm, in a town where I have previously been employed for several years, as managing operator, but my former employer, having disposed of his business, have I a perfect right to advertise and use his name without asking permission thus:—'Several years managing operator for Mr. X.'?" In reply: There is no legal objection to your doing what you propose, provided that Mr. X's name is not made more prominent than your own.

PLUSH FRAMES.—"ANXIOUS" asks: "Do you know of any houses that supply plush frames for mounting P.O.P. prints on to $\frac{1}{2}$ pl. prints, price per doz., and if any previous experience is necessary, as I have never done anything yet. If so, do you know of any houses that would undertake to do the work from own prints sent, as I am thinking of doing some?" In reply: Plush frames are supplied by all the large houses, such as Marion's, Houghton's, and the like. Very little experience is required for the mounting. Probably Messrs. Raines and Co., Ealing, would mount the prints for you if you do not do them yourself.

DEVELOPING P.O.P.—"SOTON" says: "I have very little time for printing my negatives during the day time, and can only put the printing frames out for a short time every morning before I leave home. Will you kindly give me the method for developing under-printed P.O.P., and is any special paper necessary." In reply: Any paper may be used. Print very lightly, then immerse the print for ten minutes in a 10 per cent. solution of potassium bromide. Wash well, then develop with—A. Hydroquinone, $\frac{1}{2}$ oz.; sodium sulphite, 2 oz.; water, 110 oz.; B. Potassium bromide, 15 oz.; sodium carbonate, 12 oz.; water, 110 oz. For use mix A 1 part, B 2 parts, water 1 part; then well wash, and tone and fix.

RESIDUES.—N. POWELL writes: "I have a quantity of old toning baths, and also hypo baths, in which both plates and prints have been fixed. I have saved them up, as I understand the gold and silver can be collected from them. Please tell me how to set about it." In reply: We are afraid that unless you have a very large quantity it will hardly pay for the trouble. You will proceed as follows:—Acidulate the old toning baths with nitrate or sulphuric acid, and add one-half the total volume of saturated solution of ferrous sulphate and boil; collect and wash the precipitate, which will be impure metallic gold. To the old fixing baths either add liver of sulphur and stir well, and allow to stand for two or three days with occasional stirring, and then collect the black precipitate, which will be silver sulphide, or add zinc filings or magnesium powder and stir well; the zinc and magnesium are dissolved and metallic silver deposited.

COPYRIGHT QUERIES.—"REGISTER" asks: "(1) Must every copyright print bear the word 'Copyright'? (2) What is the remedy if anyone copies a copyright print? (3) How long does the copyright hold good? (4) And, if it is not too personal, why do you require two prints when registering?" In reply: (1) No, not necessary. (2) The owner of a copyright may proceed against an infringer for (a) a forfeit or penalty of not more than £10 for every copy; (b) forfeiture of all copies and negatives, etc., used in their production; and, in addition, by special action may recover damages. To succeed against an infringer it is necessary to prove (a) that you are owner of the copyright; (b) that it has been "repeated," copied, colourably imitated," etc.; (c) that you did not give permission. Ignorance on the part of the infringer that the work was copyright is no defence in law. (3) Copyright continues for the term of the

natural life of the author and seven years after death. One for filing at our offices for reference and the other for authorities at Stationers' Hall.

BUILDING QUERY.—"NEMO" says: "I propose erecting a studio in the garden at the back of my house, but fear there may be some possible objection from the neighbours, as I want to carry the studio above waiting room and dressing room which would be on the level of the ground. This would mean a building 22 ft. long and about 18 ft. high. I should esteem it a great favour if you would advise me whether the next neighbour on the solid side of the studio could legally object to my obstructing his view by so doing? I have enclosed plan will perhaps explain the position of affairs. I may say both houses have been erected forty or fifty years and I do not deem it advisable to ask the parties whether they object or not until I know whether they can prevent the building being put up. Thanking you in anticipation." In reply: So far as we can form an opinion from the sketch enclosed should say your neighbour could prevent the building being put up. It would certainly obstruct his light and air, particularly that of the greenhouse. As the houses have been built long your neighbour is entitled to his "ancient lights."

STUDIO AND LENS QUERY.—"TROOPER" says: "1. I have a studio with side light only, from roof to floor, south-west, I should like as I get the sun all the afternoon. There are ordinary yellow blinds fitted to windows, and when the sun shines I get a kind of yellow halo between camera and sitter, which is very troublesome. I can get good effects easily when the sun is not shining, but have to give a full exposure always. Will you please say if white blinds would not be an improvement, and if another set of pale blue blinds, used in conjunction, or separately, would not prevent the halo space of in bright sunlight. 2. For the coming winter I shall require a quick-acting portrait lens for all-round studio work. Can you say which make and particular lens or lenses would best answer my purpose?" In reply: 1. By halo I presume you mean haze. If the glass is kept tolerably clean we should think you would not get that. Yellow blinds are very unusual for a studio. For the light you have should prefer medium green blinds. 2. A portrait lens as small as is made for cabinet pictures will be best for pictures of that size. See the advertisement columns.

In a picturesque description of the historic ceremony in the Lhasa Palace when the Tibetan treaty was signed, the special correspondent of the "Daily Mail" says:—"It is most fortunate that circumstances have compelled us to proceed to Lhasa and conclude a treaty in Potala itself. Had the treaty been made at Tuna, or even at Gyantse it is doubtful if the impression would have been so lasting or the results of the Mission so far-reaching." Some consternation was caused among the monks by the taking of a flashlight photograph of the signing of the treaty. They were reassured by the laughter of the Nepalese and Bhutaneses.

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THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1905.

Edited by THOMAS BEDDING, F.R.P.S.

THE forty-fourth annual issue of THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC will be published on December 1st. This year's ALMANAC reached a total of 1,604 pages, and the entire edition of 25,000 copies was sold out before publication. Of no other photographic book ever issued in two such unique facts be recorded. The edition for 1905 will also consist of 25,000 copies.

The striking favour with which past ALMANACS have been received is the surest proof that the lines upon which the publication is produced meet the requirements of its readers and supporters. Upon such lines we propose compiling the volume for 1905. At the same time, we shall be pleased to receive and consider suggestions for increasing the value of the ALMANAC in directions which may occur to our readers as susceptible of improvement.

The ALMANAC for 1905 will appeal to photographers all the world over as a daily reference guide in practical work. The standard matter and formulæ will be revised and added to where necessary, the year's advances in theory and practice will be recorded.

* The frontispiece of the ALMANAC will consist of a portrait study specially taken by Mr. Furley Lewis and a list of the Royal Photographic Society's Exhibition. (1903).

Secretaries of societies will oblige us by promptly forwarding lists of officers and other details for inclusion in the Directory of Photographic Societies. We shall also be glad to receive any additions that may be made to the list of telegraphic addresses of the trade, etc.

The publishers ask us to remind advertisers that a large proportion of the advertisement pages of the ALMANAC are already booked, and that, to ensure insertion, order and copy should reach them without delay.

* IMPORTANT NOTICE.—The attention of advertisers is specially directed to the announcement that this year the entire edition of the ALMANAC (25,000 copies) will be placed in the hands of dealers and the trade on December 1st next—a fortnight earlier than usual, so as to be well in advance of the Christmas publication season.

EX CATHEDRA.

The Two Exhibitions.

The opening of the Royal Photographic Society's Exhibition at the New Gallery, and the Photographic Salon at the Dudley Gallery during the past few days, marks the passing of another year of progress in the photographic world, pictorial and technical. The extent of this progress can be gauged by an inspection of the exhibits displayed at the two shows. The Salon with its avowed intention of cultivating the most advanced ideas in pictorial individualism, has succumbed entirely this year to the overwhelming work of the American and Continental schools, and the British element, containing though it does many sound and clever workers, appears quite out of the running in the presence of such an exhibition of efforts by the morbid-minded exponents of foreign gum printing. The broader aims of the Royal with its praiseworthy intentions and success in the furtherance not only of pictorial, but technical excellence, has again a show of interesting photographs that are refreshing to gaze upon for their straightforwardness. All the same, the foreign element of eccentricity has not been neglected, and in another room at the New Gallery this year will be found a wonderful collection of specially invited work from some of the most notable foreign workers in gum and colours that fairly out-Salones the Salon.

Ben Nevis Observatory. In our last issue the closing of the Ben Nevis observatory was referred to in a paragraph. A correspondent writing to the *Standard* one day last week expresses the regret of meteorologists that this observatory, situated on the top of the highest mountain in the British Isles, over 4,400 ft. above sea-level, should be closed because the Treasury will not increase the grant for it by a paltry £250 (£600 being all that is applied for). He in his letter calls attention to the fact that Germany and America are leaving us quite in the lurch in the matter of meteorology. It is true that the Meteorologic Council receive an annual grant of between £15,000 and £16,000. This is not a very large sum after all, but it is a question if this is expended to the best advantage. It will be remembered that a few months back the Committee appointed by a Treasury minute of a year or two ago to inquire into the administration by the Meteorological Council of its annual grant, made its report. It was to the effect that the Office should be reconstituted and placed under the control of the Board of Agriculture and Fisheries, the bodies most immediately interested in the weather. Whether this recommendation will be given effect to or not we are unaware, but the refusal of the full sum of £600 to keep the Ben Nevis observatory going would seem to show that the Treasury have no great sympathy with meteorology.

* * *

Another Picture Stolen. Thefts of valuable paintings seem to be on the increase; and what is more, the pictures, when stolen, are seldom recovered. One would not unnaturally surmise that such a thing as a valuable picture would not be easy to dispose of, for it would be of no use to anyone if it could not be shown in public. A picture is a very different thing from jewellery, precious stones, and the like, when they get in the hands of the "light-fingered gentry." The latter can be readily converted, but not so with paintings—they cannot be dealt with except in their original form. The latest theft is that of a valuable antique picture of The Crucifixion, of Grecian workmanship, stolen from the Cathedral at Osimo. It has been said that more than one stolen picture has found a home in America. The telegram, through Laffan's Agency, in announcing this theft, says that a Roman art dealer, who has business transactions with American and English collectors, is known to have lately visited the Cathedral, has been arrested on suspicion of having committed the theft, but the picture has not been recovered. The Government, it is said, has ordered a strict look-out for the treasure to be kept at all frontier stations. One would think, for the reason just mentioned, that a valuable painting, when stolen, should soon be recoverable, particularly as there are few such pictures that have not been reproduced by photography, and hundreds of copies of them circulated throughout the world, and would from them be at once recognised; yet that does not appear to be the case. No one, it might be imagined, would purchase a picture to hang, either in England or America, amongst his collection, or put into his gallery for sale, if he knew that it had been stolen—yet pictures are stolen.

* * *

Historical Photography. For obvious reasons Photography has not been the handmaid of History, as it has of other branches of knowledge. Scarcely more than half a century old itself, and only arriving at the years of discretion about three decades back, we could not expect it to do much in the historical line. But it will be very different in the future, and many earnest workers, with Sir Benjamin Stone at their head, are taking good care that future generations shall have photographic evidence of the events and episodes of to-day. One of the

most picturesque of historic ceremonies took place on the other day amid the barbaric splendours of the Palace at Lhasa, when the treaty was signed which is destined, we all hope, to put an end to our difficulties with Tibet. We can learn from the able descriptions by newspaper correspondents all about the brilliant tapestries and wall-frescoes of the chamber where the ceremony took place, and we are able in a measure to form a mental picture of the Amban and his suite, the Nepalese Resident and his following, the crowd of monks, and the group of British officers with their Sikhs, Pathans, and Gurkhas. It is a picture, however, which quickly fades from the memory like some scene at the theatre which we have admired and soon forgotten. But the historic event was photographed. We read that at the signing of the treaty some consternation was caused amongst the monks by the taking of a flash-light picture. The poor men must have been much startled by this explosive flash of light in the midst as were the visitors to Westminster Abbey the other day by the crackers which were let off by some miscreant in the building. We shall all look forward with interest to seeing a photograph taken of such an event under such dramatic conditions.

* * *

Postal "Cash on Delivery" and Photographers. A question was raised some months ago as to whether the system, prevailing in many countries, of the Post Office receiving cash payments for small parcels of goods ordered from tradesmen at a distance when the package is delivered should be adopted in this country. Judging from correspondence on the subject that has from time to time appeared in the daily Press, opinions seem to be very much divided on the point. Big concerns in large towns seem to be very much in favour of the idea, whereas tradesmen in small places are strongly opposed to it as being likely to cause injury to their business. Last week the Postmaster-General, in reply to an inquiry from a London house, said, in a somewhat ambiguous way, that he had considered all expressions of opinion sent to him, whether favourable or otherwise, the majority of which have been from traders or bodies discussing the matter from a commercial point of view. He now wishes for the views of a wider public on the matter—private individuals. In the pay-on-delivery system, through the Post Office, when adopted, we can see that it would be of great service to many photographers. Most have on their price list "Cash at time of sitting," but how frequently is this condition not enforced, particularly in country places! The result is that when the portraits are forwarded the photographer has often to wait a long time for the money, and not infrequently has a trouble in getting it at all, more especially when the pictures are sent, say, to neighbouring places. If the postal cash-on-delivery system comes into vogue the photographer would simply have to send pictures by post, and if they were not paid for on delivery they would not be left by the postman. In this way we see that the system would be of great service to photographers in all parts of the country.

* * *

Revolving Houses.

The *Lancet* last week in an article states that experts in hygiene are accustomed to lay a good deal of stress on the importance of correctly orientating dwelling-houses, so that they may receive the maximum amount of light and of protection from cold winds. Our contemporary further says experience has taught us to select as far as practicable a southern aspect for our houses, but, even when this is done, the fixity of the structure prevents our regulating the supply of sunlight to different rooms according to our varied tastes. The article adds that two French gentlemen, one a doctor

and the other an architect, propose to change all this, and they have designed a method of erecting houses on rotating platforms so that the building can be made to revolve in any required direction at any time. It appears that a gas or petrol engine is employed to move the platform, and if necessary it can be used to drive clockwork, which will enable the house front to follow the sun during the day. The article concludes by saying that there are difficulties in the way, but considers the idea worthy of the attention of British architects. What ideal houses these would be for photographers! They could be removed so that the studio, printing, enlarging, and other rooms could be illumined from any point of the compass, and at any desired time; hence, amongst other things, direct sunlight in the studio might be avoided at any season of the year. Revolving studios, per se, have been constructed in this country, and they are by no means uncommon on the Continent with those firms that make speciality of the reproduction of paintings. The studios have been abroad are wooden structures of considerable size; they are mounted turn-table fashion, and are easily rotated by two men, or even one, so that the picture to be reproduced can be illumined with light from any direction that may be desired. Much of this work, it may be mentioned, is done in direct sunlight, which with the revolving studio may be made to fall on the picture at any desired angle at any time of the day. It is needless to say that revolving studios occupy a good deal of room as the space required is a circle the diameter of which must be considerably more than the length of the structure. For this reason they cannot be availed of in confined situations.

* * *

above the snow-line.

The Alps have claimed this season more victims than their usual number of victims, and among them must naturally be numbered many photographers, for there is a charm about camera work amid the mountain peaks which is unique. Hence we find many accomplished workers who never take photographs of any other subjects. The mania for this sort of work cannot be understood by those who have not indulged in it, just as non-climbers can never understand what they call the foolhardiness of those who risk their lives amid the glaciers. There is, however, a certain class of visitors to the Alps which contributes largely to the annual death toll; people whose object seem to be that they can say to their friends that they have been there. They are not regular climbers, nor are they photographers, but they make it a rule to bring back with them, unless their career is cut short by untimely accident, a sprig or two of Edelweiss. This plant is supposed by them, and the idea is encouraged by the natives who sell it for fancy prices, to grow only in the most inaccessible places, and above the snow-line. So that its possession indicates that the owner has had the courage and hardihood to hang over his eye-lids over some precipice or other in order to gain the plant. Let us hope in charity that these eager hunters of Edelweiss will not be too cast down—we mean in a figurative sense—when they see a letter in the *Times* dispelling their fondest illusions with regard to this Alpine growth. With a penny packet of seed, we are told, Edelweiss will grow readily in any London back garden. And the writer adds, "To risk one's neck, therefore, for such a plant gives no title to the laurel crown of the hero, but rather to the garland that adorned Bottom's neck when the ass's nose was fixed on his head." The moral of all this is that if one wants to pose as a conqueror of many peaks, it is far better to take photographic negatives of them than to avail oneself of the negative evidence of the Edelweiss. An Alpine photograph cannot be faked, it must be taken up in the snow. It would be a mad thing to endeavour to obtain its counterfeit presentment from the

limited area of a metropolitan back garden, and by no stretch of the imagination could the London grimalkin be mistaken for the chamois. With the Edelweiss, however, it is different, and the penn'orth of seed will confer upon the suburban resident enough to satisfy the wants of many climbers without risking a single neck. Possibly a trade in cultivated Edelweiss for the use of those who like to be considered foolhardy, without the hardy, may be worthy of consideration for the future.

* * *

The Newest Postcard.

Many abortive attempts have been made to wed the photograph with the phonograph, and more than once we have been promised the representation of grand opera by means of the cinematograph, while at the same time our ears would be delighted by the corresponding sounds produced phonographically. All these anticipations of what might be have been doomed to ignominious failure, and the opera singers can still claim their princely stipends without any fear of a mechanical rival. The union of the photograph and phonograph has assumed a new phase. Grand opera is to be left alone, and we must be content with works of less grandeur. The photographic postcard is the medium by which the new departure is to be brought about, and the plan is certainly so ingenious in conception that it deserves to succeed. To be able to actually "speak one's mind" through the medium of a pictorial missive to a friend, and more especially to an enemy, is a consummation devoutly to be wished, and picture cards to enable one to do this are shortly to be placed upon the market by a French syndicate. And this is how it is to be done. To an ordinary pictorial card there is attached a transparent disc, presumably of celluloid, through which the picture can be as easily seen as through glass. This disc has been stamped while soft with a gramophone musical "record," so that when received through the post the owner slips it on a machine, sets the clockwork going, and hears the message sent by his correspondent. Briefly, it is the one of the uses anticipated for the phonograph, that of correspondence by sounds instead of written characters, adapted for the use of the million by the aid of the popular pictorial postcard. The portraits of well-known actors and actresses, as well as of music-hall celebrities, will be accompanied by celluloid discs bearing records of their most popular speeches or songs. The candidate for election to Parliamentary honours will send round his portrait by the thousand with extracts from the speech, written by his agent, which in former times he would have delivered *viva voce* at the hustings. Then there will surely follow some means by which correspondents can make these records for themselves, and an interesting point will arise for the lawyers as to whether a tirade of eloquent abuse, punctuated with flamboyant adjectives, spoken into a machine, can be regarded as a libel when ground out of another machine by the receiver thereof. Then there are endless possibilities opened up by this system for the ingenious advertiser. We shall no longer content ourselves with reading that a certain soap is "matchless for the complexion," but we shall have a portrait showing the fine texture of the skin so treated, while the fair one to whom it belongs sings the praises of the soap in the tones of a nightingale, so far as the gramophone is able to emulate that overrated bird. The additional cost of a thin celluloid disc is said to be trifling, but a question will arise as to the price of postage. At present one must add nothing to a postcard but the necessary stamp, and the addition of a celluloid disc would not be permitted. Our postal authorities will, however, have the opportunity of noting how our French neighbours get over this little difficulty. It is certain that if the idea of the sonorous postcard takes the

public by storm, the Post Office will see their way to relax their regulations. The introduction of the picture post-card must have brought much extra grist to the national mill, and if the new card holds out a hope of increasing the amount, its way will be made easy.

STORING NEGATIVES.

RETURNING to this subject, which we dealt with in part a little while ago, it will be wise to draw attention to one branch of it that has an important bearing upon the question of storing or non-storing. We have pointed out that this should be settled according to the wants of each business separately; no hard-and-fast line as to its desirability or not can be established. Strict economy in the conduct of a business being always a necessity, and doubly and trebly so in the present depressed state of the profession, every item of expenditure needs to be closely scrutinised, and the particular aspect that presents itself in regard to the storage of negatives is their insurance against fire. As every photographer knows to his cost, the insurance rates for photo studios and their contents is very high—unduly so, we hold, having regard to the risks—but if it be elected to exclude negatives a very much lower rate can be obtained for the whole contents of the building. This fact not being so well known as it should be, we have thought it desirable to bring it forward as an aid in coming to a conclusion.

With regard to the actual mode of storing to be adopted, the requirements to be fulfilled are ease in locating any particular negative and a minimum expenditure of time. For the carrying out of these everything must be done systematically, and in order. A collection of negatives of great intrinsic value becomes almost worthless if it requires hours of search to lay hands on a particular one. Naturally the first thing that presents itself to the mind is an index, and when it is remembered that storage implies the possibility of having replica orders from plates taken years ago, every member of the staff then existent being probably replaced, so that memory should form no part of this (or indeed any) system.

The index requires to be very complete as well as accurate, to contain not only the full name with initials, but the address of the sitter. It is a common and most desirable, though not universal custom, to mark the back of every print issued with its register number; but it is found that in a very large number of cases of re-orders a sample print is not available, and its number is unknown; hence the need for recording these details. As a further addition to the usefulness of the index in this direction we may describe a Register Book, our records attributing its invention and use, thirty or forty years ago, to one of the smartest business men who ever took up photography, the late Mr. Brown, of the well-known firm of Brown, Barnes, and Bell. This book was a companion to the index, and consisted of a large volume for pasting in a print from every negative in the index book. A sitter comes in to order replicas; has a hazy idea of when a particular picture was made, or which especially liked one of several taken about the same time is to be repeated. A reference to one or other of the register books puts the matter beyond doubt. To further the search in this direction it is an excellent plan, whenever a new year is begun, to interpolate the figures representing that year in each page of index and register books before adding the first number of the year. This seems a slight matter to name, but it will be found extremely useful in practice. As to the actual numbering the negatives themselves, before storing, little need be said. It should be done at

once—i.e., before printing by scratching with a sharp pointed instrument upon the film, or carried out by pasting near the edge, in a suitable position, a narrow slip of paper with number and name written on it. Books of labels may be bought with consecutive numbers at the end and blank spaces for names at the other. When seeking for a particular number in a batch this plan has great advantages over the scratching method, as there is no need to hold the negative up to the light. For the final racking many photographers pin their faith to the paper-bag plan, each plate being put into a bag with an index number written outside, and placed in one of a series of pigeon-holes arranged to hold any required number, the greater the number, the more the time needed in locating the required bag. By this plan the negative is preserved from dust and dirt. Others use the pigeon-holes in the same way without placing the plates in bags.

To preserve from dust others use the pigeon-holes in plain rows of shelves for packets of negatives wrapped in paper. A favourite method is to store the negatives in empty plate boxes, separating each plate from the next by a piece of paper to prevent scratching. These are then stacked on shelves on their edges, economy of wall space being subserved by arranging them with the longest edge on the shelf. Each box should be labelled at the outer edge with the first and last index number of the contents. Here let us observe that it is infinitely more convenient to put just ten plates in a box, not a dozen or more, because the box will hold them. When casting the eyes over the shelves it is surprising how much more quickly any required negative storage in boxes where, to save expense, strong wooden boxes are arranged side by side over the top of another in lieu of shelves, and an excellent plan it appears to be. It is, of course, advisable to have boxes of uniform size and substantial build. In the instance we refer to the boxes were empty cases that had been used either for Martell's brandy or bottles of champagne.

We reserve for final mention the most convenient, most costly of all—a number of shelves fitted with wide grooving. They are conspicuously numbered by tens, intermediate figures being left out so that the site of any plate can be found at a glance. The great advantage of this plan is that a place can be allowed in advance for every negative produced, and as soon as it is printed from the negative may be put in its own groove without trouble or delay, no opening of packets or boxes. It may be objected that they would gather dust, especially on the retouched plates, but this is not found to be the case, the more so that it is possible to purchase a retouching medium which negates dust. The chief argument against this system is its cost, but this will not amount to much annually, and will be further minimised by, after a number of years, removing the plates from their grooves and boxing them off above.

We have, of course, not attempted to give an exhaustive account of methods adopted, but those we have described above may be looked upon as typical and possible. Every one or other of our readers may be able to glean hints from their own practice.

MESSRS. A. W. PENROSE AND CO., of 109, Farringdon Road, London E.C., write:—Whilst thanking you for the kindly notice which have given of our publication of Von Hubl's "Three-colour Photography," permit us to point out that you have made a mistake stating that the price is 3s., whereas it is 7s. 6d. nett. The mistake has led to our receiving a number of orders with insufficient remittances. We shall, therefore, be obliged if you will, in the interest of your readers and as a favour to ourselves, make some announcement correcting the error.

THE BLEACHING PROCESS OF COLOUR PHOTOGRAPHY.

"Eder's Jahrbuch."

RESEARCHES of the author on the bleaching-out process of photography in colours have been continued during the past year. A great disadvantage of the original method (i.e., mixing the gelatine with hydrogen peroxide) is that the peroxide does not behave well with the gelatine. If the freshly-coated plates are allowed to dry quite slowly at ordinary temperatures, which at least twenty-four hours are required, the excess oxygen, which plays the principal rôle in the bleaching, escapes during the drying of the film, and the result is extremely insensitive plates. If the drying is effected at increased temperatures, so as to have the plates ready for use from one and a half to two hours at least, great changes take place in the gelatine, the film becomes dirty, and filled with oxygen bubbles. These difficulties may be overcome by bringing to the plate the oxygen necessary for the bleaching only just before use, which can be done by bathing it in the ethereal peroxide solution just before use. There is not much difference whether the gelatine is mixed with water or hydrogen peroxide. If it is mixed with the latter, then drying is best effected by artificial draught, but without heated air, which takes from six to eight hours; if, however, it is mixed with ordinary water, then they may be dried by warm air, and this may be done in from one to two hours. The plates, mixed with hydrogen peroxide and then bathed with ethereal peroxide solution, are rather more sensitive than those made with plain water only, the former plates must be exposed within three or four days of their preparation.

The necessary peroxide-ether solution for bathing the plates just before use is prepared by vigorously shaking 15 cc. of 10 per cent. aqueous hydrogen peroxide solution with 200 cc. of ether. This gives about a 1 per cent. solution of ethereal peroxide solution, which is the best sensitising the plates. As, after shaking up the mixture of ether and hydrogen peroxide, the water contains always at least thirteen times as much peroxide as the ether, the use of a 1 per cent. solution of the peroxide only gives about a 0.75 per cent. ethereal solution, which is not sufficient. The bathing of the plates must last at least five minutes; simply pouring the mixture over the plate is not sufficient.

In order to prevent the adherence of the coloured original film during printing, which must be done in diffused light, not sunlight, the film should be rubbed over with oil. For exposures in good summer light, and with the most powerful lenses, require from six to eight hours' exposure, and the film must be protected by a sheet of glass to prevent too long a drying of the film.

A useful recipe for the preparation of the gelatine colour solution is as follows:—

Soft emulsion gelatine	10 g.
Distilled water	100 ccm.
When the gelatine has melted there should be added with constant stirring	
Methylene blue BB (Bayer) (0.1 : 50 ccm. dist. water)	6 ccm.
Auramine conc. Bayer (0.1 : 50 ccm. alcohol)	1.5 ccm.
Erythrosine, Schuchardt (0.25 : 50 ccm. dist. water)	3 ccm.

Before mixing it should be filtered. The best sensitiveness is obtained by keeping the mixture for four or five hours at 25°C. If the gelatine is mixed with peroxide the quantities of the dyes are slightly different:—

Soft emulsion gelatine	10 g.
Hydrogen peroxide 10 per cent. sol. ...	100 ccm.

After melting at as low a temperature as possible, the following should be added with constant agitation:—

Methylene blue solution, as above.....	5 ccm.
Auramine blue solution, as above	2 ccm.
Erythrosine blue solution, as above	4 ccm.

After filtering the plate should be at once coated.

The author has not yet succeeded in preparing paper so that the dyes do not penetrate into the paper, which gives very insensitive preparations, so he uses opal glass with a rubber substratum, by which means the film can be stripped and transferred to paper.

The author has continued his researches on increasing the sensitiveness by various additions, but without result, and the persulphates still remain the best sensitisers, but the beauty of the colours suffers.

In isolated cases the author observed that printed plates could be further developed by repeated dipping in hot water. Under what circumstances this occurred could not be accurately determined, as sometimes it occurred and sometimes did not under absolutely identical conditions.

Warm water exerts an action on the film, which is interesting from several points of view. In many cases the bleached colours are regenerated when the image is treated with warm water. An instructive experiment is as follows:—A coloured print is bathed in formaline solution, and then exposed to strong sunlight till the colours have quite disappeared. If the plate is now dipped into hot water the colours are regenerated and the original coloured copy is again obtained.

Not less interesting is the formation of colours by light. It is known from the work of Oscar Gros, that when the leuco-bases of certain dyes are prepared, and these exposed to light; the original colour is regenerated from the leuco-base, and this regeneration is strongest when the leuco-base is illuminated by light of a colour complementary to the colour that is formed.

In spite of the apparent similarity of these experiments the regeneration of the colours in the experiments described by the author have nothing to do with the leuco-bases, because here there is no leuco-base, but probably a sulphur compound of the dyes. Many dyes, especially the blues, lose their colour in the dark when mixed with aqueous gelatine solution mixed with a small quantity of ammonium persulphate. If opal glass is coated with such a mixture, and the ammonium persulphate present in the film washed out after drying, and the still damp plate exposed, the colour is regenerated, and most vigorously in a coloured light complementary to the colour that is formed. If such a plate is exposed dry, no colour forms, but this immediately appears if the plate is bathed after exposure in lukewarm water. The formation of the colour is most vigorous where light has acted which is complementary to the colour that is formed. We have here to do with the beginning of a colour-forming process.

DR. R. NEUBAUSS.

A NEW washing apparatus for plates and prints has been designed by Emil Bachmann, of Erfurt. It consists of two tanks placed together at right angles, in each of which is a partition somewhat lower than the side walls of the tanks, and dividing the tanks into two divisions. This arrangement is suspended from an ordinary tap and is free to revolve round an axis. In the larger part of each tank are placed the plates or prints, fastened in with a folding frame. By opening the tap the part is filled with water until the height of the partition is reached, after which it fills the other part. The weight of the water in this portion then causes the apparatus to revolve, the filled tank being emptied and the other brought under the tap. The apparatus continues to work automatically and the plates are continually being washed with clean water, which is discharged as it becomes contaminated. The apparatus is simply an application of the principle adopted in the well-known Kipp weighing machine.

ROYAL PHOTOGRAPHIC SOCIETY'S EXHIBITION.

FIRST NOTICE.

YESTERDAY, the forty-ninth Annual Exhibition of the Royal Photographic Society of Great Britain, opened its doors to the public, at the New Gallery, Regent Street. The Exhibition is to remain open until October 29. The private view on Wednesday afternoon (September 21), and the popular soirée in the evening drew a crowd of photographic notabilities from all parts of the Kingdom, and the success of both functions can be regarded as auguring well for the future of the show.

Amongst those present during the afternoon and evening we noted Messrs. George Scammell, Furley Lewis, H. Snowden Ward and Mrs. Ward, R. H. Anthony, Thomas Bedding, E. J. Humphrey, W. Downey, T. K. Grant, G. W. Norton, Hubert Elliott, H. Foulkes Winks, Sydney Keith, S. G. Kimber, F. H. Evans, Mrs. A. Jennings, J. Gunston, C. H. Oakden, P. Bale Rider, William Gill, Fred Marsh, P. Brotherton, W. Calder Marshall, Miss M. Donaldson, Rev. F. C. Lambert, B. H. Bentley, P. R. Salmon, Dr. Evershed, Miss Ackland, F. Martin Duncan, P. Ponge, J. Hay Taylor, J. H. Baldock, C. C. Cook, W. Kilbey, E. Sanger Shepherd, A. Haddon, R. Craigie, Kung Pah King and Family, H. Bedford Liemere, C. E. Kenneth Mees, Prof. R. Meldola, C. H. Austin, F. Beeson, Alfred Bedding, C. Welborne Piper, F. W. Gregg, Drinkwater Butt, F. W. Hindley, Miss Constance Ellis, A. W. W. Bartlett, J. H. Avery, W. H. Hayles, J. C. S. Mummery, F. J. Mortimer, Douglas English, T. E. Freshwater, R. Beckett, C. F. Juston, B. G. Wilkinson, W. E. Southcombe May, A. L. Henderson, J. Cadett, Arthur Marshall, A. R. Sargeant, T. Thorne Baker, Hedley Smith, Chen Ming Sheng, Yin Show Ling, and Pai Kwung, Attachés to the Chinese Legation, W. Sims, Dr. L. West, J. A. Sinclair, H. Wilmer, W. E. Debenham, W. E. Foxlee, R. R. Beard, Sebastian Davies, E. Shunemann, J. S. Teape, W. Gamble, J. B. B. Wellington, Alfred Ellis, A. Horsley Hinton, Hector Maclean, and E. Clifton.

This year's Exhibition, as a whole, with the exception of the brilliant display of American and Continental work in the invitation section, of which more anon, has nothing very original or striking to show in either the pictorial or technical sections, nor among the professional and trade exhibits. It is satisfactory to note, however, that no retrograde action has taken place, that the same healthy tone pervades the majority of the pictorial exhibits, and that although no new giants have appeared, the dwarfs of previous shows have evinced a steady, if not rapid, growth, and the result is an excellent all-round exhibition of good, sound photography, representing English camera craftsmanship at its best. Far be it from our thoughts to "damn with faint praise" so admirable a collection of photographic productions as are now presented for our inspection, but we seem to feel that English pictorial photography, of which this is a representative exhibition, is pausing awhile, and, like a sailing ship in stays, quivering uncertainly in the deflecting wind of criticism, steadies itself before plunging off with renewed vigour on a new tack, but withal keeping the same objective in view—the betterment of photography in general, as opposed to the aggrandisement of a few, whose affectations and personalities, although interesting and clever enough per se, are apt to have a warping influence, if taken in bulk, on the broader-minded policy pursued with particular vigour on this occasion by the Royal Photographic Society. The work from all parts of the world, depicting all styles of mannerisms and eccentricities collected together and exhibited this year in the South Room, serve to show to a great extent the position of pictorial photography abroad, and also in many instances will supply valuable object-lessons to the more ambitious English workers who cannot make up their own minds.

The technical and scientific section this year does not appear so strong as in previous years, either in quantity or quality,

but the apparatus show is good, and the professional section well supported again. A detailed account of these exhibits will be given later. We will chiefly concern ourselves for the present with a brief notice of some of the principal works in the pictorial section. This section, as in previous years, is in the West Room, and it would be difficult to secure a gallery for the display of so large a collection of photographs. Out of a total number of over 2,000 pictures sent in, 345 have been hung. The weeding out process must, therefore, have been very drastic. Six medals have been awarded in the pictorial section, and one in the technical and scientific. The recipients are: Pictorial:—Arthur Marshall; F. J. Mortimer; C. Austin; T. Lee Syms; Henry Havelock Price; and Ernest Boon. Technical and Scientific:—Arthur C. Banfield.

Dealing with the medalled pictures first, No. 1 in the catalogue, "Devotion," by Arthur Marshall, is the first recipient of this honour we meet with. The picture represents a figure kneeling at the foot of a statue of the Virgin and Child, and is treated with a masterly skill that altogether disarms any objection of repugnance that one might feel for the portrayal of this sort of subject by photography. The technical quality of this print is first class, and the contrivance of the light on the kneeling figure's face, occupying as nearly as possible the middle of the picture, is quite successful. The lines formed by the suppliant and the statue will be found to be particularly graceful in spite of the extreme narrowness and height of the frame which is the ornate thing of its kind in the Exhibition, and leaves absolutely no doubt that it was specially constructed for this picture. Marshall's steady progress along the lines of sound pictorial work displaying considerable personal feeling, culminating in this achievement is a matter for congratulation. The medalled picture we come to is No. 164, "The Reef," by F. J. Mortimer. As the title indicates, this is a sea-piece, and, most of this worker's studies of the sea, the endeavour is apparent to render something beyond a mere snap-shot of curling breakers and stormy skies. A poetical feeling is evinced in the delicate treatment of this particular subject, which represents a line of foaming billows breaking over an almost submerged reef, the effect of flying scud, foaming water, and squally sky is true to nature. The composition is curious, and strikes us as being a trifle weak, inasmuch as the highest light, the towering wave-crest, is as nearly as possible in the centre of the picture. The feeling of daylight, however, which it appears to be Mortimer's endeavour to bring into his sea-scapes is very much in evidence. Nevertheless, we think that at least one other of this worker's exhibits on the walls was deserving of recognition before this. The third medal goes to C. H. Austin for "Cape Dordrecht" (175), and is the least satisfactory of the awards. There is nothing really remarkable in this quite commonplace photograph of a Dutch quayside, with houses and shipping of the same sort of thing has been done over so much better, even in the present show. There is a peculiar heaviness about the print that appears unnecessary. The composition is not remarkable, and the recession of planes is distinctly faulty. A triangular piece of dark roof in the top left-hand corner is a mistake. It is, however, unaffected photography, and a sunny effect that is not displeasing. The reflections in the water are also good. The next medal winner in the catalogue is T. Lee Syms, with one of his typical portraits of a Lancashire lass. We wonder if this award was made by artificial light? We raise this query in view of the exceedingly bad specimen of spotting that is apparent in quite large patches on this otherwise nice photograph. It is entitled "A Country Girl," and the young lady's bonnet-strings, coming over her shoulder, evidently formed an obtrusive white line that was undesirable. Why Lee Syms, who is, we understand, a professional photographer, could not have painted this out in a colour that matched the rest of the picture we cannot conceive. It is particularly ob-

when the bright morning light is on this wall of the gallery. There is excellent modelling in this portrait, but the face itself is not particularly pleasing, and has a puffy look that does not attract on close inspection. Henry Havelock Price's "Dr. H. O. Percy," winning the fifth medal, is a splendid piece of work. It can rightly be described as a "speaking likeness," and no fault can be found with the photography, the subject, treatment, or the composition. The modelling of the face is admirable, and the masterly management of the white collar and fur on the coat is worthy of considerable study. The white mount for a portrait in so low a key is not quite happy, and tends rather to upset the value of the face, but this detail can be overlooked in the presence of such first-class work. No. 317, "Convalescent," a charming little child study by Ernest G. Boon, secures the sixth medal, and it is quite a triumph in low-pitched tones. It represents a pathetic-looking little girl in bed, and the title is evidently inspired by fact. The rendering of the textures of the bed hangings is what probably calls for most praise. This is very skilfully done, and Dr. Boon is deserving of all praise for the restraint shown in the treatment of the whole. The little girl, who is placed rather low in the picture, is excellent, one might, indeed, be forgiven for saying beautiful, and the entire picture is delightful to contemplate.

The medal in the section devoted to scientific and technical photography is secured by Arthur C. Banfield's extremely clever series of photographs showing a comparison between a jump of one foot in height as executed by a dog and a cat respectively. This series of thirty-two prints, sixteen of each animal, illustrates the successive motions of the animal at approximately equal periods. The photographs illustrate the animals' ability to judge with great nicety the amount of power required to clear the obstacle, effected in both instances with a remarkably small allowance of space. Each animal alights on one fore-paw only, the other being advanced before the moment of contact. Each animal alike takes a step forward with fore-paws alone to bring the hindquarters free of the obstacle as they fall. The exposures are: Cat, 1-1,200 sec.; dog, 1-5,100 sec.; and the whole is a remarkably clever and painstaking example of the application of photography.

Reviewing as many of the more striking pictures in the West Room as our space will allow, the visitor on entering will probably admire A. H. Blake's "Blown Sand and Shadows" (4). This will have a lot of attention. It is unfortunate, however, that the sand gives rather the impression of snow, which is misleading. Dr. C. F. Grindrod's strong portrait of "A Cornish Fisherman" (5), just above this, we do not care for as much as some portraits from this worker. The expression is not pleasing, and the head seems somewhat too big for the frame. The application of bolting silk during the printing is not amiss in a picture so large in conception as this. F. J. Mortimer's "Majestic Main" (9) is a particularly large and open sea-scape, teeming with light and atmosphere, and, including as it does, a representation of the sun itself, may be regarded as successful in avoiding the appearing of a moonlight effect so often associated with sea pictures taken against the light.

At first sight Winthrop Somerville's "Scotch Moor" (20) strikes one as being a good thing, but a closer inspection reveals shockingly bad technical print. The printed-in clouds are so very obvious and much too heavy. They overlap the distant hills and are of a different colour to the landscape. The print also wants careful spotting in many places. T. Carter's "Rainy Day in the Moors" (24) is better, but here, again, the sky, although better managed, strikes us as coming forward too much. "Miss May Morris" (26), by "W. Smedley Aston," is a strong portrait of faultless technique, and very convincing. It is a well-arranged composition taken against the light from an open window, although there is also another subsidiary light from the opposite side. The brilliant pattern on the young lady's skirt is admirably broken, and, in consequence, is not too insistent. "Gossip" (29), by John H. Gash, is an example of this worker's now familiar treatment of out-door groups of Normandy market women and would be more successful if the figures were detached from the buildings at the back. They appear to be almost on the same plane as the foreground. "The Hour of Prayer, Tangier Mosque," by T. Ernest Waltham, depicts the arched entrance to a mosque, and has the most beautiful colour and lighting. This is seen to best advantage in daylight, but we are not sure that the value of the picture is not discounted by the colour of the canvas covered frame. "The Last Gleam," a large gum print, by J. C. Warburg, is a strong landscape in its way. It represents evening in a harvest field, and, viewed from a distance, great breadth is apparent. The composition is good, but the sky, representing as it does nightfall, appears to us to err somewhat on the light side, and its quality is rather poor. The suggestion of long shadows on the foreground stubble is very happy, the gleams of light coming between the wheat stacks, giving great luminosity to the otherwise heavy foreground. Furley Lewis's portrait of "Percy Lewis, Esq." (37), is admirable in every way, and no higher praise can be bestowed than to say it is worthy of Furley Lewis. It will be doubly interesting to the visitor to gaze on so striking a likeness of the winner of so many R.P.S. medals. B. Gay Wilkinson's landscape (41) is likely to also attract attention, as representing an idealisation of realism. It is as successful a rendering of evening light as we remember having seen. The sky is beautiful, and the foreground, although it appears very dark and blank at first, soon assumes its correct perspective, and the whole effect becomes very convincing. The important portrait on this wall of the late Lord Shand, by Wm. Crooke, is a strong piece of portraiture in Mr. Crooke's best and most vigorous style. We can suggest no improvement beyond a further suppression of the white stock. The concentration of light and modelling of the face in this splendid portrait will repay much careful study. As Mr. Crooke was one of the judges, all the examples of his powerful portraiture in the gallery are "not for competition." We really think that "not for competition" should also have been affixed by Percy Lewis to his two admirable Venetian pictures this year. Mr. Lewis can now well afford to rest on his laurels. No. 58, "Storm Swept," by J. Appleby, is somewhat dramatic, and the sky is much too heavy. The wind-swept sand dune in the foreground is, however, very fine. In "A Vegetable Shop" (73), Herbert Bairstow has given us a little gem. The quality of the work and the grouping of the figures are first class. The group is perhaps a trifle too central, but the whole is admirable.

Work from most of the best-known users of the camera appears on the walls, and these will be commented on in our next issue. The Invitation Section, the Scientific and Technical Section, and the Trade and Professional Exhibits will also be dealt with.

THE Photographic Department of the Acton and Chiswick Polytechnic will be opened on Monday, September 26, at Bath Road, Bedford Park, W. The lecturer will be Mr. Arthur G. Field, and the course of lectures with demonstrations will include:—The apparatus; the light, how to expose; how the lens does its work; the dry plate; standard method of development; when to stop development; all the new developers; intensification and reduction of negatives and prints; printing in silver, platinum, and bromide and chloro-bromide papers; carbon printing; vignetting, printing in skies and clouds; the studio; history of the development of studio lighting, modern methods of lighting the sitter; rapidity of the film the basis of the newer lightings; tips in portrait photography; daylight, electric, and other artificial light; backgrounds, accessories, posing; groups, indoor and outdoor; at home portraiture; copying and other work of a mechanical and exact character; press work; flashlight work; instantaneous work; developing films; landscape photography; architecture; orthochromatic work; lantern slides, etc.; principles of three-colour photography.

THE SALON.

FIRST NOTICE.

THE twelfth annual exhibition of the Photographic Salon, which was opened to the public on Friday last, September 26, is a triumph for the American school and the gum-bichromate process. The work and personalities of Mr. Steichen, Mr. Stieglitz, Mr. Coburn, and other Transatlantic enthusiasts so obviously pervades this clever little collection of bastardised outcomes of superfluous lenses and cameras, that one finds a difficulty at the first blush in believing that British photography and its leading exponents have now anything but a nodding acquaintance with that "new movement" which they so heroically initiated a dozen years ago.

Even Messrs. Hinton and Davison, the two most consistent and successful exhibitors in the little Piccadilly room, seem quite out of it on the present occasion—apparently having lost heart before the advance of the Great Army of "Gum Spodgers" (the phrase, be it remembered, is not ours), and content themselves with showing enlarged snapshots on photographic printing paper of a now quite conventional kind.

The majority of the exhibits, scarcely one of which, we frankly admit, lacks cleverness or interest, pay the handsomest tributes to the manipulative skill of their producers; but they can no more claim the title of photographs than can printed impressions from well-etched half-tone blocks. Your gum print at the Salon makes a magnificent pretence of being something which it is not—lithograph, wash or charcoal drawing, and in some instances oil and water colours. Conceding the liberty claimed in the revived forewords of the catalogue, "Why drag in"—photography? And should not these ingenious manifestations of revolt against the academic and conventional be seriously placed before the authorities of the New English Art Club with a view to their inclusion in the next exhibition of that body, which takes place in a few weeks' time. We make the General Committee of the Salon a present of the idea and trust it will be as highly appreciated as the other services which the Salon has from time to time acknowledged to this JOURNAL.

The effect of the selection by the American members of the Linked Ring, of the pictures submitted by American workers, is at once apparent after a glance at the catalogue, and has resulted, as we imagined it would, in nearly one-half of the entire Exhibition being composed of the efforts of a small body of workers in the United States, who cannot be called at all representative of American photography.

Dealing with the foreign efforts first as furnishing quite the most important and striking things in the show—although productions we are not in sympathy with—the work of Eduard J. Steichen calls for immediate attention. In this worker we have evidently a man who thinks and works out the results of his ideas with the object of causing thoughts in others. Just what these thoughts may prove to be is not always clear, but none can gainsay the originality of his methods and the power of his work. His portraits appeal to us as being distinctly stronger than his landscape productions.

Both the portrait of G. F. Watts and that of W. M. Chase are very fine indeed, the former tending perhaps a trifle to undue hardness, while the latter is seen to greatest advantage in an exceedingly strong light. In fact, all the exhibits by this worker should be seen in a much stronger light than that permitted at the Dudley Gallery. His landscapes have a curious elusive quality of their own, and we question their legitimacy in a photographic exhibition at all. No less than twelve frames are filled with his handiwork, and they will all repay close study as specimens of clever workmanship.

Alfred Stieglitz's two contributions are distinctly disappointing. We looked for far greater things from him than "The Flat Lawn" and "The Street."

Both Messrs. C. Yarnall Abbatt and Alvin Langdon Coburn appear to delight in dark and dirty tones that, although pressing a broad view of the subjects portrayed, have a morbid and somewhat unhealthy tendency. Of the former's work, "Cocktail" (199) is probably the most reasonable, although "The Bridge" (169) has qualities that are distinctly realistic and pictorial. "On Capri" (105) is hung rather too high for to appreciate much beyond the ragged mount. This fashion of mounting somewhat indifferent photographs on ragged-edged paper, with the intention, we presume, of increasing its artistic value, is attracting considerable attention, and is rapidly approaching the extremely narrow division which separates the possibly sublime from the obviously ridiculous. Many of the specimens exhibited at the present Salon may be said to have already passed that division.

Mr. Coburn's work does not wholly fascinate us, although we confess a liking for "The Bridge, Ipswich, U.S.A." (39), "Snow" (40). The latter, in particular, most nearly approaches being a good picture. It certainly most nearly approaches being a good photograph of all this exhibition's work. No. 36, "The Haunted House," bears out the tale and the weird resemblance of the house to a large face, possibly an assistance. "The Dragon" (151), an open landscape through which a winding stream twists and turns, has no great claims to pictorial merit beyond the delightful natural curves presented by the gleaming water.

Clarence H. White, whose efforts in previous Salons have caused a stir, appears to be marking time, and gives no evidence this year of increasing vitality. His eight exhibits are of very uneven quality, the most unsatisfactory of which appears to be "The Violin Player" (213). It is really asked too much from the imagination of the beholder to fill the blank in this specimen of "portraiture by suggestion." No. 99, "Sisters," is another specimen of the ridiculous method of mounting a photograph previously mentioned. In this case, in addition to the paper on which the print is fastened having uneven, ragged edges, it has further been crumpled up, rendered dirty, and otherwise maltreated until it has, we presume, become sufficiently mature to accommodate the mass of piece in posing and composition affixed to it. We should be pleased to learn exactly what added merit or charm this particular mount gives this particular picture. "The Cave" (107) fills no specific purpose beyond portraying a naked female aggressively peering around what appears to be a large tree trunk in search of her clothes. "Portrait" (17) is very satisfactory, with the exception of the signature of the author being placed in the middle of the print, while "In the Orchard" is perhaps Mr. White's best effort, the lighting being beautifully managed.

Mrs. Gertrude Käsebier is likewise a prolific exhibitor, eight pictures being on the whole better specimens of straightforward photography than much of the American work, erring very much indeed on the side of heavy murkiness, though this is in no way helped by the fact that the prints are mounted on large sheets of glaring white paper, entirely upsetting tone values and in some cases making the photographs appear but little better than black rectangular patches surrounded by an expanse of white mount. "The Road to Rome" (No. 34), a portrait of a lady nursing an apparently stuffed animal, is better, while "The Sketch" and "The Picture Book" (Nos. 165 and 166) are very fine indeed. Perhaps the last word of eccentricity as applied to a photographic production is supplied by No. 187, "The Koto Player," by H. G. French. It appears to have been produced or mounted on a piece of soiled and torn tissue paper of the species usually known as "curl paper." It is quite an achievement in its way, rivalled only by No. 192 near by, supplied by the same worker. To the effect, these two prints are further permitted to flap

the breeze caused by the visitor hurrying past. Whether the omission of glass from these frames is intentional or accidental we do not know.

Of the other American workers represented, J. T. Keiley has some half-dozen exhibits, none of which call for special mention. Mrs. Jeanne E. Bennett has only one, "Misty November Morning" (205). We can forgive the distance appearing altogether far more fuzzy than anything ever seen in nature, but cannot overlook this fuzziness in the near tree-trunks. They appear to have been X-rayed, and have a "bone" in them. Curtis Bell's contribution, entitled "The Last Load," is altogether beyond us. We give it up. The elucidation of this puzzle is not assisted by the somewhat dirty glass in the frame.

Miss Alice Boughton's "Water Sprites" is a rather weird, but nevertheless successful, photograph of two nude boys at a wooded bathing pool. J. G. Bullock's study in telegraph poles, entitled "The Beach," has its good points. It is small, and it is in the far corner of the room. Dr. F. Detlefsen's "Cameo Relief from Life" is not a very brilliant example of this sort of thing, nor is the object at which the young lady is gazing particularly clear. "The Navajo," by William B. Dyer, calls for no comment beyond that it is an exceedingly ugly male nude. J. Mitchell Elliott and A. A. Gleason have each fairly good snowscapes, but the same sort of thing has been done often before and much better; by Rudolf Eickemeyer in particular. "The Huckster" (16), by W. F. James, is unsatisfactory and a dirty colour, although the figure driving into a dust-storm conveys the idea of action well. "Rest at Nightfall" (216), by Frank E. Marks, is a rather heavy study of shipping, while "Carpenter's Hall, Phila.," by the same worker, is good, and mounted on what at first sight appears to be a piece of rag. Mrs. Jeanett Peabody's picture of a little girl with no boots on—"Caryl" (27)—is of too unpleasant a colour to be effective. "Youth" (128), by Miss Landon Rives, is good in composition and treatment, and quite excellent enough to have dispensed with the application of bolting silk to render it fuzzy. Harry C. Rubincam's portrait of a frightened boy (24), and Mrs. Sear's decorative portraits call for little comment, the latter's "Portrait of a Lady" being rather original in conception; but the string of beads with which she is bedecked is much too insistent. Also is it necessary to bind up in the frame a collection of bits of foreign matter to improve the appearance of the light mount?

On a future occasion the works of the Continental and English exhibitors at the Salon will be dealt with.

POLONIUM, the first radio-active substance discovered by M. and Mme. Curie, and so called after Poland, her native country. is distinguished from the other radio-active bodies, thorium, uranium, actinium, and radium, by the fact its radiation appears to consist solely of the alpha particles, which are larger, slower, and less penetrating than the beta particles, as well as not so much deviated by a magnet. Moreover, polonium does not yield a "gaseous emanation." Radium, as we know, emits both alpha and beta particles, and a gaseous emanation which contains helium. Two other radio-active substances have been found in pitchblende—namely, "radio-actinium" and "radio-active lead," but M. and Mme. Curie consider radio-tellurium identical with polonium. M. Debiere has investigated the matter, and come to the conclusion that there is no distinction between polonium, radio-active lead, and radio-tellurium. He also observed that while the radio-activity of polonium disappeared little by little, that of the nitrate of radio-active lead continued for several years. He, therefore, supposes that the constancy of radio-activity depends on external conditions, which it will be important to determine. It is possible that in certain conditions the activity of uranium, thorium, actinium, and radium may disappear like that of polonium.

OPTICAL NOTES.

[From the "Physical Review."]

I. REFLECTION AND REFRACTION AT THE INTERFACE OF TWO MEDIA HAVING INTERSECTING DISPERSION CURVES.

OCCASIONALLY there appear notices of methods for making objects invisible by selecting combinations of media having about the same index of refraction as the immersed solid. This subject was first investigated by Christiansen¹ in 1884. His object was to show that white powders are transparent. For this purpose he used a mixture of ground glass, benzene and carbondisulphide. The transmitted light varied in colour from violet to red, depending upon the size of the glass particles, upon the quantity of carbondisulphide mixed with the benzene, and also upon the temperature. That wave-length, for which there is an equality of the indices of refraction of the mixture, is transmitted without reflection or refraction. It varies with the temperature, is fairly homogeneous, and is called "Monochrome" by Christiansen. The reflected and refracted colours bear his name.

The most recent notice on this subject is by Wood,² who dissolved chloralhydrate in glycerine. This solution has almost

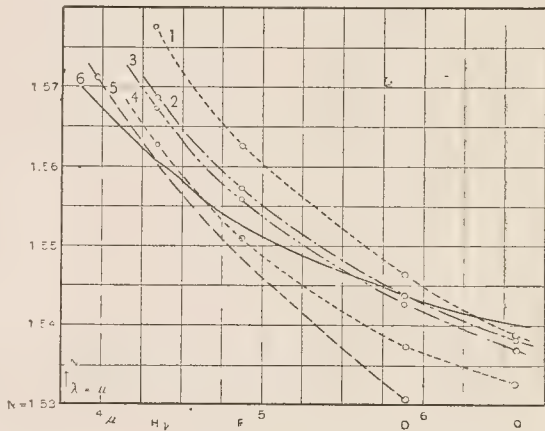


FIG. 1.

Dispersion curves: 1=benzaldehyde; 2=eugenol; 3=safrol; 4=methyl eugenol; 5=cuminol; 6=rock salt.

the same dispersion as glass, and finely powdered glass, in it, is transparent without showing a trace of Christiansen's colours.

The object of the present communication is to call attention to a phenomenon connected with media having intersecting dispersion curves, hence the same index of refraction for a certain wave-length of light.

While investigating the infra-red absorption spectrum of eugenol, $C_9H_{10}O_2$, it was found that the liquid had decomposed on standing exposed to the light, the colour having changed from a light to a deep reddish brown. As a film between two plates of rock salt, observed at a varying angle of almost grazing emergence of the light, one sees a brilliant series of spectral colours—reddish brown for the reflected, and violet for the transmitted rays. Safrol, $C_9H_{10}O_2$, which is light straw-colour, also shows this effect, while carvacrol, $C_{10}H_{16}O$, also straw-colour, does not. At first this seemed likely to be due to "Resonance." But the directly transmitted light showed no peculiarities as viewed in a direct-vision spectroscope. Furthermore, the same films between glass plates lost this property. It was then suggested by Professor Nichols that this is probably due to the near equality of the refractive indices of the two media.

¹ Christiansen, Ann. der Phys., 23, p. 198, 1884.

² Wood, "Phys. Rev.," Vol. XV., p. 123, 1902.

A glance at the dispersion curves³ of rock salt and the liquids, in Fig. 1, explains the question. In fact they contain more information than was first anticipated. In the region to the right of their intersection with the rock salt dispersion curve, the indices of refraction of the liquids are less than for rock salt, while to the left of their intersection they are greater. To the right of this intersection, as the rays pass from rock salt to the liquid, we have the ordinary case of total internal reflection, which can occur only when a ray, travelling in a given medium, falls upon the boundary separating it from a less refracting medium at an angle of incidence greater than the critical angle. To the left of the intersection, in the same manner, the rays pass from a less to a greater refracting medium, and we have the ordinary case of refraction.

However, the occurrence of total reflection, and of refraction at the boundary of two media, at the same time, by breaking up and dispersing a non-homogeneous ray of light is rather unique, and is so easily observed that it seems worth mentioning. It impresses us the more with the question of what occurs at the interface of two media, of optical density, etc., which will be considered presently.

Let us first consider what has really been observed when non-homogeneous light passes into a combination of media like a film of eugenol (from oil of cloves or benzaldehyde from bitter almond-oil; the essential oils might answer the purpose), held between the two plates of rock salt, as indicated in Fig. 2, where p , p = plates, s = the source of light, k = an opaque screen to prevent light from entering from below and thus confusing the resultant distribution of light. It was found,

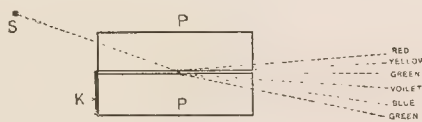


Fig. 2.

on viewing the surface of the films of eugenol at an angle of almost grazing emergence, as shown in Fig. 2, that the totally reflected light was a reddish brown, which changed to a greenish yellow as the angle with the normal was increased. Viewed end on, a light green was visible. Moving the eye farther along so as to get the transmitted light, a quite deep blue appeared which changed to a blue-green, and finally light green as the eye was moved farther around the edge. For benzaldehyde, following in the same order, the reflected light was a deep red, cardinal, reddish brown to orange, then blue to green for the transmitted rays. In the same manner the colours for safrol were reddish brown, orange to light green for reflection, then violet, blue green to light green for the transmitted ray. Most interesting of all is cuminol, $C_{10}H_{16}O$, which, as will be noticed in the dispersion curves, Fig. 1, intersects the rock salt curve towards the violet. For this compound, the reflected rays, observed in the usual order, appeared in succession brownish red, yellow, green, and light green, while the transmitted rays were deep violet, then blue to deep green.

It is to be noticed that the arrangement of the spectral colours appears anomalous, i.e., red, yellow, green, then violet, blue, green.

However, since we are looking at the transmitted light we see the virtual spectrum, in which case the violet appears the least refracted.

A quotation from Rayleigh⁴ seems in order there, since the

³ Indices from Landolt & Börnstein. Physical Tables.

⁴ Rayleigh, Light, "Encyc. Britt." 9th ed., 34, p. 158, 1888. "The whole problem of reflexion is so much concerned with the condition of things at the interface of two media about which we know so little. . . . Reflexion depends entirely upon an approach to discontinuity in the properties of the medium. If the thickness of the transitional layer amounted to a few wave-lengths there would be no sensible reflexion at all. Our theories take no account of the fact that one at least of the media is dispersive. . . . We may thus expect a finite reflexion at the interface of two media if the dispersive powers are different even though the indices be absolutely the same for the waves under consideration, in which case there is no refraction."

media in question show continuity as well as discontinuity when we consider their dispersion curves. This combination might possibly be used to study the question of a finite reflexion at the interface of two media having different dispersive powers, at the point where the indices are the same.

The present cursory examination shows qualitatively how dependent the reflected wave-lengths are upon the relative difference in the refractive indices. Thus for benzaldehyde, where the intersection of the dispersion curves is towards the red, no green is reflected, while for cuminol all wave-lengths up to the deep green are reflected.

The experiment is simple and easily performed. Rock salt is easily obtained. The natural cleavage surfaces last the longest, and are usually just as plain as the hand-polished. The few striations will do no harm if the plates are put together at their common cleavage face. The splitting of the plates is most easily done by applying a thin, sharp-bladed knife, and tapping it gently with a light hammer. The size of the plates produced depends upon the dexterity of the manipulator as well as upon the homogeneity of the crystal. A plate 2 by 2 by .2 cm. will answer the purpose, unless a lantern projection is desired. A few drops of the liquid is placed on a plate, which is then covered with a second plate, and the two held together in a clamp or by means of a wire wrapped around them. The liquids mentioned have high boiling points, hence are convenient to manipulate. The incident light should not be too intense. Daylight has sometimes been found most serviceable. The bottom, one end, and the two sides of the lower plate should be protected from stray light. The incident light is then permitted to enter from above, and viewed from the other end, already described. Such plates will last for several months provided the surfaces have not been rubbed hard, nor scratched in cleaning.

The disappearance of an object when immersed in a medium having the same refractive index is less exactly shown by placing powdered rock salt in one of the liquids mentioned. (Ordinary salt will not behave thus.) A blue colour is visible for the transmitted light, while patches of totally reflected red are also apparent—"Christiansen colours." Applying heat, the whole becomes opaque, but again becomes transparent on cooling. For a lantern projection it is best to have the rock salt split into parallelepipeds having edges, say .5 to 1 cm. These are placed in a flat glass cell and covered with benzaldehyde. In this case the reflected and refracted rays (for light passing through the liquid) at the interface are just the reverse of the case already considered when the liquid was between the rock salt plates. Here we have violet, blue, green for reflection, then green, yellow, red for refraction, observed in the order already described.

At the same time that one observes this effect at the upper surface of the rock salt cube, the phenomena already described for a film of liquid between the plates can be seen at the lower surface if precaution has been taken to avoid stray light from entering the sides and the bottom of the cell. To demonstrate this most successfully it is best to have one large parallelepiped of rock salt in the liquid, covering its sides and the upper half of one end with tinfoil to avoid confusion from stray light. Even then it is difficult to repeat one's observations, and the method of placing the liquid between plates of rock salt seems preferable. However, for the spectacular, the display of colours from the parallelepipeds of rock salt in benzaldehyde rivals that obtained by interference of polarised light in thin mica plates. Rock salt is about the only transparent mineral from which such regular solids with plane, highly polished faces can be obtained cheaply. The effect is rendered still more conspicuous by placing ground rock salt in the bottom of the cell and the parallelepipeds above, thus projecting both upon the screen at the same time. As the cell grows warmer from the lantern the wave-lengths transmitted without reflection or refraction will shift in a very striking manner. W. W. COBLE

ON THE LOSS OF LIGHT BY REFLECTION AND ABSORPTION IN PHOTOGRAPHIC LENSES.

In the year we called attention to some researches by M. Cousin on this subject, and now Herr Martin, who is, we believe, one of the mathematicians attached to the Rathenower Optische Anstalt, so well known for many years as Busch, attacks the subject, and gives in this year's volume of Eder's "Jahrbuch" conclusions, which we summarise, and which, in the face of the increasing use of uncemented lenses, is of considerable interest to the photographic fraternity at large.

Herr Martin refers to Cousin's paper, and recalls his estimation of loss—40 to 60 per cent.—and states that this is so large that it is reasonable to doubt the correctness of the figures; further points out that the "effect" of a lens cannot be estimated as though it were a dynamo or steam-engine, because much depends on the colour of the light.

Limiting the inquiry to an axially parallel beam of violet light λ 415, the loss by reflection can be easily reckoned from the formula:

$$r_1 = \left(\frac{n_1 - 1}{n_1 + 1} \right)^2$$

which r_1 = the loss of a refracting surface with a refractive index of n_1 , when the incident light = 1. The residue of the light is obviously

$$1 - \left(\frac{n_1 - 1}{n_1 + 1} \right)^2 = \frac{4n_1}{(n_1 + 1)^2}$$

and, therefore, the loss by reflection from a second surface of refractive index n_2 is

$$r_2 = \left(\frac{n_2 - 1}{n_2 + 1} \right)^2 \cdot \frac{4n_1}{(n_1 + 1)^2}$$

neglecting the light which reaches the plate after repeated reflection from the surface of the lens, the amount of light which remains after the reflection from the second surface is

$$\begin{aligned} & \frac{4n_1}{(n_1 + 1)^2} - \frac{4n_1}{(n_1 + 1)^2} \cdot \left(\frac{n_2 - 1}{n_2 + 1} \right)^2 \\ &= \frac{4n_1}{(n_1 + 1)^2} \left\{ 1 - \left(\frac{n_2 - 1}{n_2 + 1} \right)^2 \right\} \\ &= \frac{4n_1}{(n_1 + 1)^2} \cdot \frac{4n_2}{(n_2 + 1)^2} \end{aligned}$$

the loss by reflection from one glass surface be calculated it will be found to be about 5 per cent., whilst at cemented surfaces is practically negligible.

In order to obtain a general comparison, the refractive index of all the glasses was assumed to be 1.58 for λ 415, and that there was no loss from the cemented surfaces, then reckoning the residue of light for x glass-air surfaces from

$$R = \left(\frac{4n}{(n + 1)^2} \right)^x$$

and for $n = 1.58$:—

$$R = \left(\frac{6.32}{6.66} \right)^x = 0.95x.$$

From this formula the following table was calculated:—

	Loss.	Efficiency.
	Per Cent.	Per Cent.
Single lens (2 glass-air surfaces).....	9.8	90.2
Double lens (4 glass-air surfaces).....	18.7	81.3
Triple lens (6 glass-air surfaces).....	26.7	73.3
Quadruple lens (8 glass-air surfaces).....	33.9	66.1

It will thus be seen that there is a difference of about 10 per cent. between each type.

If the absorption of light is taken into consideration, the above differences are considerably reduced.

According to Pfüger (Zeitsch. f. wiss. Phot. 1903, p. 141), the loss by absorption for λ 415 and 1 cm. of glass is for ordinary crown 1.8 per cent., for baryta crown 5.2 per cent., for baryta

flint 2.5-2.7 per cent. Herr Martin points out that these values were found by a thermopile, and therefore may not be absolutely accurate for the "actinic" rays.*

Now, considering that cemented objectives of five, six, eight, and ten lenses require much thicker masses of glass than the three or four thin uncemented lenses, the absorption must be greater; and if one considers that the loss of light from the surfaces cemented with yellow Canada balsam, with the three, four, six, and eight surfaces, cannot be neglected, then generally the uncemented lens system is only about 10 per cent. less effective than the cemented.

A Goerz double anastigmat Series III. F. 7.7 and a Busch Series III. F. 7.7 were compared, and both lenses being of 300 mm. focus, the following figures were obtained:—

I.

Goerz anastigmat F =	300	mm.
Loss by reflection, about	18.5	per cent.
Loss by absorption, about	14.1	per cent.
Total loss	32.6	per cent.
Efficiency	67.4	per cent.

II.

Busch anastigmat F. =	300	mm.
Loss by reflection, about	32.5	per cent.
Loss by absorption, about	4.7	per cent.
Total loss	37.2	per cent.
Efficiency	62.8	per cent.

Therefore, "efficiency" of the cemented anastigmat (I.) was only about 5 per cent. more than the uncemented anastigmat (II.).

MYCOLOGICAL PHOTOGRAPHY.

MUSHROOMS, toadstools, and other fungi are often so frail and inconspicuous that the world is apt to almost entirely ignore them. They are, however, so very important a feature in the vegetable kingdom that, as such, we cannot afford to let them die as nature often does, unpictured and unseen. The mushrooms and toadstools, as everyone knows, grow in meadows and pastures; some of the fungi on decaying trees; others on books and papers in damp places; more, again, on grasses and vegetables, which they destroy; and not a few on man, animals, and fish suffering with certain diseases.

John Boyd, in the current number of the "Photo Era," speaks at length of the photography of these fungi, and says: "I shall not here go into the microscopic varieties, but confine my remarks to some of those that come within the range of the ordinary camera; and it may be said, en passant, that we are assured there are over four thousand varieties that might be put under this head. The enthusiastic fungologist may appreciate the latter as a fact, but the most skilled camerist will not be likely to give the remark more than a passing thought—unless he wants a life task, and is ready to begin when he is yet in his 'teens.'

To the nature lover I would, however, point out some of the interesting developments that will open to him as he goes along, even when giving the subject only a casual study. There comes, first of all, a wealth of educational knowledge to be derived from the changes that take place in a fungus in a single night, and more if we choose to trace that particular species from its earliest

* Herr Martin appears to ignore the researches of Eder and Valenta on the absorption of colourless optical glasses, which proved that up to a 396 it was practically negligible, and also that the same experiments proved the absorption of Canada balsam in the visible spectrum to be negligible. *Trans.*

stage until it finally decays. Many of these changes are readily told by photography, but up to the present time no one has apparently had zeal enough to undertake their illustration. Only the mature specimens of a few of the best-known varieties have so far been impressed on the sensitive plate, and the figures we generally see are invariably the production of the artist in line and water-colours. This is not as it should be, and it can only be laid to the want of interest in the subject.

Let us for a moment look briefly at the growth of a mushroom, that we may better appreciate what we are going to perpetuate; and, in taking this single species, we can apply our remarks to the entire family.

A mushroom is a plant, and while so named, is entirely different from others of the vegetable kingdom, inasmuch as it does not possess chlorophyll, or the green colouring matter which is the chief characteristic of other vegetables, and therefore is incapable of converting inorganic into organic matter; hence it has to depend for its growth on the efforts of other plants. As it develops no flowers or seeds, its reproduction has to be accomplished by means of spores. These spores first assume the form of threads; these subsequently develop small round bodies, which grow larger until a stem is formed, when it finally forces the globular part above the surface of the ground. After this, the plants assume a variety of forms, such as cups, clubs, horns, cones, umbrellas, shells, faces, and spheres.

It is while passing through these phases that they can be followed day by day by the watchful and painstaking photographer, and their life histories told in a way the prose-writer cannot hope to impart it.

Owing to the wide habitat of the genus, we have to be on the lookout for specimens in all kinds of places, from the city pavement and damp cellar to the high tree-trunk of some forest monarch.

Mr. Boyd then describes various species of fungi and their peculiarities. He goes on to say: "We had now better leave the study of mycology and devote some time to the best means of photographing its various species. The tripod is such a particular part of our outfit that we should give it first place. For stumps, logs, and near the base of trees, our ordinary folding tripod will answer, providing it is rigid, and has sliding legs, as very often we have to set it up on uneven ground. For higher places we can raise the same tripod to almost any elevation by fastening three pieces of wood to the lower portion, but often this can be obviated if we have an attachment which fastens to the tripod head, and permits the camera to be elevated. In purchasing one of these, do not be deluded with any ball and socket contrivance which will not hold your camera firm when fully extended, and at right angles to the tripod. For the ground species we must resort to other means, as they have to be pictured at a low elevation. You can get good returns from making a miniature tripod about twelve inches in height, but the handiest and easiest prepared support is a piece of board 30 inches long, 6 inches wide, and $\frac{3}{4}$ inch thick, with several small holes bored along its length. To use it, you attach the camera to the board by your regular tripod screw at the most convenient hole, and elevate or raise the board with any handy thing, until you have it at the height you wish.

Any camera will answer, provided it has a good long draw of bellows, for it is needless to say we shall have to work very close to the object, though at times it may be found much more advisable to use the back combination of the lens, and take the picture from double the distance. This latter plan enables us to obtain better perspective drawing.

Of the plates to be used we have no doubt already satisfied ourselves that they must be orthochromatic, and those sensitive to the reds and yellows particularly are really what we need. A ray screen under certain conditions is also necessary, as we have violets and blues in some of our specimens, which

will call for special treatment. We have also seen how we have to deal with yellows of various tints, lilac, violet, greens, thus emphasising the use of colour-corrected plates. Back the plates with some good compound, unless you obtain the orthochromatics doubly coated, or already backed with a non-halation medium.

In picturing any of these fungi, whether they are growing on trees, logs, or on the ground, it is best to clear away extraneous objects from the field of view. I do not mean by this that you are to eliminate all traces of the surroundings as these are sometimes of as much value as the object you are picturing. To illustrate, suppose you have a Chanterelle at the base of a spruce tree; there is a lot of underbrush all around it, and, it may be, some forest plants also in the field of view. My idea is to remove such of these as give us, first, a complete view of the mushroom, then give of the remainder as detract from the primary object, leaving sufficient of the surroundings to show that the specimen grows in the thick woods, and that this particular one favours a spruce tree for its protector. Or again, we are portraying a Tricholoma. It is growing in a grassy place in the open woods; around it are the usual growths of ferns, wild flowers, and grasses. We should begin by clearing away all that is in front of it, and sufficiently back, to give it an individuality in the finished print, thus bringing its surroundings into view, but not in a dominant way.

In the foregoing I have spoken of giving an individuality to a specimen. This is accomplished in two ways, both of which should be worked in harmony. The first is to choose the proper lighting, and this is generally at right angles to the lens, slightly more to the front; the other is to use as large a stop as possible, and just sufficient to bring the principal object into good focus, and leave the balance of the surroundings to do for themselves, and at the same time assist the composition in an indefinite way.

If the work we are doing is to be doubly effective we should all our picturing to an adopted scale, so that in comparing specimens we can the more readily see the changes that take place day by day; and I know of no more interesting part of mycological photography than that which shows the abnormal changes in height and form which these plants undergo in a few hours. The term 'mushroom' growth is certainly no monomer, and the camera is the only means of actually proving the statement.

Of the exposures to be given, the developers and papers used, we might continue for pages and then not exhaust the information. Of the first, it is difficult to set up a rule that can be rigidly adhered to, because so many factors enter into it that do not confront the ordinary worker. The distance from the object, the confusing ground light, the colour of the specimens, and the size of the image are features that call for special reckoning, but for a starting-point one will be safe exposing from six to ten times that which would be given for group or portrait under similar light conditions.

Formulas for developers are everywhere, but the wise man usually adheres to that given by the maker of his plates. The latter has a big stake in your attaining the best results with his products, and you may be sure his chemist has experimented a great deal more than you will ever care to do, and knows what he recommends is what is best suited to the emulsion with which he has coated his plates.

Of the papers, the prince of all is carbon; though I must confess platinum for permanency and easy working is very suitable for black and sepia tones. Carbon tissues, however, can be had in colours to match so many of the species we meet, that if we choose to stand the extra work involved in the process we can certainly can produce gems of prints that are absolutely permanent."

AYLESFORD BRIDGE, KENT.

ERS of the picturesque and the beautiful, especially those who have intimate knowledge of Mid Kent (and, may we add, large numbers of photographers)—Eds. B.J.P.), will have heard with surprise and interest that designs for a new bridge, intended to replace the charming medieval structure which spans the Medway at Aylesford, near Maidstone, have already been accepted by the authorities. Unless (writes George Clinch in the "Times") some active measures of opposition are immediately taken it is to be feared that the ancient bridge, one of which are probably of the fifteenth century, will be entirely obliterated. Many of those who know Aylesford bridge and who are quite competent to form an opinion as to the necessities of the river navigation on one hand, and the traffic over the bridge on the other hand, believe that the removal of the existing bridge would be an unnecessary piece of destruction. They hold that a much more satisfactory scheme would be one which involved the making of a "cut" in the river for the purposes of navigation, and the strengthening of the old bridge by means of timber staging. The Society for the Protection of Ancient Buildings has, in fact, drawn up a scheme, which the following are the most important features. The new bridge in the river already mentioned would be commenced about 300 yds. above the bridge, and would run in a direction practically parallel with the line of railway. Over this cut, at a point nearly opposite the railway crossing, the new bridge would be built, with the existing bridge in continuation of it over the railway, thus superintending the dangerous level crossing. The road, approaching from the north, would commence to rise at the point where it joined that from the railway station, and would be carried on an embankment until it reached the railway, over which there would be a bridge in one span. The newly constructed channel or cut in the river would also be spanned by a bridge of one arch. The new raised roadway would be continued to the existing bridge, which might be widened for foot passenger traffic by means of timber staging. In this way the whole of the fine old bridge at Aylesford might be saved, whilst it would continue to be useful for future generations as it has for so many centuries already. As is well known, the Medway follows a beautifully irregular course, and the present bridge of Aylesford crosses it at the point where a rather sharp bend brings it near Aylesford Marsh. The proposed new channel, without in any way detracting from the picturesque character of this bend, would provide an almost straight reach, which would be of great value in assisting the passage of flood water, and, of course, would be a very great boon for the navigation of craft on the river. There are many other points in favour of this scheme, not the least being the possibility it would afford of an economically constructed bridge, because it is obvious that there would be no water to contend with, as the cut would be made before the new bridge was erected. But apart from considerations of sense, the loss of a picturesque structure like Aylesford bridge would be deplorable. Its old grey stones and its mediæval form entitle it to respect, and one feels very strongly that every scheme which offers the possibility of saving it should be carefully considered before it is adopted. The conservators of the river Medway and the other authorities concerned in this important question will have fulfilled their duties imperfectly if they do not give these schemes their fullest consideration.

DEPARTMENT STORE PHOTOGRAPHY.

DEPARTMENT store photography is not confined to America, and it tends to rouse the ire of German photographers as much as it does that of their American brethren. Like their American brethren, too, they, instead of trying to retain their trade by doing better than the others, attempted to enlist the Government into an appreciation of their grievance by asking the Minister of Commerce to make some kind of inquiry into the matter, but, of course, without success. The "American Amateur Photographer" observes that the State Association of German Photographers has determined to ascertain for itself what that it wanted to know, although with what object it would be hard to tell, and the following is the most important information obtained: Of the question sheets which were sent out to business houses, 49 with answers were returned from 18 towns, whilst of those sent to employees at the departments of stores 160 were returned answered. The 49 stores in question had in their photographic depart-

ments 309 employees, of whom 57 were operators, 85 retouchers, 63 printers, and 24 general assistants; 46 were employed as helpers, and there were 8 apprentices. The number of women engaged was 95. The average hours of work were 10, exclusive of breaks, and 8½, 9, and 9½ hours were only exceptional instances. The term of notice was generally a fortnight, and in only 10 to 12 cases was a month's notice usually given. Few fines were inflicted, and then only for lateness. The answer to the question, "How many portraits are taken daily?" was not answered with much exactness. As far as could be ascertained, about 735 portraits were taken daily in the 49 businesses, and the average for each would be 15. But the number of portraits taken in each studio is very different; for instance, one house in Berlin, on an average, takes 120 portraits daily, whilst in other small businesses only about 8 are taken. The minimum prices for cartes-de-visite and cabinets are 1s. 9d. to 1s. 11d. and 4s. 6d. to 4s. 9d. per dozen, respectively. The maximum prices vary considerably, and range from 6s. to 8s. for cartes-de-visites and 12s. to 18s. for cabinets. In a few establishments the receptionists are paid premiums for securing higher prices and large orders.

The average hours of work by assistants is nine, and the average salary said to be \$26.40 per month, but surely that must be to those boarding in the house. The closing sentence in the article from which we get the information is "This offers a splendid basis for further action"; but what action can be taken? The days of trade guilds are gone, never to return, and as has been already said in these "Words," photography is free, and always will be, "free for all."

FORTHCOMING EXHIBITIONS.

September 16 to November 5.—Photographic Salon, Dudley Gallery, Egyptian Hall, Piccadilly. Hon. Secretary, Reginald Craigie, Photographic Salon, 1904, Dudley Gallery, Piccadilly, London, W.

September 20-28.—Newbury Photographic Society. Hon. Secretary, E. J. Forster, Guildhall Club, Newbury.

September 22 to October 29.—Royal Photographic Society's Forty-ninth Exhibition; New Gallery, Regent Street, London. Secretary, A. W. W. Bartlett, 66, Russell Square, London, W.C.

September 29.—Beverly Photographic Society. Hon. Sec., T. J. Morley.

October 4.—Whitehaven Y.M.C.A. Zoar Photographic Exhibition. Hon. Sec., J. Hayward, 14, Albert Terrace, Whitehaven.

October 15-23.—Coatbridge Photographic Association. Hon. Sec., Geo. W. Campbell, Ailsa Cottage, Coatbridge, N.B.

October 18, 19, 20.—Kettering Church Institute Photographic Exhibition. Hon. Secretary, E. Claypole, 112, Hawthorn Road, Kettering.

October 19-20.—Isle of Wight Photographic Society. Hon. Sec., J. Howard Burgess, 53, Pyle Street, Newport, I.W.

October 19-22.—Rotherham Photographic Society. Hon. Sec., H. C. Hemmingway, Tooker Road, Rotherham.

October 26-28.—Watford Camera Club. Hon. Sec., H. G. Trayfoot, 3, The Parade, Watford.

November 2, 3, 4, 5.—Newark Photographic Exhibition. Secretary, L. C. B. Appleby, Barnbygate House, Newark.

November 2-23.—Plymouth. Hon. Sec. Photographic Section, Chas. R. Rowe, 2, Walnut Villas, Cockington, Torquay.

November 3.—Frome M.I. Photographic Society. Hon. Secretary, B. J. Mitchell, 3, Willow Vale, Frome.

November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Sec., James Dunlop, Myrtlebank, Motherwell.

November 9.—Hackney Photographic Society. Hon. Secretary, Walter Selfe, 70, Paragon Road, Hackney, London, N.E.

November 15-19.—Sunderland Camera Club. Hon. Sec., Selby-Ord, 52, Frederick Street, Sunderland.

November 17-18.—Braintree and Bocking Camera Club. Hon. Sec. W. H. Tilston, 81, High Street, Braintree, Essex.

November 17-19.—Darwen Photographic Association. Hon. Sec., J. G. Thomas.

November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.

November 22-23.—Ipswich Camera Club. Hon. Secretary, R. H. Sutton, 37, Honley Road, Ipswich.

November 23-26.—Hove Camera Club. Hon. Secretary, A. R. Sargeant, 55, The Drive, Hove.

November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., G. W. Simmers, Aberdeen House, Ramsgate.

November 25-26.—Ilford and District Photographic Society. Hon. Sec., W. N. Beal, 155, Thorold Road, Ilford.

November 26-December 3.—Glasgow Eastern Amateur Photographic Association. Secretaries, John Brough, 68, Dalmarnock Street, Park Head, Glasgow; and Geo. R. Johnstone, 591, Alexandra Parade, Dennistoun, Glasgow.

December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.

December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104, West 101st Street, New York.

December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.

December 12-17.—Sefton Park Photographic Society, Liverpool. Hon. Secretary, H. E. Cubery, 3, Langdale Road, Sefton Park, Liverpool.

December 13-20.—Southampton Camera Club. Hon. Secretary, S. G. Kimber, Oakdene, Highfield, Southampton.

December 23-31.—Wishaw Photographic Association. Hon. Secretary, Robert Teffer, 138, Glasgow Road, Wishaw.

January 12-14, 1905. Boston Camera Club. Hon. Sec., H. M. Hames, 65, West Street, Boston.

January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.

January 20-21, 1905.—South Essex Camera Club. Hon. Secretary, T. Michell, 180, Browning Road, Manor Road, E.

January 28-February 12, 1905.—Photographic Society of Marseilles. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.

February 6-11, 1905.—Blairgowrie and District Photographic Association. Hon. Secretary, Wm. D. M. Falconer, James Street Cottage, Blairgowrie.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

March 4-11, 1905.—South London Photographic Society. Hon. Sec., H. Creighton Beckett, 44, Edith Road, Peckham, S.E.

June, 1905.—Northern Photographic Exhibition. Secretary, F. G. Issot, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

September 30.—"Photographic News." Quarterly Competition. "Photographic News," 9, Cecil Court, Charing Cross Road, London, W.C.

October 1.—Thornton-Pickard. £100 cash prizes for pictures taken with Thornton-Pickard cameras and shutters. Thornton-Pickard Manufacturing Co., Altrincham.

October 10.—Luna paper. £240 cash prizes for prints on Luna paper. Lucien Allegre and Co., 59a, New Oxford Street, London, W.C.

October 15.—Belgian Association Lantern Slide Stereogram Competition. Secretary, M. Vanderkindere, 97, Avenue Brugmann, Brussels.

October 31.—Coxin. 68 prizes for users of Coxin. Judging twelve pictures. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.

November 1.—The "Graphic." £50 in cash prizes. Manager, Photo Competition, the "Graphic," Tallis Street, Whitefriars, London, E.C.

December 31.—Barnet. Nineteen classes. Prizes valued at £500

for lantern slides and prints made with Barnet products. Elford and Sons, Limited, Barnet, Herts.

March 15, 1905.—Ilford. £750 in cash prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Sept.	Name of Society.	Subject.
26.....	Ilford and District Photo. Soc.	Nomination of Officers, Appointment of Auditors. Open Night for the reading of papers submitted and not previously before the Association for the Henson Award.
27.....	London and Prov. Photo. Assoc.	Last day for sending in Prints "Holiday Competition."
30.....	Watford Photographic Society	Platinotype Printing for Beginners.
30.....	Wimbledon and Dis. C. Club	Mr. E. T. Holding.

CAPE TOWN PHOTOGRAPHIC SOCIETY.

THE annual general meeting of this society was held on August at the society's headquarters, Y.M.C.A. Buildings, Cape Town.

The acting secretary read the fourteenth annual report of society, and reported that the membership has risen from 156 November to over 200 in July. The event of the year has been Easter Exhibition, which was carried out on a scale never before attempted by any photographic society in South Africa, and shown a quality of work which easily surpassed all other attempts. The exhibition was opened by His Excellency the Governor, on Easter Monday, in the Government Art School; Queen Victoria Street kindly lent for that purpose by Dr. Muir, and remained open during the whole of Easter week. A striking feature of the exhibition the large collection of some of the best and most representative work from England, kindly loaned by the Royal Photographic Society, Great Britain, and the North Middlesex Photographic Society. competition was thrown open to societies outside South Africa, the result that pictures were received from Adelaide, Sydney, Boston and Philadelphia. In all 460 pictures were passed by the selection committee, of which 355 were from South African artists.

The society has this year been represented by two delegates at the Photographic Convention of the United Kingdom. They were Messrs. A. J. Fuller and J. P. Edwards. During the secretary's absence in England his duties have been carried on by Mr. G. Oakley. On looking over the amount of work successfully undertaken during the past year the society has much cause for congratulation, and the council feels that this achievement is largely due to the untiring zeal of their indefatigable secretary, Mr. A. J. Fuller.

The treasurer (Mr. E. C. Matson) presented to the members of society a most satisfactory balance sheet.

The election of office bearers for the coming year was then proceeded with, the following being elected: Patron, His Excellency the Governor, Sir Walter Hely-Hutchinson, G.C.M.G.; president, Sir David Gill, K.C.B., F.R.S.; vice-presidents, Mr. J. D. C. Wright, M.L.A., Rev. Wm. Forbes, Professor W. S. Logeman, E. Noaks; council, Messrs. J. P. Edwards, G. B. Kipps, E. Oakley, H. W. Schonegevel, F. M. Matson, J. A. Yallop, M. T. Quandt, and H. S. Jaeger; hon. lanternist, Mr. G. Ainslie; hon. treasurer, Mr. E. C. Matson; hon. secretary, Mr. A. J. Fuller.

A NEW Application of the X-rays. The latest aid to the identification of criminals in France is the X-rays. The head of the Radiographic Laboratory at the Salpêtrière Hospital, Paris, has collected 8,000 negatives of fractures and other internal and other outwardly invisible means of identification. The other hospitals of Paris probably contain twice as many more, and it has been suggested that these or similar records might be of the greatest utility, where indications fail to establish identity. It is even proposed that a system of preventive radiography should be enforced, every criminal being subjected to the X-rays as soon as arrested.

Commercial & Legal Intelligence

A RECEIVING order has been made in the matter of C. Lee, photographer, Bridge Street and Market Place, Heywood.

A WINDFALL for Creditors.—Good news for some Southport creditors is announced by the Liverpool Receiver. In 1886 the failure of Henry Sampson, a photographer of that town, with liabilities slightly over £2,000. Two dividends, amounting in all to 2s. in the pound were paid by the Official Receiver, and the matter rested there. Latterly the debtor benefited under the will of a relative, and he promptly deposited with the Official Receiver a sum sufficient to pay the remaining 18s. in the pound, with interest at 4 per cent. per annum for the period that has elapsed. The accumulated interest enables the creditors to receive not far short of 100 per cent. upon their debts.

A TRAVELLING Photographer in Trouble.—At the Borough Police Court, Oswestry, on Friday last, Albert Astley Hanlon, a travelling photographer, was charged by Mr. G. T. Belbin, photographer, Oswestry, with appropriating a case of photographs and two boxes of coupons to his own use. Prosecutor said on June 18 defendant came to his studio in Willow Street and asked for work as a photographer's assistant. He told him to call later, and he then engaged him as a canvasser for orders. He gave him a box of coupons and a case containing an enlargement of photographs, with instructions to canvass the town of Oswestry, and come back the same evening and report what business he had done. Since then defendant had not been in an appearance. He identified the case and the other things produced as his property, and valued them at £1 8s. P.C. Maddocks said he received a warrant for defendant's arrest on the previous day, and went to Shrewsbury, where he received him into custody from the Shrewsbury police. Superintendent Lewis said there were several similar cases pending against defendant in different towns in Wales. The Bench imposed a sentence of three weeks' hard labour.

ADVERTISING on the River.—H. P. Basset, a photographer, of High Street, Weybridge, was summoned last week at Staines, at the instance of the Thames Conservancy, for exhibiting an advertisement on a sailing punt, the same not being an advertisement or notice by the owner of such vessel having reference to his trade or business, contrary to the Thames Bye-laws, 1898, on August 13, at Shepperton. Mr. E. Glenshaw, who prosecuted for the Conservancy, stated that Bye-law 21 of the Thames Bye-laws of 1898 provided that no advertisement or advertising notice should be exhibited on any vessel in the river except that of the owner of the vessel, and which had reference to his trade or business. The expression "owner" in the Bye-law, under which proceedings were taken, was defined in the Bye-law as the "person whose name appears in the certificate of registration of such vessel." Defendant told the Court that he had been using the punt at Shepperton and Halliford Regatta, where he had been taking photographs. He had contravened the Bye-laws entirely in ignorance, but he had used the punt on other occasions in the river without being spoken to or cautioned by the Conservancy. The Chairman, to defendant: It appears from the Bye-law that all you have to do is to become the registered owner. Continuing, the Chairman added that he should be sorry to see the river become an advertising medium. Mr. J. C. Buckmaster: The advertising system is becoming a public nuisance in every direction. The summons was dismissed on defendant's paying the costs.

PHOTOGRAPHIC Industries, Limited.—After many weary weeks of stagnation in the company-promoting world a prospectus has at last appeared. The good news is brought from Ghent. Photographic Industries, Limited, is but a modest concern, in spite of its title. It proposes to acquire a certain freehold factory in Ghent, Belgium, and to carry on a photographic manufacturing business under the auspices of Dr. Findlay, whose patented and secret processes are also acquired. The factory, with appliances, is independently valued as a going concern at £13,350, and the purchase price for this and the processes is fixed at £28,500, of which £8,500 is payable in cash and £20,000 in Ordinary shares. These shares constitute the whole

of the ordinary capital, and the whole of the Preference shares, 30,000 of £1 each, are offered for subscription. They are entitled to a cumulative 7 per cent. and to one-third of the remaining profits after the Ordinary shares have received 7 per cent. The directors may proceed to allotment if £10,000 out of the £30,000 offered is subscribed, and the payment of an underwriting commission of 10 per cent. is authorised. The amount required to pay the 7 per cent. on the Preference shares is £2,100, and, though a chartered accountant estimates that this should be amply secured and more, the actual results of the past three years—during which, it is stated, the premises have been in course of construction and equipment—have amounted apparently to a profit of less than a thousand a year. Thus the affair seems distinctly speculative, depending entirely on development. One rather interesting item the prospectus contains is the statement that the company is in a good position in distributing its goods from the factory, as Ghent has the advantage over London of from 50 to 80 per cent. in carriage charges to such centres as Birmingham, Manchester, Liverpool, Leeds, and Glasgow.

RE Henry Carpenter, trading as Henry Carpenter and Co., 47, Orchard Street, Essex Road, Islington, and carrying on business at 14, Aldersgate Chambers, Goswell Road, E.C.—The public examination of this debtor came on for hearing at the London Bankruptcy Court on Tuesday last, before Mr. Registrar Giffard. The statement of affairs filed by the debtor disclosed unsecured liabilities amounting to £983 11s. 8d., and assets £9 12s. 10d., thus leaving a deficiency of £973 18s. 10d. It appeared that the bankrupt was a manufacturers' agent, and commenced business with a capital of about £300 of his own. His business was a failure from the start owing to a strike and to bad buying by his traveller, also to bad debts. In the beginning of 1903 he became acquainted with Joseph Bartnack, of 57, Crouch End Hill, and Bristol and Norwich, dealer in photographs, picture frames, etc. He told debtor that he was doing a large business in the provinces by taking orders from time to time for enlargements of photographs, in consideration of the owners giving orders for frames. He told debtor that his money was locked up in the business, and that he wanted more capital. He subsequently entered into a verbal arrangement with Bartnack, under which he agreed to find the money necessary for carrying on the business, in consideration of his receiving half-share of the profits. This arrangement continued down to the date of the receiving order. After a few months trading the shop at Crouch End Hill was closed, and the stock was removed to debtor's premises in Aldersgate, the London branch of the business being worked from there. All debts in connection with the business were incurred in Bartnack's name, and the business was carried on in his name only. As far as he knew no intimation was given to the creditors that he was a partner. One of Bartnack's creditors—viz., the British Art Co., of Essex Road, Islington—sued debtor for goods supplied to this business, but it was held by the Court that he was not liable. He put about £250 into that business and drew out about £50. When the execution was levied on his premises there were a large number of enlarged photos ready for framing, but they had not been paid for by their owners, or at all events the frames had not been paid for, as the owners generally paid for them by instalments. A deposit had been received in each case, and in many instances further instalments had been received. He had the names of the persons who had paid money in most cases, but in some cases he did not know the names of the customers, as they had a numbered card, and in those cases the number of the card only was entered in the books. He had not seen Bartnack for about three months, but he had heard that he had gone to South Africa. He carried on the business in the name of the Venus Art Studio Company, which style had been adopted prior to his joining the firm. He could not say whether that was the style of the firm in Bristol and Norwich. There was no banking account in respect of that business. Bartnack attended to the collectors in Bristol and Norwich. He used to go down and see them periodically. Neither debtor's name nor his address appeared on the order forms signed by the customers. He had not scheduled any of Bartnack's debts in his statement of affairs, as he did not think he was liable for them. Eventually, upon the application of the Official Receiver, the examination was ordered to be adjourned until November 11.

News and Notes.

A MEETING of the Liverpool branch of the P.P.A. will be held on Friday next, September 30.

TORBAY Camera Society held a meeting at Wellswood Hall, Torquay, on Wednesday last, when a lecture on "Competition for Photographers" was delivered by Mr. A. U. Searly, of Kingskerswell.

We are sorry to learn of the death of Mrs. Ashby, wife of Mr. J. T. Ashby, F.R.P.S., the well-known photographic writer and judge. Our sympathies are extended towards our bereaved friend and his family.

THE Austin-Edwards Monthly Film Negative Competition.—The prize camera for current month has been awarded to Albert Haynes, Esq., London Road, Alderley Edge, for his negative, "Gamekeeper's Cottage."

THE Wimbledon and District Camera Club has moved into fresh quarters. The new address is The Rembrandt Studio, 6A, Hill Road, and the Hon. Secretary is J. Munro, Erskine Villa, 96, Richmond Road, Wimbledon, S.W.

BEARD'S Animated Photographs.—Mr. R. R. Beard, of 10, Trafalgar Road, Old Kent Road, London, S.E., sends us a little pamphlet which deals briefly with the subject of animated photography. The prices of exhibitions are included.

MR. E. A. LEBLANC, of the Photo Agence, 48, Avenue Montaigne (Champs Elysées), Paris, informs us that he has opened an office and dark room for the use of visitors, where all information can be had gratis. Plates and films may also be obtained for the Frena and Zambex cameras.

PLYMOUTH Photographic Society's Outing.—About thirty members of the Plymouth Photographic Society held an outing to the Cheesewring on Wednesday last. A visit was paid to the historic well and Church of St. Cleer. The weather was unfavourable for photographing, though it did not altogether mar the enjoyment of the visitors.

THE annual general meeting of the members of the Luton Camera Club was held at Franklin's Restaurant, Luton, on Monday evening last. The report presented by the secretary was a very satisfactory one, showing that considerable progress had been made during the past year, the membership having gone up from forty-five to about a hundred.

THE Boston Camera Club is holding an exhibition on January 12, 13, and 14, 1905, and the School of Art Rooms have been placed at the disposal of the club for the purpose, by the kindness of the School of Art committee. There will be open as well as club classes. Particulars and entry forms will be obtainable in due course from the hon. secretary, H. M. Hames, 65, West Street, Boston.

SOUTHAMPTON Camera Club.—On the 19th inst. the members of this club held their last meeting of the summer programme, when Mr. F. C. Wardell (representing Carl Zeiss) gave a very instructive lecture and demonstration entitled, "Some New Photographic Optical Instruments." We understand an attractive and instructive programme is about to be issued by this club for the winter months.

THE catalogue of the Royal Photographic Society's Exhibition at the New Gallery is a very fine production, and its production reflects unbounded credit on the Secretary, Mr. A. W. W. Bartlett. The half-tone illustrations are from blocks by The Meisenbach Co., Ltd., West Norwood, and the printing thereof by Harrison and Sons, printers in ordinary to His Majesty, St. Martin's Lane, London, W.C.

CRIPPLEGATE Photographic Society.—This society held their sixth annual general meeting on Monday, September 12, at Cripplegate Institute, Golden Lane, E.C., and we are glad to hear that excellent progress is still being made. The membership has increased so rapidly

of late that it has been found necessary to get increased accommodation, and henceforth the meetings will be held in one of the comfortable halls of the Institute. Mr. G. H. Depledge vacates the secretaryship, the duties being taken over by Mr. J. B. Parnham, 5, Reighton Road, Upper Clapton, N.E., who will be pleased to send particulars of membership to any gentlemen wishing to join.

THE Prospectus and Entry Form of the Sunderland Camera Club Third Annual Exhibition has been sent us. We note that there are six open classes, and that plaques specially designed by R. J. Bertram, of Newcastle-on-Tyne, are placed at the disposal of the judges, Rev. F. C. Lambert and F. M. Sutcliffe. The last day for entries is October 29, and full particulars are obtainable from the Hon. Sec., Selby Ord, 52, Frederick Street, Sunderland.

A NOVEL advertising scheme has been instituted by the "Daily Mirror." From time to time they will publish the photograph of a house, and if the tenant recognises the picture and applies to them they will forward a prize of two guineas. In the course of the next week or ten days the "Daily Mirror" photographers will be at work taking photographs of a number of houses in Romford, Chelmsford, Colchester, Southend, Clacton, and Ipswich. A score or more photographs will be taken in each town from which one will be selected at random.

THE First Photographic Portrait.—According to "T. A. T.," the first person to be photographed in England was the present Lord Avebury (Sir John Lubbock). Daguerre, it is stated, paid a visit to London to patent his invention, and on meeting Lord Avebury's father and explaining his new discovery, the youthful Lubbock was summoned into the garden and posed for the purpose of the first photographic demonstration. Unfortunately, there is no record of the exposure given. In the case of the first person photographed in America, Miss Dolly Draper, it is on record that half an hour's exposure was given. This portrait, which still survives, is a credit to the imperturbability of the lady, for she has managed to preserve an almost pleasant expression.

FORBIDDEN Photographs.—The German Government has prohibited the sales of the various photographs depicting scenes in connection with the betrothal of the Crown Prince and the Duchess Cecile of Mecklenburg-Schwerin, and there has been, in consequence, a great rush to secure them as curiosities and for speculative purposes. The photograph showing the newly-engaged couple receiving the congratulations of school children is particularly asked for, and the one in which the Crown Prince wears a weird Panama hat and clutches the Duchess's arm will doubtless be valuable in course of time. When the Kaiser was merely Prince William of Prussia the sale of similar photographs of like scenes was prohibited.

At the exhibition of the Thirty-third Congress of the German Photographic Union, the highest honour, viz., silver medal, was awarded to the photographic specialities of the Bayer Company, Limited, of 20, Booth Street, Mosley Street, Manchester. These included edinol, acetone sulphite, Bayer's flashlight, Bayer's fixing salt, Bayer's intensifier, Bayer's red varnish, Bayer's fixing-salt destroyer, Bayer's premier combination gold salts, Bayer's combined toning and fixing salt, and Bayer's gum, and also to their papers, viz., Pan, Tula, St. Luke's, Bromide, Aristo, Lactarine, and transfer paper. A number of artistic photographs on Pan paper were shown at the same exhibition, amongst which those by Oskar Trinkler, of Jena, also obtained high honours.

At the Private View of the Salon on Thursday of last week a large crowd of members and friends of the "Linked Ring" and other exhibitors were present, including H. Snowden Ward, A. Stieglitz, Alvin Langdon Coburn, Reginald Cragie (hon. sec.), J. C. S. Mumery, Hector Maclean, Frank Evans, A. W. W. Bartlett, Dr. Evershed, Miss Donaldson, Furley Lewis, R. Child Bayley, Thomas Bedding, P. R. Salmon, Miss Marion Silverston, Rev. F. C. Lambert, Ward Muir, F. J. Mortimer, Will Cadby, Mrs. Carine Cadby, George Scammel, A. Horsley Hinton, Mr. and Mrs. F. E. Mills, W. Benington, J. Packham, P. Wright, E. H. Carpenter, George Davison, M.

Southnot, Miss Constance Ellis, Miss Kate Smith, W. J. Clutterbuck, M. A. Cromack, Rev. E. G. Watts and Charles Moss.

The following are the awards in the recent exhibition of the Cambridge Camera Club, which appears to have been a completely successful venture:—Class I.—Architecture: Silver medal, Rev. H. R. Campion; bronze medal, Mr. T. J. Sowdon; highly commended, Mr. S. Orlebar; commended, Mr. S. J. Parson. Class II.—Portraiture: Figure Studies: Silver medal, Mrs. Addison; bronze medal, Mr. Johnso Smith; commended, Mr. A. S. Orlebar. Class III.—Landscape and Seascape: Silver medal, no award; bronze medal, Mr. C. Squires; highly commended, Miss Pope. Class IV.—No award. Class V.—Still Life and Flowers.—Bronze medal, Mr. W. Farren; highly commended, Mr. H. W. Chapman. Smith Challenge Cup: Mr. H. R. Campion. Class VI.—Lantern Slides: Medal, Mr. W. Green. Class VII.—Open: Gold medal, W. Claydon, Plymouth; silver medal, D. W. Kyle, Glasgow; bronze medal, S. G. Kimber, Southampton; highly commended, P. W. Crane, Heanoe; commended, G. Kimber, Southampton.

WARRINGTON Photographic Society.—The annual general meeting of this society was held at the Old Academy, Warrington, on Tuesday evening last. The secretary's report showed that the past season had been highly successful in every way, and the membership also showed satisfactory increase. The treasurer's balance-sheet was presented, the financial position being a balance on the year's working of £11s. 7½d. compared with a deficit the previous year of £8 6s. 5d. was resolved to ask Mr. Roger C. Parr to accept the office of president. The vice-presidents elected were:—Alderman Bennett, Messrs. E. J. Hall, J. Harding, F. V. L. Mahias, and W. Winstanley. Mr. Smithson was elected hon. sec. The following were elected for their respective offices:—Hon. treasurer, Mr. F. Garlick; hon. lanternist, Mr. H. Warburton; hon. assistant-lanternist, Mr. J. V. Moore; hon. auditor, Mr. P. Dalton. For the committee the following:—Messrs. F. W. Purse, G. Nicholls, D. S. Birrell, Mrs. C. Smithson, and Messrs. Bishop and Dolan.

MISSIONARY Cinematograph.—The cinematograph is to be employed by the Church Missionary Society in order to create further interest in this country in missionary work in India. According to the "Daily Chronicle" a skilled operator is leaving for a five months' tour in India, under the conductorship of a leading missionary. He will carry with him 10,000 feet of films and 250 photographic plates, which will be forwarded to England for development. Some of the results will be ready for exhibition in London next January, and afterwards the leading provincial towns. The scenes will be typical of life in India, and there will be no "staging" whatever. As showing the old India, and heathenism still has upon the people, pictures will be taken of Parsees worshipping the sun from the seashore in the early morning, and of Parsee funerals showing the vultures waiting to pounce down upon the bodies. Examples of native self-torture will be illustrated, as, for instance, a native hanging head downwards from a tree and swinging himself over a fire. Other pictures will show superstitious priests carrying brooms to sweep away insects from their path; children prostrating themselves before shrines; and multitudes bathing in the Ganges. By way of contrast all the leading features of missionary work will be depicted.

TRAINING for the Printing Craft.—The tenth session of the London County Council School of Photo-Engraving and Lithography, 6, Bolt Court, Fleet Street, E.C., will commence on Monday, September 26. The school is open to those who are genuinely engaged in business in any branch of the photo-mechanical, photographic, designing, illustrating, lithographic, engraving, and printing crafts, and no provision whatever is made for amateurs. The courses of practical instruction are arranged to suit the following craftsmen:—Photo-engravers: Line and screen negative making, etching, proving, tricolour work; photo-lithography and preparation of originals for reproduction. Photo-lithographers: Negative making, photo-lithography, collotype (plate preparation, press and machine work), combinations of lithography and collotype. Photographers: Line and continuous tone negative making, printing, enlarging, transparency making. Lithographers: Lithography, map and plan drawing, transfer writing, drawing, design, lettering, photo-lithography. Designers: Design drawing, lithography. Draughtsmen: Drawing, design, lettering; pictorial com-

position. The school is well equipped with the necessary appliances for study and practical work. It contains large studios for life and elementary drawing, design rooms, lithographic studio, lithographic press room, photographic studio with electric light installation, dark rooms, collotype preparation, and printing room (with three presses), etching rooms, lecture rooms, etc. Only those engaged in the trade are admitted. The inclusive fees for the session are low. Trade apprentices, learners, and improvers (under twenty-one) are admitted free.

THE lantern lectures to be given in the North Room at the New Gallery, Regent Street, during the period of the R.P.S. Exhibition are as follows:—Thursday, September 22, the Affiliation Competition Slides, 1903 and 1904 sets; Saturday, September 24, "A Popular Talk on Colour Photography," with lantern illustrations, by T. K. Grant; Monday, September 26, "Lantern Views of Athens, its Monuments and Palaces," by A. L. Henderson; Thursday, September 29, "Cathedral Outlines and Sky Lines," by E. W. Harvey Piper; Saturday, October 1, "Photographic Studies of Marine Life," by F. Martin Duncan; Monday, October 3, "Submarine Boats, Past and Present" by Alan H. Burgoyne, F.R.G.S.; Thursday, October 6, "The Sculptures of Chartres Cathedral," by Ernest Marriage, F.R.P.S.; Saturday, October 8, Slides by Members of the North Middlesex Photographic Society; Monday, October 10, "A Popular Talk on Colour Photography" with lantern illustrations, by T. K. Grant; Thursday, October 13, "Marine Photography," by F. J. Mortimer; Saturday, October 15, "Morocco," by John H. Avery; Monday, October 17, "Camera Pictures from Balloons and Airships," by Miss Bacon; Thursday, October 20, "Northumbrian Rambles," by George Lamley, F.R.P.S.; Saturday, October 22, "Unfrequented Cities of Southern Italy, Ancona, Ascoli, Trani, Bari, Bitonto, Ruvo, Giovenazzo, Conza, Barletta, Foggia, Manfredonia, Troia, Milfi, Muro, Paestum, Salerno, Cetara, Capo d'Orso, Amalfi, Atrani, Ravello, Monastery of La Cava, Naples—Bronzes and Statuary in Museum—Pozzuoli, Benevento, Caserta, Caserta Vecchio, Capua, Sessa Aurunca, Savona, St. Gilles, Arles, Avignon," by J. Cooper Ashton; Monday, October 24, to be announced; Thursday, October 27, "A Popular Talk on Colour Photography," with lantern illustrations, by T. K. Grant; Saturday, October 29, "The Engadine and Lucerne," by Samuel J. Beckett, F.R.P.S. The lectures will commence at 8 p.m.

BATTERSEA Polytechnic.—The evening classes of this institution commence on September 26. Photography will be dealt with by Mr. E. Senior. The photographic department contains a large studio, fitted with Joel arc lamp and reflector, for photographic work at night; two commodious dark rooms lit with electric lanterns, and fitted up with every convenience for work. The equipment includes an 8½ by 8½ studio camera and lens, a 10 by 8-copying camera fitted with Zeiss lens, an electric light enlarging apparatus with 10 inch condenser, a complete set of carbon and platinotype printing apparatus, and a special camera for lantern slide making, so that ample provision exists for practical work. The classes are primarily intended for trade students, but others are admitted upon payment of higher fees. Students will be provided with necessary chemicals and apparatus free of cost, but must provide their own plates, sensitive paper, etc. Syllabus.—Elementary: Lectures on principles of photography; the camera and detached parts; the dark room and fittings; use of camera; plates; exposure; lenses; developers; defects; intensifiers, printing and toning; practical work in dark rooms and instruction in taking and copying with electric light. Advanced lectures: The studio; portraiture; lighting the model; use of screens; diffusers, etc.; the dark room; exposure; development; intensifying and reducing; the construction and use of photographic lenses; preparation and use of colour screens for isochromatic photography; shutters; orthochromatic and three-colour photography; photography in colours; cameras; landscapes; printing in silver, carbon, and platinum; printing in clouds, etc.; toning and fixing; retouching and spotting; elementary photographic chemistry; enlarging. Practical classes: Instruction will be given in negative making, contact printing on bromide paper, silver and platinum printing, general studio work, and lantern slide making; wet collodion process; single and double transfer carbon printing; artigue printing; and in the use of Dr. Albert's orthochromatic collodion emulsion. A special class in enlarging will be held on Tuesdays, 8.30 to 10.

Correspondence.

- * * * *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given*
- * * * *We do not undertake responsibility for the opinions expressed by our correspondents.*

INVITATION SITTINGS.

To the Editors.

Gentlemen,—I feel sure the consistent and moderately-expressed opposition of the JOURNAL to invitation work earns the grateful appreciation of the majority of professionals, who will also regret to see the reasonableness of your comments on this matter called in question.

Photographers who invite are at this moment doing their level best to score off those who will not, and no one can be blind to the irritation and distrust which is being engendered, not only in the Press, but among professionals themselves.

If copyright is only to be gained by this miserable, petty appeal to the cupidity of one's sitters, then the less we have of it the better for the business morality of photographers. It is over and over again made the excuse for mean and underhand attacks upon photographers of higher skill, by men who have neither faith in themselves nor respect for their work. These are the fellows who are damning the future of professional photography, who, both in high places among us and in low, are preaching the gospel of cowardice and "free sittings."

Apparently it requires more courage nowadays to ask payment for one's services than in the days gone by; it is also probably easier to learn the tricks of a lower commercialism than to master the difficulties of lighting and posing in the studio, and do business on an established reputation. But no one works on "free sitting" lines without exerting a decadent influence upon the future of professional photography, and your comments, gentlemen, are kindly directed against the common enemy.—Yours very truly,

T. C. TURNER.

Regent House, Hull,
September 18, 1904.

THE FUTURE OF PROFESSIONAL PHOTOGRAPHY.

To the Editors.

Gentlemen,—With your kind permission, I should like to state a few facts on the above subject. I fully endorse all your correspondent "Operator" says in your last issue, but he states the case too mildly when he insinuates that double dealing, meanness, and lack of business principles are to be found in the professional ranks; it is not only all this, but in some cases that have come to my notice the employers know practically nothing of photography or photographic processes themselves.

I do not wish to be a fault-finder, or I could mention several cases where specimens have been retained by the advertiser over a week, and then returned insufficiently packed, so that the prints were injured; but there is one case in particular I wish to bring to your notice. Specimens were sent with an application for the situation; within a week, as no reply was received, a letter followed, asking for the return of specimens; still no reply; two other letters were then sent at different dates, with a like result. Several weeks elapsed, when my friend the assistant happening to be in the town, called at the address and asked if they had received his specimens, and the repeated inquiries respecting the same. He was told that they had received something of the kind from some one, but they could not trouble to return specimens, and when asked why they did not write for stamps for return if they required them, he was told that the specimens were trash not worth the trouble of returning or writing about, and that he never would have had them if he had not called. I have not related half that passed at that interview; the gentleman in question was most insulting to my friend, and, respecting the specimens, they were infinitely better than any work I have ever seen in the window of this would-be employer.

Regarding the incompetent assistant. In many instances the

apprentice is kept to silver printing or some other equally elementary branch, wherein after a few weeks he is competent, over two of his three years apprenticeship (I am quoting facts). Of course, it saves the wages of a silver printer; but how is the apprentice to learn all he requires to know about plat, carbon and bromide printing, studio work, the making of negatives, retouching in nine or ten months? We know, in the words of the principal of one eminent firm, "the chief thing is to be grounded, one must have a good foundation," but in my opinion this is carrying things a little too far. It makes no difference a large and high-class firm how many incompetent assistants turn out; they know whom they have educated in things photographic, and they take good care not to employ them. After serving his time, the assistant is politely told they will give him 7s. a week as an improver, a sum they know he cannot possibly accept; therefore he is turned out into the professional world to be a nuisance to all photographers until he has gained sufficient knowledge to serve him at some good-middle-class business, or he takes a printer's place on a paltry 25s., unless there is an unusual amount of "grit" in him, when he will rise in the manner above stated there is no other way.

I could write of several circumstances with which I have personally been connected, but I will not intrude further on your valuable space, save to mention that there was, not many months since, a firm who were executing a "20 by 16 enlargement and cabinets, beautifully mounted and finished, for the ridiculous sum of 5s. 6d." They were, I was told, members of the Professional Photographers' Association. There is only one thing to be deduced from this; I hope it is clear to all my readers.

If I have unconsciously offered offence I ask those whom I have wronged to accept my sincere apologies. My intent is not to create discord but to show things in their true light, and to bring a state of harmony, if possible, between employer and employed.

Thanking you, gentlemen, in anticipation of insertion,—I am, yours sincerely,

ANOTHER OPERATOR.

September 19, 1904.

THE "STEADMAN" EXPOSURE SYSTEM.

To the Editors.

Gentlemen,—It seems from Mr. Steadman's letter that it is subject table "which is the new arrangement in the system," it is here, I am afraid, that Mr. Steadman has gone most wrong. Because Nature continually presents different types of subjects, the lens, it no more follows that each subject will require a different exposure (or diaphragm) than that it will require a different camera, a different lens, or a different developer. To quote an old long quip, it is not necessary that "who drives fat oxen should himself be fat."

If Mr. Steadman's text book is to be "acceptable to mathematicians and physicists," it must be based on up-to-date researches on light action on a plate, and these all tend to show that one type of exposure may be absolutely and scientifically correct for all types of Mr. Steadman's classifications of bird's-eye, middle distance, foreground, when represented on one plate, provided that the exposure is a good one with a long "correct exposure range."

The object of considering subject classification at all is simply to ensure that all the subject tones come within the range of tones which can be represented by the plate; and the greater latitude of the plate the wider becomes the group of subjects which may be included in one simple classification.

After all, the majority of photographs taken represent a group of subjects, which, if considered separately on the lines Mr. Steadman proposes, would require different exposures (or different diaphragms) and yet we know that when of necessity we give one exposure for all these varying subjects on the plate, that one exposure may prove correct for all.

If we follow out the idea that to attain accuracy different exposures are required for even slightly varying types of subjects, we shall arrive at the conclusion that each tone on the plate ought to receive a different lens exposure.

The fact is that we are still under the influence of the old exposure table subject classification, which the use of an actinometer would

have swept away. I did not shake myself quite clear of this
 in my earlier work, and Mr. Steadman is deep in it.—I am,
 yours, etc.,
 ALFRED WATKINS.
 Hereford, September 17, 1904.

ANIMATED PHOTOGRAPHY.

To the Editors.

Gentlemen,—Referring to the article "Revival of the Optical
 lantern" in your current week's issue, may I be allowed a small
 corner of your valuable space? Firstly, I join issue with your
 statement that the cinematograph has found its final place as a
 music hall edition of the daily papers. That it is capable of giving
 vivid representation of current events to thousands who could not
 possibly be present at the actual scenes goes without saying. The
 implied in your expression of "filling a turn at a theatre of
 varieties or a travelling fair temporarily located in a country hamlet"
 in my opinion, unworthy of a journal which devotes itself to
 photography.

Possibly one of the reasons why animated photography is so
 much more successful than the haphazard snap-shots of the ordinary
 photographer (from which, presumably, your lantern lecture slides
 are to be drawn) is due to the fact that the popular quarter-plate
 costs the nimble penny, and one penny more or less does not
 count much. But take the case of the man taking animated photog-
 raphs. He requires a most expensive plant and really expert
 assistants for producing his pictures, entirely apart from the actual
 cost of the material he uses (there are many cases that have come
 within my own knowledge where a picture has cost from £100 to £200
 to produce, and some special pictures have even cost five or six
 times as much as that), consequently more thought and care is
 expended over the production of these animated pictures than the
 ordinary photographer would dream of devoting to his most cherished
 productions. A smudge here, a smear there, and heigh, presto! you
 have an artistic production which will possibly be raved about
 because "it does not look a bit like a photograph."

But to return to my point as to the final resting-place of animated
 photography. Personally, I regard it as only in its infancy—there
 are possibilities in it from an educational point of view that are
 undreamed of. Take as an example a picture now showing at
 the Palace Theatre illustrating the production of steel. Here you
 have scenes in some steel works of which the ordinary man could
 have no conception unless he lived in the "Black Country." Again,
 there are many pictures being daily shown illustrating our different
 industries, from the launching of a huge ship on the one hand to
 the minor industries, such as hop-picking or strawberry-gathering.
 But the eye is an infinitely better medium for permanently im-
 pressing the brain than the ear there can be no two opinions about.
 Scenes and things that we saw years and years ago remain impressed
 on the brain long after the names of the places or things are
 forgotten; and teachers are more and more coming to use object
 lessons as the best method of impressing the youthful mind.

That animated photography suffers at present from its costliness
 and the risk attached to the use of such inflammable material as
 celluloid I willingly admit; but there are many minds and hands
 actively engaged in the endeavour to remedy both these defects,
 and when an unflammable film at a reasonable price is placed on
 the market there will be such a boom in living pictures that will
 eclipse anything that has preceded it in the annals of photography.

There is just one personal matter I should like to refer to, if you
 can spare me a little more space. As you are aware, although I
 was the pioneer of animated photography, at least in England, I
 have long since discontinued taking these pictures, contenting myself
 with the manufacture of the sensitive films on which others take the
 photographs; but I object to the Messrs. Lumière always being
 given credit for first showing these pictures in England. I photo-
 graphed and exhibited the Oxford and Cambridge boat race and the
 English Derby months before Messrs. Lumière published anything
 of their work, even in France, and a reference to the files of your
 own and other photographic papers will prove that the first animated
 photographs, as they are understood to-day, were taken by me and
 exhibited by me at the Royal Photographic Society, causing con-

siderable sensation at one of the meetings of that eminently staid
 society.—Apologising for the length of this communication, I am,
 yours faithfully,
 BIRT ACRES.

Whetstone Photographic Works, Whetstone, N.,
 September 19, 1904.

[At the conclusion of an article on Animated Photography in our
 Almanac for 1898 we wrote that it appeared to us this branch of
 photography was "destined to have something more than a transient
 existence, and that as an adjunct to the optical lantern, as a means of
 preserving records of scenes and occurrences, and for scientific and
 entertaining purposes we have only just commenced to tap its possi-
 bilities," so that Mr. Birt Acres and ourselves saw eye to eye on this
 point six years ago; and still do so. But, to be frank, we do not
 think, as the result of considerable observation, that the educational
 mission of the cinematograph excites much general interest. If it had
 to rely solely upon the depiction of industrial subjects it would at once
 pass into the realm of such scientific instruments as the microscope
 and the telescope. Mr. Birt Acres has not read our article aright.
 The "sneer" at the cinematograph was unintentional; will Mr. Acres
 deny that the variety theatre and the travelling show are the best
 customers for films? There can be no harm in stating a fact of this
 nature. We have not the slightest desire to deprecate animated photo-
 graphy; but we do wish to see the good lantern lecture revived, be-
 cause we think that the contemplation of a projected glass
 transparency accompanied by lucid oral comment and explanation a
 better method of impressing the brain than appealing to the eye alone.
 Which does Mr. Birt Acres prefer—"Hamlet" in dumb show—or
 acted and spoken by accomplished performers? There can, of course, be
 no doubt as to most people's choice. We are sorry our correspondent
 raises the priority question, and we do not decline the implied
 challenge. The Lumières showed animated photographs in Paris on
 July 11, 1895; Mr. Birt Acres's results were shown at the Royal
 Photographic Society on January 14, 1896. It is a small matter after
 all. Lumière's animated photographs were the first of the kind which
 we saw publicly exhibited in this country, and there surely can be no
 harm in our stating the fact.—EDS. B.J.P.]

THE GOLDSMITH INSTITUTE CAMERA CLUB.

To the Editors.

Gentlemen,—Mr. Downey, in his note announcing the demise of
 the Goldsmiths' Institute Camera Club, may give the impression
 that the technical classes for photography are also stopped; such is
 not the case, as the whole of the technical classes previously carried
 on by the Goldsmiths' Company are continued as before; the social
 side of the institute alone being suspended, with all the clubs belong-
 ing to that side.—Yours faithfully,
 NEMO.

Patent News.

THE following applications for patents were made between Septem-
 ber 5 and September 10, 1904:—

Mounting prints.—No. 19,097. "An improved method of mounting
 and protecting stamps, photographs, prints, and the like." Charles
 Ashby and Charles Egbert Ashby.

Developing apparatus.—No. 19,164. "Apparatus for introducing
 developing, washing, and fixing photographic plates, films, or
 sensitised surfaces without the use of a dark room." Hans
 Tirmann and Hugo Tirmann.

Dark slides.—No. 19,264. "Improvements in or relating to cassettes
 or dark slides for photographic cameras." Rudolph Krugener.

Shutters.—No. 19,380. "Improvements in photographic camera
 shutters." Julius Rudolph Hief.

Panoramic cameras.—No. 19,427. "Improvements in panoramic
 photographic cameras." John Boulton Brooks.

Cameras.—No. 19,511. "Improvements in photographic cameras for
 producing multiple photographs upon a photographic plate." William
 Tylar.

Changing device.—No. 19,570. "Changing device for photographic
 plates." Complete specification. Paul von Garainow-Trautten-
 berg and Max Leopold Fabian.

Answers to Correspondents.

- ** All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.**
- ** Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.**
- ** Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.**
- ** For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.**

PHOTOGRAPHS REGISTERED:—

- J. Clapperton, 23, Albert Place, Galashiels. *Photograph of Celtic Font.*
 J. Harris, 56, Cromwell Road, Bishopstone, Bristol. *Photograph of the Bristol City Football Team, 1904-5.*
 J. Hargreaves, Union Street, Dalton-in-Furness. *Photograph of the late Rev. H. Hayman, D.D.*
 F. J. R. Macfadyen 151, Barras Bridge, Newcastle-on-Tyne. *Photograph of Figures in Reredos of Newcastle Cathedral.*
 P. M. Clark, Victoria Falls, Rhodesia. *Nine Photographs of Views of the Victoria Falls. Photograph of the Bend in the Gorge. Photograph taken amongst the Islands, Zambesi River. Photograph of a Boabab Tree. Photograph of Hippopotamus in the River Zambesi. Photograph entitled "In the Wash." Photograph of a Sylvan Scene. Photograph, Crossing the Gorge in Bucket. Photograph overlooking Palm Forest and Knife Edge.*

E. J. HEDGECOCK.—Probably "Dekko" paper, supplied by Kodak, Limited.

A. B.—We are sorry we cannot give you any information as to the firm named.

P. W. (Glasgow).—We presume you refer to paper negatives. Paper for the purpose may be obtained of any dealer. We do not undertake to answer letters by post.

JAMES WOOLLEY AND SONS and T. EVERITT INNES.—The preparation referred to is an American equivalent of the English Megilp, sold by all artists' colourman.

T. J. HANDS.—We did not retain the address of the writer, so cannot supply you with it. If you advertise what you desire to dispose of in our pages, the advertisement will most likely meet the eye of our correspondent.

M. D.—Messrs. Dawbarn and Ward, Farringdon Avenue, London, E.C., publish a book on various enamel processes. You might obtain the information therefrom. We do not undertake to answer letters by post.

SCRATCHED BURNISHER.—"Rex" says: "There are a number of scratches on the roller of my Globe enameller, which mark the prints when rolled through. Is there any means of removing the scratches?"—In reply: Only by polishing them out. We advise you to send the damaged roller to those who supplied the apparatus to do the needful for you.

ELECTRIC LIGHT.—J. H. VICARY says: "I am in want of a thoroughly up-to-date and reliable electric flash-light apparatus, capable of giving illumination to cover a good area, for large halls, etc. I believe it is against your rule to recommend any special make, but if you would kindly give me the addresses of any good makers I would esteem it a great favour."—In reply: Messrs. Adamson and Co., 24, Charles Street, Hatton Garden, make a speciality of electric lights for photographic purposes, but whether they have an "electric flash-light" we cannot say. Better call on them and see what they have.

COLLODIO-BROMIDE.—J. JOHNSON says: "I have lately been experimenting with collo-bromide emulsion, without success. The trouble is the bluish colour of the film when dried. Note enclosed scrap of ferrotype. This bluish colour only appears when plate is dried, and disappears on varnishing. I want to avoid this and to know cause thereof. 1. Has the pyroxiline

become denatured while emulsifying? 2. Is it insufficiently washed? 3. Or are the chemicals impure? Schering's and high temperature pyroxiline have been used separately and mixed with the same. It occurs when making an emulsion, and also when speeding it according to Hul Waterhouse. I may say that I am able to make gelatin emulsions of all kinds, but am new to collod. emulsion reply: The opalescence is in all probability due entirely the emulsion containing too much water, as we notice this is very crapy. Remedy: Use stronger solvents in future. The pyroxilines you have used are very suitable on emulsions.

UNREASONABLE CUSTOMER.—J. B. asks: "Will you please give your advice on the following, re the enclosed photograph shop? The proprietor engaged me to photograph his premises, instructing me to take up a particular position from which to take the photograph. This I did, and on presenting the proof he was quite nasty about the reflection on the window. He did not mind the reflection of a house on the opposite side of the road reflecting in his left-hand shop window complained most strongly of the way the two upstairs windows came out. I wish to ask if this is a reasonable complaint and whether I could have done anything to have avoided the result complained of, seeing that I was bound down practically one standpoint, and the few feet I could have moved away from that point to one side or the other did not make any difference? It was taken at 5.30 in the afternoon when the sun was not shining. If I take it again from the same position at any other time of the day there will probably be reflection somewhere, and he would not want to pay for a second time. I travelled five miles to do this job. If he refuses to refund should I have any chance of getting my money through court?"—In reply: Your customer is evidently a very unreasonable man. He bound you down to take the photograph from a particular standpoint, and left nothing to your merit. The photograph is, however, a very good one, and should advise you to sue for the money in the County Court and there is little doubt that you will obtain it, as there is no fault with the photograph.

SOUTH London Photographic Society.—At the last meeting W. T. Wilkinson gave a demonstration of "Photographic Methods of Illustration." He described the methods used in photographic printing, zinc etching, collotype, and photogravure processes, and said he found the best paper for photo-lithography is that made for final transfer in carbon work. As a substitute for making collotype plates he at one time used a mixture of soda and silicate of soda, but as all beers were not suitable, this necessitated visits to too many houses of refreshment. He was thus upon discovering some more satisfactory medium, and after a number of experiments has now adopted a solution of dextrine in place of the uncertain concoction known as "beer."

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THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1905.

Edited by THOMAS BEDDING, F.R.P.S.

THE forty-fourth annual issue of THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC will be published on December 1st. This year's ALMANAC reached a total of 1,604 pages, and the entire edition of 25,000 copies was sold out before publication. Of no other photographic book ever issued can two such unique facts be recorded. The edition for 1905 will also consist of 25,000 copies.

The striking favour with which past ALMANACS have been received is the surest proof that the lines upon which the publication is produced meet the requirements of its readers and supporters. Upon such lines we propose compiling the volume for 1905. At the same time, we shall be pleased to receive and consider suggestions for increasing the value of the ALMANAC in directions which may occur to our readers as susceptible of improvement.

THE ALMANAC for 1905 will appeal to photographers all the world over as a daily reference guide in practical work. The standard matter and formulæ will be revised and added to where necessary, the year's advances in theory and practice will be recorded.

* The frontispiece of the ALMANAC will consist of a portrait study specially taken by Mr. Furley Lewis (medallist of the Royal Photographic Society's Exhibition, 1903).

Secretaries of societies will oblige us by promptly forwarding lists of officers and other details for inclusion in the Directory of Photographic Societies. We shall also be glad to receive any additions that may be made to the list of telegraphic addresses of the trade, etc.

The publishers ask us to remind advertisers that a large proportion of the advertisement pages of the ALMANAC are already booked, and that, to ensure insertion, order and copy should reach them without delay.

**** IMPORTANT NOTICE.**—The attention of advertisers is specially directed to the announcement that this year the entire edition of the ALMANAC (25,000 copies) will be placed in the hands of dealers and the trade on December 1st next—a fortnight earlier than usual, so as to be well in advance of the Christmas publication season.

EX CATHEDRA.

A Suggestion for Plate Wrapping Paper.

A correspondent has made a suggestion which, whether it should prove of value or not, may well be put on record. Considerable attention has been given of late to the subject of the absorption of gases by charcoal, which is shown to be able to take up many times its own bulk of gas. Every one who has had much experience in the keeping of dry plates will have observed how much better some samples keep than others, but that eventually, after long years, perhaps, they succumb at the margins, an unpleasant iridescence making its appearance to the naked eye, while upon development the plate is worthless in the affected part. It will usually be seen that the giving way of the plate is a function rather of the wrapping than of the plate itself—the more securely the air is kept out the better it will keep. The suggestion we refer to is that if a maximum of protecting wrapping be first insured, the innermost wrapper might be a double paper containing a layer of charcoal, secured by some adhesive compound, and thus any small quantity of air that passed through the wrapper might be robbed of its injurious property.

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Shellac Substitutes.

Shellac, the chief constituent of negative varnish, has greatly risen in price of late, and so a number of substitutes for it have come into the market. These are made to imitate both the brown and bleached shellac in colour and shape. The "Chemische Revue" of the resin industry describes some of them as consisting of resin, spirit-soluble copal, and other soluble resins in admixture with a little genuine shellac. Others are com-

posed of resin and fatty acids and fatty oils, or of resin and phenol. All contain up to 20 per cent. of water, and so furnish a dirty solution in spirit, besides necessitating a larger quantity of the "shellac" to give a varnish of a certain consistency. Makers of photographic varnishes should be further on their guard against these pernicious imitations of shellac, inasmuch as the resinous coating remains tacky for a long time, and can frequently be removed altogether with the finger. Also, certain of the substitutes differ from genuine shellac in being soluble in turpentine, a point of considerable importance when a retouching medium containing turps be applied to a negative which has been varnished with the solution of imitation shellac.

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Mechanical Print Copying.

There is printed in "Machinery," over the signature of Joseph C. Riley, an ingenious and novel method of making a copy of a print or engraving of small dimensions. Though the method is not photographic—it, indeed, is antagonistic in interest to it—the method is so ingenious, and might, on occasion, be useful to any of our readers that we here transcribe the main points. Many who read this may remember the species of memorandum books which once were highly popular, though difficult to obtain now. They consisted of paper, covered with a smooth, chemically-prepared surface, which was written upon by a pencil, practically ever pointed, made of a compound like pewter, but which could be replaced by brass, copper, aluminium, or any of the softer metals. Mr. Riley has discovered that by placing a sheet of this paper on any small engraving or print, and then rubbing down with a hard smooth object, such as an ivory-handled pocket-knife, etc., the pressure so exerted, which partakes of the nature of a shearing stress, will cause sufficient of the black surface to give a distinct and useful copy, subject, of course, to the defect of being reversed. In his final instructions Mr. Riley finds it better to lay the metallic transfer paper face up upon at least a dozen sheets of blank paper, and lay the print face down upon it. Then place on the back of the print a piece of thin cardboard, and rub the tool over this protecting sheet. Slipping is thus comparatively easily prevented, and prints of eight or ten inches on a side may be copied satisfactorily.

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Exhibited Photographs of Painters and Sculptors.

A morning contemporary points out that at the two annual exhibitions of photographs in London portraits of painters and sculptors are always fairly numerous, and this year is no exception to the rule. Last year Mr. Sargent was the favourite model; this year it is M. Rodin, the President of the International, two portraits of whom are at the Photographic Salon and one at the exhibition of the Royal Photographic Society. One of those at the Salon, proceeds the writer, shows M. Rodin seated in his studio before a bronze of "Le Penseur"—a bronze on the scale of the small original model from which, it is said, the huge figure shown last winter at the New Gallery was enlarged entirely by mechanical means. Unfortunately none of the Rodin photographs renders adequately the striking head and face of the famous sculptor. A portrait of another distinguished sculptor, less known in this country, is at the Royal Photographic Society's show, that of Reinhold Begas, the German artist who was proposed for an Honorary Foreign Academician at last January's election at Burlington House. The photograph is by Herr Hilsdorf, of Bingen, who is also responsible for the portrait of Adolph Menzel which hangs by the side of that of Begas. Menzel's

photograph is excellent, but a better impression of the greatest of German draughtsmen can be got from another portrait, also by Herr Hilsdorf, that hangs on the opposite side of the room. This second portrait shows Menzel—a quaint little figure in oddly old-fashioned clothes—standing in a room examining a sketch-book he holds in his hands.

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Prices of American Work at the Salon.

Many a hard-working and clever professional photographer will gasp at the figures, so disproportionate to the value offered, when he ascertains the prices asked for some of the productions by Transatlantic members of the Linked Ring at the Exhibition now open at the Dudley Gallery. When he is informed that these specimens of photography are "works of art," imbued with the soul and personality of their authors, and not mere mechanical productions of the lens and camera, he will understand, and will probably thank his stars for having been blessed with a soul in a reasonably harmonious ratio to his intelligence. That the prices affixed to some of these specious examples of "modern photographic artistry" will cause many a visitor to stand amazed we are as sure as we are of the astounding fact that some of the pictures will find purchasers. Asking absurd prices varying from five to fifteen guineas for small smudgy prints, some of which are quite inexplicable, although we do not deny the cleverness of others, points only to one of two reasonable explanations. One is that prohibitive prices have been placed on these specimens of handiwork because their producers have no desire to part with their art treasures. The other is that they are the indication and outcome of life in a land of self-made millionaires, who individually may have sound judgment in most matters, but are apt to found their scale of appreciation in these matters on the scale of charges. We have no doubt that some of the buyers at the Salon who do not patronise home products (which we can assure them are as good as anything on view and much cheaper), but turn to these "personal reflections," only do so, impressed by the high prices demanded, and not from any real love of murky gloom and blurred representations of nature minus sunlight.

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Sunburning Extraordinary.

If the report had originated in an American newspaper we should have passed it over as the product of an industrious imagination, but its appearance in a London morning journal, although it comes from an Irish source, gives it an importance which compels attention. The story told is exceedingly difficult to believe, but as name and place of occurrence are candidly stated, we have no alternative but to accept it provisionally. A gentleman who had been engaged in literary work, and had only been out of doors one day, when it happened to be dull and rainy, has suddenly, as the result of a dream, as he believes, been afflicted with all the symptoms of severe sunburn. If he had only dreamt that he dwelt in marble halls this deplorable thing would not have happened, but he was ill-advised enough to dream that he was lying on the sea-shore in a strange locality, and that the sun was shining upon him with all the intensity of noonday heat, so much so that he felt his face and hands actually being burned. "In my dream," he writes, "I remember thinking what a tanned face I would have after lying so long exposed to the glaring sun." When this strange vision of the night had passed away, and the dreamer arose to shave himself, he was astonished on looking in the mirror to find his face and neck literally

tanned dark brown, his nose in that peeling condition familiar to tourists, and his forehead so covered with freckles that any photographer would have been justified in charging extra for the retouching of a negative of his countenance. A doctor whom he consulted stated in the most positive manner that the patient must have been exposed for many hours to the sun, and when told that this was not the case, and the actual facts had been explained to him, expressed the belief that the force of imagination had, in the dream, tanned the skin and produced the freckles. The value of this story to the photographer lies, as Captain Cuttle would have said, "in the application of it." We cannot believe that this dreamer of dreams can be the only man who can set his imagination to work with such wonderful results. There must be many more who can do this thing if they could only be found, and we would suggest that a school for their training and general encouragement should at once be founded, and the tanned and freckled gentleman appointed to a prominent position on its staff. For does it not stand to reason that a man who can by the force of his imagination get such a marvellous imitation of sunshine would find no difficulty in printing photographs by the same agency? In comparison with what he has already done it would be the simplest thing in the world. A pile of negatives, interleaved with pieces of sensitive paper, would be put in his room when he went to bed, and he would dream that the sun was doing its beneficent work upon them. And while he was about it he might also dream that the prints were toned, fixed, washed, and mounted. Never, since the time of Joshua, did mortal man ever have such an opportunity to succeed as a photographer, and we trust that this worthy Irishman will be persuaded to instruct others in the useful art of dreaming things which come true.

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Local Vandalism. In spite of the good work done by many societies, there are persons who never seem to be happy unless they are engaged in some scheme which involves the destruction of that which is picturesque or historically interesting. We are, of course, aware that in the natural march of progress many old things must give place to new, but there are certain beauty spots with which it seems sacrilege to meddle. How many of our readers, we inquired last week, have not at one time or other focussed upon the ground glass of their cameras that lovely picture of Aylesford Bridge, in Kent? There is no bridge like it for beauty within such easy reach of the metropolis. It is partly fifteenth century work, and its old grey stones and mediæval aspect should entitle it to respect even in this utilitarian age. But it is said to be condemned, and that designs for a new bridge have already been accepted by the authorities. We are not acquainted with the reasons for this decision, but we may suppose that the usual thing has happened. The old bridge is perhaps not strong enough or wide enough to accommodate the snorting traction engine, and it must be replaced by a hideous lattice-work girder abomination in steel. It is stated that the Society for the Protection of Ancient Buildings is interesting itself in the matter, and that it has proposed an alternative plan by which the old bridge will be left intact. We only hope that this effort to retain a beautiful piece of old work will succeed, and that all photographers who are friendly to the movement, as all must be, will do their best to strengthen the society's hands. But Aylesford Bridge is not the only relic of old times which requires protection just now. At a recent meeting of the Devonshire Association, held at Teignmouth, complaint was made of the wanton destruction of prehistoric remains on Dartmoor, chiefly by the authority of the Rural District Councils, with the laudable object of getting stones cheaply for mending the roads! And the

road contractors have already, it is said, removed a most interesting group of hut circles near Princetown. At the same meeting it was asserted that "one of the large stones of the Scorhill circle at Gidleigh, near Chagford, had been thrown down, and an attempt made, in the usual way, to split it lengthwise to make gate-posts of it." Now, what punishment ought to be meted out to men who are guilty of these enormities? They certainly ought to be locked up where they can do no more mischief, but the difficulty would be to find a prison large enough for their incarceration, for apparently these vandals are found all over the country. We may well conclude this note with an extract from the report of the Committee on Ancient Earthworks, dated July last:—"But that there is yet room for constant watchfulness of these relics and efforts for their preservation is plainly evidenced. Maiden Bower, one of the best-known earthworks of Bedfordshire, is in daily peril from the quarryman's pick; the fate of the curious work at Willington, almost certainly a Danish defence, on the banks of the Ouse, is trembling in the balance; and so it is with many another of these evidences of our country's story."

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Forbidden Photographs. Whenever any Royal personage, or indeed any eminent person whatever, goes abroad, whether on business or pleasure bent, there are awaiting that illustrious one a host of camera bearers, or snap-shottists, as they are vulgarly called, eager to steal a pictorial record of the eminent one's appearance. Some persons would give their ears to be thus sought out by photographers, but the persons to whose lot it falls to be thus honoured are far from being pleased at the distinction thrust upon them, and we are continually reading that the American millionaire and his belongings are very sensitive on the subject of illicit portraiture. Such pictures of Royalties are sometimes of considerable value, for the reason that they are extremely difficult to get, and are, therefore, rare. Sometimes, too, a particular photographer may have the good luck to have a picture suppressed, and then of course it assumes a fictitious value, just as a book will under similar circumstances. We are not aware that official suppression of such a photograph has ever occurred in this country, but in Germany the sale of pictures illustrative of Royal doings has more than once been prohibited. For example, several pictures were taken which depicted scenes in connection with the betrothal of the Crown Prince and the Duchess Cecilie of Mecklenburg-Schwerin, and, as we noted last week, the sale of these has been forbidden. It is difficult to understand how a series of such photographs could be taken surreptitiously, and we can only suppose that the eminent persons chiefly concerned, after consenting to their production, repented of their action when they saw the results of the photographer's art, and had the pictures suppressed. Anyhow, we read that there is a great demand for the forbidden fruit in Berlin, and that the pictures are fetching fancy prices. One picture is in especial demand. It shows the newly-engaged couple receiving the congratulations of school children. Another which has also found favour with the curiosity hunters shows the Crown Prince in what is described as a weird Panama hat, clutching the Duchess's arm. Photographs of a similar kind taken when the Kaiser was merely Prince William of Prussia, were suppressed by the authorities, and these are now worth from fifteen to twenty pounds apiece. It would be interesting to know whether the fiat of the authorities goes as far as the destruction of the negative, but possibly the German photographers guard against such a regulation by the duplication of any negative which has the chance of falling under the official ban. We can all of us understand how Royalties, being only

human, should object to the wholesale distribution of photographs in which they do not appear to advantage. A case of the kind occurred not long ago when the Kaiser visited the Holy Land, and when many of the papers were comparing him to the old Crusaders. Some one took a snap-shot of the Kaiser during his journey, of which we saw a print. The German Emperor was in a uniform closely resembling that of our own Horseguards, and surrounded by a group of men so much taller than himself that he looked a mere pigmy by their side. We can well imagine that it would be consonant with the Royal wishes that such a picture should not get a post-card circulation. For every snap-shot of value there must be thousands taken which are not worth developing.

THE SALE OF SITTERS' NEGATIVES.

In "Ex Cathedra" a short time ago the question of the disposal of negatives was referred to as being a somewhat wide one as regards its legal aspect. Sometimes one sees advertisements for prints of portraits, or negatives, to be used as specimens in show cases, presumably by those who are themselves incompetent to produce work of their own good enough to attract customers. It is quite unnecessary to here go into the *morale* of a photographer exhibiting in his show cases portraits which he has purchased because he is unable himself to take such as would bring custom. The proceeding is little better than a fraud, as the public is naturally led to believe that the pictures shown are his own work, and that if they sit to him they will receive pictures equal to those shown, whereas they usually get those which are far inferior.

This, however, is not the question we are here dealing with. It is this. Has a photographer under any circumstances a right, legally, to deal with portraits, either as prints or negatives, that he has in the ordinary course of business been paid for taking? Let us take, by way of example, the sale of a business where the stock of negatives form a considerable part of the goodwill. In this case, perhaps, in the strict reading of the law as laid down in the Chancery Division of the High Court of Justice in 1888 by Mr. Justice North, in the case of *Pollard v. The Photographic Company*, the question is a little doubtful. But we imagine that in practice no difficulty will arise in this direction, as the purchaser will in his own interest respect his predecessor's sitters and negatives in the same way as he did, so that here no question at all is likely to arise. Therefore this part of the question may be dismissed.

There are, however, other ways in which negatives may change hands that may lead to the annoyance of sitters and possibly to legal proceedings. Take, by way of example, a photographer becoming bankrupt. In such a case the Official Receiver, or trustee, may have to realise the debtor's assets in the best way he can for the benefit of the creditors. This is often done by selling the effects, negatives included, at auction. Here the negatives, and probably a number of prints, have passed out of the photographer's hands, not voluntarily, but compulsorily, and according to law, as it were. He certainly cannot be proceeded against, as he has not disposed of the negatives or used them for any purpose of his own, nor has he sold them.

A few years ago we saw, at the Islington Friday Market, for sale a number of fine carbon enlargements of large size,

framed, of well-known persons, and also a large number of portrait negatives, which were very fine work. They all bore the photographer's register numbers and the names of the sitters, and several, we noticed, were titled people whose portraits had been taken in the ordinary course of business. We recognised that the pictures were the production of a West-end concern that had "come to grief." What ultimately became of the negatives we are unable to say, but they were offered to us as we were looking at them for a quite nominal sum—not much more than the boxes that contained them must have cost. Now, the question is had the purchaser of these negatives the right to print copies from them and sell them, or even to exhibit them publicly? That is rather a knotty point. One can readily imagine the annoyance of aristocratic personages who have paid high prices for their portraits—and the concern that produced those referred to commanded very high ones—knowing that their portraits were being exhibited in the showcases of third or fourth rate photographers in perhaps the East-end of London. On the other hand, the purchasers of the negatives would not altogether unnaturally think they had a perfect right to do as they liked with their own and this raises another somewhat interesting point.

Can the originals prevent the exhibition or sale of their portraits in the above circumstances? We opine that they can. The copyright in a portrait is vested in the sitter if the photographer has been paid for taking it, but he or she can take no action until the copyright has been registered at Stationers' Hall. Now if the person whose portrait is being so dealt with registers the copyright in it, he can restrain by injunction the sale or exhibition of it from the time of registration, but can do nothing with regard to what has been done before. Clause 6 of the Copyright Act makes it an offence "to multiply for sale, hire, *exhibition* (the italics are ours), or distribution" any copyright work, and renders the offender liable to a penalty of £10 for every copy, forfeiture, injunction, damages, etc. From this it will be seen that anyone who has purchased negatives, even under circumstances such as those just referred to, can be restrained from making any use of them if the sitter elects to register his copyright in the picture. In registering the copyright it should be registered in the name of the sitter, adding that of the photographer as the producer.

The note in "Ex Cathedra" referred to at the beginning of this article arose from a query that was replied to in the "Answers" column a little while before, in which a correspondent asked the best way to dispose of old negatives, presumably by sale, which, it is pretty clear, is illegal if the photographer was paid for taking the portraits, and might get the seller into trouble. The best way of getting rid of many old negatives is to scratch the faces and then get the dustman for a trifle to take them away, for the value of the glass now is practically nil. It was different in the wet collodion days; then the negatives could be cleaned off and the glass used again.

There is another way in which they may sometimes be profitably disposed of, namely, that adopted by M. Camille Silvy when he retired from business after the *carte-de-visite* furore subsided. Silvy, it may be mentioned, took eight negatives on a plate with four lenses and a repeating back camera. When he retired from business he advertised that his sitters could purchase their negatives, from which any photographer could produce copies, for the sum of, we believe, half a guinea. In this way he realised a substantial sum, and sitters became the possessors of their negatives.

EXPOSURE AND DENSITY.

SOME slight signs having been evident during the present year of a revival of interest in the theoretical and scientific aspects of photography, it may be a fit time to write a few notes regarding a theory of the relation between exposure and density in dry plate negatives which I advanced some years ago in the pages of THE BRITISH JOURNAL OF PHOTOGRAPHY. Messrs. Hurter and Driffield gave, in their original paper, a formula for the expression of the density due to a given exposure which would be undeniably correct if the bases upon which they worked could be granted; but, unfortunately, in several respects these bases are not at all in accordance with the conditions which exist in actual practice; hence the value of the formula is at least doubtful, and it still seems desirable that the subject should be examined with strict consideration of all the facts actually existing in photographic work.

The following are conditions which I think may fairly be considered as applying in dry plate photography—viz., the sensitive salt consists of grains of appreciable size contained in a film of a certain thickness. The sensitive salt is of varying degrees of sensitiveness. On exposing any particular particle of it to light for time and intensity equal to its specific inertia, the particle will become changed and arrive at the developable state. On a further much prolonged but definite exposure it will again become undevelopable owing to reverse action. (I shall not deal, however, with that subject in this article.) Supposing, then, these statements to be granted, and assuming also (although it is open to question whether it is an entirely correct assertion) that, after complete development, the whole of the changed particles will be reduced and no others, let us now consider the effect of the exposure of a plate for a suitable time on a subject containing a long range of intensities of light.

In the first place let us imagine a plate in which the sensitiveness of the silver salt does not vary, but every particle has an inertia of a constant value. Evidently, in that case, in all the parts of the subject where the intensities are of less value than the inertia, they will produce no developable effect, and when they are just equal to it they will change only the Ag. Br. which lies quite at the surface of the film. Those intensities which are greater than these will, in penetrating the film, be of course diminished by its opacity, and to an ever-increasing extent according to the depth reached, so that each at some definite level will be brought to just equal the inertia. Beneath that position the light passing will be still less intense and consequently cannot render any of the Ag. Br. developable, while in all the part above the intensity will always be greater than the inertia value, so that the whole of the sensitive salt therein will be changed. It follows from this that the transparency of the developable silver will always be exactly in the inverse ratio of the original intensity to the inertia intensity. Light of threefold intensity, for instance, in being reduced to unit intensity must pass through a medium having a transparency of one-third. Hence it seems clear that the ratio of gradation of the transparencies of the changed silver over the plate will exactly correspond, inversely, to the various intensities of the subject in the case of all intensities lying between that of the inertia and that producing the maximum of density. If it were possible to employ a developer which merely rendered the altered Ag. Br. insoluble in the fixing bath without changing its colour, we could in that manner obtain, for all subjects whose range of gradations did not

extend beyond the limits indicated, the ideal "correct negative" of Messrs. Hurter and Driffield. But the "periods of under and over exposure" on such a plate would be absolutely devoid of gradation, the former showing nothing but bare glass, the latter a perfectly even density.

It will, I think, be difficult to find any flaw in the above reasoning, but, if it be accepted as sound, a result will be that the Hurter and Driffield "Correct Formula" falls entirely to the ground. That formula starts also with the assumption of equal sensitiveness in every particle of the silver salt, and leaves the matter of reversal out of consideration, but arrives at very different results.

I have assumed, however, that, as a matter of fact, the sensitiveness does vary—an opinion in which I believe most will agree. Let us now suppose, then, that our plate contains particles of Ag. Br. of many grades of sensitiveness, and examine successively the effects resulting from the action of light upon it in a series of increasing intensities. An exposure equal to the inertia of the most rapid grade will produce the beginning of a developable effect and greater intensities will form in the silver of that grade an image which has densities rightly corresponding to their gradations; but, as we follow the series, there also come into action at every step particles having higher inertias than those previously concerned, and add their densities to the total sum, which consequently is always greater than what would result from a continuance of the progress in the grades which have already been acted upon, so that the gradations of densities of the changed silver, plotted graphically, will take the form of a curve concave towards the starting point. When that intensity is reached which measures the inertia of the slowest grade of Ag. Br. in the plate, a certain definite quantity of the sensitive salt will have been rendered developable. Let us put that intensity as equal to γ , and the density produced by it as equal to γ . Now, from that stage onward, we shall have conditions similar to those of the case previously considered, for it is evident that from the surface down to a level where intensity is reduced to a certain value (i.e., to β), the whole of the Ag. Br. in every instance will be made developable; but below that the intensity of β will still produce an additional density equal to γ . Consequently, it must follow that, for intensities greater than β , we shall again have the conditions of the "perfect negative," as the even additional deposit of γ density in no way affects the truth of the gradations. Graphically, we shall have a perfectly straight line. Such conditions will continue to exist, as density increases, till on approaching the maximum the amount of unchanged Ag. Br. begins to fall short, and then those portions of it included in each of the different grades will consecutively become exhausted, according to their various degrees of sensitiveness. The density here, therefore, must always be less than would have arisen from a continuation of previous conditions, and the line will show a flexure in the opposite direction to that of the commencement, always increasing till maximum density is reached.

It appears to me that the foregoing is a reasonable way of considering the subject of exposure and density. Stated shortly, it may be put: "The gradations of a negative, if rightly exposed and developed, represent the varying degrees of transparency which, during exposure, have reduced all the intensities of light in the image to one common intensity; consequently, their transparencies are inversely proportional to those original intensities."

The conclusions arrived at are perfectly in harmony with the teaching of Messrs. Hurter and Driffield's experiments and with most of the practical applications of their principles, although somewhat opposed to the latter on the theoretical side. There are several points which it might be interesting to consider, but I will not at present occupy space in touching upon them.

H. J. CHANNON.

A COLOUR-SENSITIVE COLLODION EMULSION.

[Translated from Eder's "Jahrbuch," 1904.]

COLLODION emulsions with an excess of bromide, which are generally used at present, do not lend themselves to the addition of most of the dye stuffs for colour sensitising in a sufficient degree for practical work, unless in the presence of some soluble silver salt. Solutions of the silver salts of eosine are, therefore, used, or the plate, coated with stained emulsion, is dipped in a weak solution of silver nitrate before exposure.

This process, however, has the disadvantage that the emulsion, in the presence of soluble silver salts, soon becomes unusable, and one often has to contend with fog in development. The film is also extremely sensitive to impurities.

The favourable influence of a soluble silver salt upon the action of the dye stuff should be traceable to the elimination from the emulsion of the residuum of the bromide salt, which adheres to the particles of silver bromide, and prevents the precipitation of the dye stuff. A high degree of colour sensitiveness may also be attained without resorting to a silver salt when the emulsion is prepared with an excess of silver. The same may be said of emulsions that contain a little chloride of silver, and in which consequently only soluble chloride can be present.

Based upon various experiences in the preparation of emulsions, we used ammonio-silver oxide to make an emulsion which should be of the greatest possible sensitiveness and contain chloride of silver. The result was in every respect satisfactory. In this process, although considerable quantities of silver chloride remain in solution of ammonia, and pass into the washing water, the emulsion works without a fault, and clearer negatives are obtained than those which are prepared with preventatives of fog, such as aqua regia. The sensitiveness, moreover, is at least twice that of a collodio-iodide plate.

For preparation of the emulsion the following solutions should first be made:—

A. 50 grammes of silver nitrate are dissolved in 50 c.c. of ammonia, after which 100 c.c. of alcohol (strength 90 per cent.) are added.

B. 27 grammes of bromide of ammonium are dissolved in 40 c.c. of water by heat, then are added 100 c.c. of alcohol and 15 c.c. of an alcoholic solution of lithium chloride.

The silver solution is added to 700 c.c. of 4 per cent. collodion, and the hot solution of bromide added little by little. A very fine grained emulsion is thus obtained, which is red by transmitted light. After letting it stand for a few hours it is precipitated in water, and redissolved in alcohol and ether.

Stirring the emulsion before precipitation does not increase its sensitiveness, and as there is no bromide present, it does not cause any change in the size of the grain of the silver bromide, although ammonia be present. However, the emulsion becomes more liquid, which facilitates the coating of large plates. The emulsion, as we have already mentioned, permits of all dye stuffs used for colour-sensitising exerting their full strength, provided otherwise favourable conditions exist for dyeing the bromide of silver. In this respect special care should be taken that the emulsion of silver bromide be treated with the aqueous solution of the dye stuff. Consequently, it is necessary that the plate coated with unstained emulsion be bathed in such an aqueous solution of the dye, or that an alcoholic solution of the dye be added to the emulsion, and the plate afterwards washed. Eosine, rhodamine, ethyl-violet, and many of the recently prepared chinaldin-cyanines, as, for example, Dr. E. König's p-Tolu-chinaldin-chinolinmethyl-cyanin iodide, have been found specially suitable dyes, which do not produce fog in development. The last named, a purple-red dye stuff, which hitherto has not been found of any practical use, is a splendid sensitiser for green. Like Orthochrom T, used with a gelatine plate, it yields an almost continuous spectrum from orange to the colour for which the collodion plate itself is sensitive.

Each of the dye stuffs we have named imparts to the emulsion a colour sensitiveness exceeding the blue, and a mixture of the last named green sensitiser with ethyl-violet enables one to produce a panchromatic plate, the sensitiveness of which is four or five times as great as that of wet silver iodide.

BARON A. VON HUBB.

THE CHEMICAL REACTIONS WHICH TAKE PLACE IN TONING AND FIXING WITH THE SALTS OF LEAD.

[Translated from Eder's "Jahrbuch," 1904.]

THE action of the salts of lead in baths for toning and fixing has been the subject of numerous investigations. Recently Messrs. Lumière and Seyewetz, after a long series of experiments, have arrived at the conclusion that the toned print contains no trace of lead.

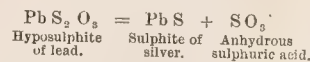
On the other hand, in analysing paper prints toned with lead salts, I have found traces of such salts, my procedure being different from that of the authors I have named. I treated the ashes of the paper with boiling hydrochloric acid, and, as the lead is converted to chloride, it is easy then to detect it.

Messrs. Lumière ascribe the action of the lead salts to the so-called sulphur toning of the image. But even if it be granted that only sulphide of silver is formed, it is incomprehensible how any bath that only sulphurises can produce the black tone one obtains with the salts of lead. Neither the mixture of alum and hyposulphite, nor the pentathionic acid, which the said authors found possessed of a specially energetic sulphurising action, will account for it. The said authors only used the pentathionate of lead to make a good toning and fixing bath.

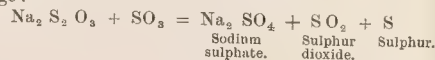
This fact, and the additional one that the toned image always contains lead, although it may be in many cases only small in quantity and difficult to trace, confirm that which I established many years ago, that the toning is set up especially by the lead sulphate.

It remained to be explained how this sulphate of lead could be deposited upon the image, and this explanation has been the object of my recent researches. I am now in position to present a theory, which appears to be highly probable.

It is known that a mixture of a lead salt and hyposulphite of soda yields a precipitate of sulphide of silver. This comes about because the hyposulphite of lead formed in the mixture is the result of slow decomposition, according to the following formula:—

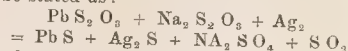


Scarcely has the anhydrous sulphuric acid been liberated before it acts upon the hyposulphite of soda, and produces the following change:—



Consequently, a deposit of sulphur is formed at the same time as that of silver sulphide, and a liberation of anhydrous sulphuric acid takes place.

But when the silver image comes into contact with the bath, the strong tendency of silver to unite with sulphur facilitates both reactions referred to, which may be regarded as one, and the final reaction, when in contact with the silver forming the image, may be stated as:—



If the bath also contains chloride of gold the presence of the lead salt facilitates the precipitation of the gold, and I conclude that the presence of the sulphate of lead very likely favours the formation of gold sulphide on the image.

The sulphide of gold may add much to the blackness of the image. In any case, a small quantity of lead, which in the process of analysis might easily be overlooked, can be traced even if a considerable quantity of gold salt be used and the toning be sufficiently prolonged. In this case the larger quantity of lead sulphate is replaced by gold or sulphide of gold.

PROFESSOR RODOLPH NAMIAS.

OPTICAL NOTES.

II. THE INFRARED ABSORPTION SPECTRUM OF SELENIUM.

About a year and a half ago the absorption spectrum of a film of selenium, melted between rock salt plates, was found. Commercial vitreous selenium was used. It was found that the transmission varied with the age of the film for the first few days, hence it seemed wise to repeat the work. Since then, through the courtesy of Dr. Carveth, of the Chemistry Department, an opportunity was granted to repeat the observations on very pure selenium prepared by A. P. Saunders.⁵ The results

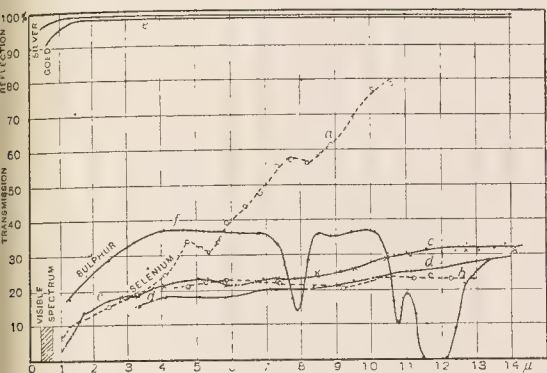


Fig. 3.

seem worth recording, since they complete the exploration of the spectrum from the ultraviolet to 14μ in the infrared.⁶

The results are shown in Fig. 3, in which curve *a* shows the transmission for the commercial material. The transparency at this time increased with increase in wave-length. Two days later the film was re-examined, curve *b*, when a constant transmission of about 20 per cent. was found throughout the spectrum. This it continued to do, as was found on subsequent examination.

Ordinary selenium contains sulphur, and since the latter changes from one crystallographic form to another soon after it has been melted and permitted to cool, this may perhaps explain this change in transparency.

Curve *c* gives the transmission of pure selenium, examined like the preceding. The dots show the first examination just after melting, while the crosses show the second one made two days later. It is to be noticed that the two curves coincide.

Curve *d* gives the transmission for this film thirty days later. It likewise is fairly constant in its transmission, being parallel, but about three per cent. less than for the preceding dates. This, no doubt, is due to the fact that the film had to be remounted on the carrier before the spectrometer slit, while the surfaces of the rock salt plates may have changed by that amount. The results show that the pure material did not change from a varying to a constant transmission, as was found for the commercial article. The film of pure selenium was made by melting between very clear rock salt plates, heated just above the melting point. The film was homogeneous, and its colour was a deep ruby-red. Thickness, 0.07 mm.; area, 8 14 mm.

It would have been interesting to examine the metallic modification of selenium. But no film could be made procured that was free from rills, so the examination was never made.

The absorption and refraction indices have been determined in the visible spectrum by Quincke,⁷ in the visible and ultra-

violet by Cornu,⁸ and by Wood.⁹ The ultraviolet reflecting power has been measured by Nutting.¹⁰ He found that the reflecting power increases abruptly from a low value in the red to a maximum in the yellow, falls off slightly towards the violet, and then more rapidly in the ultraviolet, which agrees with Wood's observations. Wood thinks that the violet and ultraviolet regions have several bands with maxima beyond $.22\mu$. This point is of considerable interest, because of the high dielectric constant, 10.2, of selenium; for, according to the electromagnetic dispersion theory, the dielectric constant of any substance is the sum of that of the ions, which by acting on the ether waves cause absorption and dispersion, plus the dielectric constant of the ether. It has been noticed that selenium is quite transparent in the infrared, and has no broad absorption bands. Hence, on the above hypothesis, we must attribute this high dielectric constant to the ions whose free periods correspond in frequency to the green, blue, and ultraviolet rays, as surmised by Wood. He also found that, for a film of selenium which absorbs but little of the red, the violet and ultraviolet is absorbed nearly as strongly as a metal film of the same thickness. This is one peculiarity of selenium, occupying, as it does, a position midway between the metals and non-metals. Like the metals (curve *e*, Fig. 3, from Hagen and Rubens¹¹) it has a high reflecting and absorbing power for the visible and ultraviolet rays. Unlike the metals, but like the non-metals (except that it has no defined selective absorption bands), it is quite transparent in the infrared. Hagen and Rubens have examined a large number of metals and alloys to 14μ and found a uniform, high reflecting power throughout the infrared region. They call attention to the enormous influence of the molecular free periods of the metals upon the optical region. The curves impress us with the complexity of the phenomenon of total (of metallic) reflection and the depth of penetration of the same, especially for a metallic film so thin that it is optically transparent, in which case the penetration might be considered infinite—i.e., the disturbance is never turned back, but is transmitted.

Curve *f*, Fig. 3, gives the transmission of a plate of sulphur 3.6 mm. in thickness. Nothing was known about the direction of the optic axis. Since this is a problem by itself, in pleochroism, it will be sufficient to add that a natural crystal, 1.06 cm. in thickness, transmitted on an average about 50 per cent. where this plate of 3.6 mm., but not so highly polished, transmitted only about 38 per cent. As is well known, sulphur and selenium have an extraordinary similarity in their properties, but no such similarity is to be found in their transmission curves. Like the metals, selenium is more opaque than sulphur, and its absorption is general, while, unlike the non-metals, it shows no selective absorption, as is true of sulphur.

W. W. COBLENTZ.

Physical Laboratory, Cornell University.

THE hon. secretary of the West London Photographic Society writes:—It affords me much pleasure to inform you that during the past year the membership of our society has increased about thirty per cent. Our meetings are well attended, the members taking interest in the welfare of the society. We have just completed arrangements by which we have secured the Wycombe Hall for the coming session, the same being larger and more convenient than our old premises. The hall is situated at No. 263, Hammersmith Road (close to the Broadway), and is within easy access of not only the immediate neighbourhood, but also of West Kensington, Putney, Notting Hill, etc. Our annual general meeting takes place on October 7, and the ordinary meetings are then continued fortnightly until May.

⁵ Saunders, Allotropic Forms of Selenium, Jour. Phys. Chem., vol. IV., p. 423, 1900.

⁶ A mirror spectrometer, rock salt prism, and radiometer were used. Described in the "Phys. Rev." Vol. XVI., Nos. 1 and 2, 1903.

⁷ Quincke, Wied. Ann., Jubelband, p. 336, 1874.

⁸ Cornu, Compt. Rend., 108, 917, and 1211, 1889.

⁹ Wood, Phil. Mag. (6), 3, p. 607, 1902.

¹⁰ Nutting, PHYS. REV., XVI., p. 129, 1903.

¹¹ Hagen and Rubens, Verh. d. Deutsch. Phys. Gesell., 4, p. 55, 1902; 5, p. 113, 1903.

THE SILVER "GRAIN" IN PHOTOGRAPHY.

[From the "Astrophysical Journal," by courtesy of the Author.]^{*}

ON THE SILVER "GRAIN" IN A DEVELOPED PHOTOGRAPHIC PLATE, WITH A CONSIDERATION OF THE INFLUENCE OF THE DEVELOPING AGENT AS MODIFYING ITS SIZE OR CHARACTER.

It is a matter of importance to those making use of photography as a means of recording scientific data that a definite understanding be arrived at regarding the size of the silver particles which constitute the image. More particularly is this so in the case of astronomical photography, where the original negatives must necessarily undergo considerable enlargement, in order that the detailed structure of the object photographed may be rendered readily apparent.

In many instances this enlargement is carried to such an extreme that the individual particles of silver composing the negative image become so obtrusive that detail is entirely masked (for close observation) and can be discerned only when the enlargement is held off at some distance. In such a case there is absolutely no gain, but rather the reverse, as it is much easier to study detailed structure of any kind when at the distance of normal vision.

It is with special reference to this usage that the present work was begun, since there are many plates available for the astronomer or physicist, each of which is supposed to combine in itself (according to the manufacturer) those qualities which make them valuable—viz., speed, fineness of grain, and general uniformity.

Speed must necessarily be the first consideration, and this narrows down the number, so that in the present work those selected for test were as follows: Seed 27, "Gilt Edge;" Cramer "Crown;" Cramer "Instantaneous Isochromatic;" and Hammer "Special Extra-fast." In each instance the plates were taken from different emulsions, triplicate exposures being made for all results aimed for.

These makes were selected as being the fastest generally available, and tests for relative speed showed that the point of highest efficiency was about equally shared by the Seed "27" and the Cramer "Crown." The results of nine separate tests (from different emulsions of the same trade brand) showed that, although the latter plate was occasionally a trifle faster, yet the Seed "27" was always of the same uniform speed, and gave the least amount of "chemical fog." The remaining two plates were somewhat lower in general sensitiveness, which may be proportionately represented as 9 : 11 between the "isochromatic" and "27," and 8 : 9 between the Hammer and "27," in favour of the latter.

It is very generally understood that silver bromide (2 Ag. Br.) is the chief substance employed in the making of gelatine dry plates, but that silver bromide exists in several different allotropic forms has long been known—the first formed by the admixture of the gelatine and bromide and silver salts, is of low sensitiveness, but in the process of ripening passes gradually through several modifications, finally ending in a state which is capable of reduction by a developer without the previous action of light, viz., the blue allotope of silver bromide.¹ If the ripening of the emulsion be stopped prior to the formation of this last form, the result is still another allotope, which is green by transmitted light, and of high sensitiveness.

In the process of "ripening," which is brought about principally by an increase in the temperature of the emulsion, the introduction of ammonia, etc., it undergoes still another and purely physical change, viz., the particles of 2 Ag. Br. increase in size, in all probability due to accretion. The measurements of Eder give the particles in the finer unripened emulsion as from 0.0008 to 0.0015 mm., while in the most sensitive form he gives a size of from 0.003 to 0.004 mm.² As stated by Perrine,³

the size in this latter state is approximately 0.0025 mm., while Kayser⁴ places it at 0.001 mm.

Although a more sensitive emulsion certainly means a coarser grain, yet that coarseness of grain is not synonymous with speed is shown by the researches of Luppé Cramer, who instances the use of too strong a solution of nitric acid in the manufacture of the emulsion, or too strong ammonia (or too great a quantity), also an insufficient amount of gelatine; even the shaking up of the sediment during the process of "cooking" is likewise certain to result in coarseness.

Much has at various times been written regarding the value of certain developing agents as modifying the resultant size of these silver particles, and many claims have been advanced by the advocates of slow or dilute development as giving a negative with a very fine grain, and some diversity of opinion exists regarding the plate best suited for the work.

It goes without question that the plate best suited to the needs of the astronomer or physicist is that one which combines the highest speed with the requisite fineness of grain; for in the first case the higher the speed, the greater the efficiency of the telescope or instrument used; and in the second case the finer the grain of the original negative, the greater the available enlargement.

After consideration, the following method was adopted in making the tests as offering the least chance for error (as already mentioned), triplicate plates being made in every case, and at every point throughout the series.

An instrument was constructed upon the same lines as the

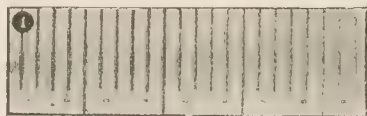


Fig. 1.—Scale of Enlargement for Photomicrographs.

Four divs. of ocular micrometer — one div. of stage micrometer;
One div. of stage micrometer (ruling — 0.001 mm) — 4.3 mm; ∴ one div. ocular = 2.3μ.

sensitometer of Scheiner, consisting of a rectangular box open at either end and fitted with forty-two small rectangular cells. One end is closed by a sheet of thin metal in which is made a number of minute holes corresponding to the ends of the small rectangular cells, beginning with one and increasing in arithmetical progression. The plate under test was placed at the other end of the sensitometer and closed in light-tight. Exactly similar exposures were then made to ground glass illuminated by sky-light.

COMPARISON OF SIZE OF "GRAIN" IN THE PLATES CONSIDERED

Similar sensitometer exposures were made on each of the four makes of plates, as previously mentioned, the precaution being taken in the selection of the three plates of each that they should represent entirely different dates of emulsion. These exposures were then developed four at a time, the developing tray containing one plate of each "brand."

A hydrochinone + metol + adurol combination was selected as the developing agent, for reasons which will be obvious as this article progresses. Microscopic and photometric examination of the negatives showed results identical on each plate of the same make.

Photomicrographs were then made from equal opacity squares of one plate of each make, of sufficient magnification to show clearly the individual particles of reduced silver.

Considerable difficulty was experienced in this portion of the work owing to the definite thickness of the gelatine film on the plate and the consequent number of planes, which rendered

¹ Blue by transmitted light.

² Meldola, "Chemistry of Photography"

³ "American Annual of Photography," 1904 p. 203.

⁴ "Handbuch der Spectroscopie," 1, 638.

focussing a matter of extreme care. The use of a lower-power objective could not be taken into consideration because the "grain" was not sufficiently resolved, an entirely false effect being thereby produced.

A magnification of + 430 (Fig. 1) being decided upon, the apparatus was firmly clamped and negatives made of the squares selected. At this point the triplicate plate exposure was of much assistance, for, as the field was entirely refocussed between each, the plates served as a check upon one another inasmuch as imperfect focussing brought into the field a new "set" of grains whose position would not coincide relatively with the accompanying two plates; to facilitate comparison and eliminate errors of personal measurement, an ocular micrometer was introduced, and brought to a focus at the plane of the sensitive plate.

It will be seen (Nos. 2-5, Fig. 2) that the grain particles of the Seed "27" plate are decidedly the most regular of the

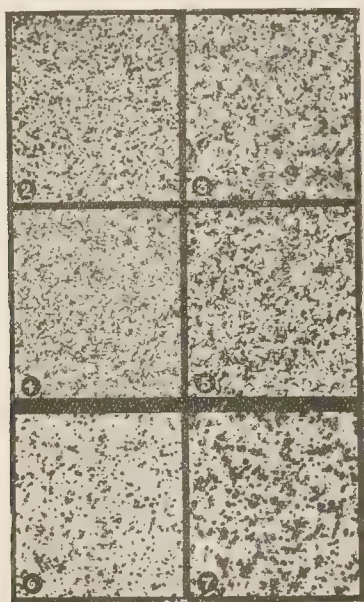


Fig. 2.—Photomicrographs of Silver "Grain."

2. Seed 27. "Gilt Edge" (1.4 to 1.8 μ). 3. Hammer "Special Extra Fast" (3.5 μ).
4. Cramer "Inst. Iso." (0.6 to 1.5 μ to 1.1 to 3.7 μ). 5. Cramer "Crown" (5.3 μ).
6. Seed 27. Before Intensification (1.3 to 4.0 μ). 7. Seed 27. After Intensification (2.8 to 10.4 μ).

series, while those of the Cramer "Crown" show the largest and most "ragged." It will also be noted that in the case of the isochromatic plate the appearance of the grain particles is altogether different from that shown by the others; for, while the general shape is more or less regularly round or spherical, the isochromatic grain is decidedly spicular.

Examination shows that this spicular grain is not distributed equally throughout the depth of the film, but is almost entirely confined to the surface; for, whereas the film at this point is composed of grains of this character, they become fewer as the lower planes are successively observed, until at the lowest depth (in contact with the glass) they are entirely absent.

It must not be understood that these spicular "grains" gradually change shape and become irregularly round; they are a distinct set of particles by themselves, the gradual introduction of the others being readily seen with a sufficiently high power.

That this form of particle would seem to occur rather generally in isochromatic plates is shown by the fact that from a number of other "iso" plates, exposed and developed in the same way, and including Cramer "iso" plates of emulsions covering a period of eighteen months, Seed orthochromatic, Cramer trichromatic, and Lumière orthochromatic, the same spicular grain was noticeable in each, but varying in amount. The idea that this form of "grain" is inherent in and essential to an orthochromatic film the writer does not advance, there being several probable reasons for the formation, which it is purposed to treat to a further investigation.

Careful visual microscopic examination of these negatives also agrees well with the findings of Luppo Cramer, who states that each particle of Ag. in the negative corresponds to a 2Ag. Br. grain in the undeveloped layer, and that an increase in the exposure and development of the plate shows, first, "that the number of Ag. grains in the upper layer is constant" (or nearly so); "second, the number of grains in a unit of volume increases; and, third, that the size of the individual grains increases;" and to this may be added a fourth point—that the grain particles become more complex by reason of their running together and forming what we may term as a group-particle.

ENLARGEMENT OF THE "GRAIN" BY INTENSIFICATION.

A sensitometer negative was firmly fastened upon the microscope stage and photomicrographs were made. The objective was then swung aside, and the square under magnification was intensified by mercuric chloride, followed by blackening with ammonia, the entire operation being performed by means of a small camel-hair brush. When dry, the objective was replaced in position, and exposures were again made, which was reproduced in Nos. 6 and 7. The enlargement in size of each of the original particles is very marked, measurement of the "before and after" effect showing an increase from about 2.5 μ to 5.0 μ in the single grains, and from 4.0 μ to 10.5 μ in the group-particles. Observation will readily identify the individual grains in these two plates.

PRESENTATION TO MR. ARTHUR PAYNE.

THE Federation of the Photographic Societies of Northumberland and Durham, which dates from November, 1901, owes its founding and a large measure of its subsequent growth and success to its Hon. Secretary, Mr. Arthur Payne, F.R.P.S. Mr. Payne now finds it necessary to relinquish his office as secretary owing to pressure of business. Many members of the Federated Societies have felt for some time that a suitable recognition of Mr. Payne's services should be made, and as the occasion of his retirement from office was felt to be a fit occasion, a presentation fund was started, and met with a liberal response. At a representative meeting held in Newcastle-on-Tyne on September 21, 1904, Mr. A. E. Cowling, Chairman of the Federation, in a well-chosen speech, asked Mr. Payne to accept from the Federation, as a mark of their esteem, a massive solid silver salver bearing the following inscription:—"Presented to Arthur Payne, Esq., F.R.P.S., in cordial recognition of his services as founder and hon. secretary of the Federation of the Photographic Societies of Northumberland and Durham. September, 1904." Mr. Surtees, of Consett, and Mr. Brady, of South Shields, also spoke in appreciation of Mr. Payne's services as Secretary of the Federation. On rising to respond, Mr. Payne met with quite an ovation. He thanked Mr. Cowling and others for the kind expressions they had used concerning him, and the Federation for the valuable gift presented to him. Mrs. Payne and he would always look upon it with pride as the evidence of the good feeling towards him expressed by this presentation. The salver was afterwards handed round, and its beautiful work and choice appearance were much admired. Mr. H. Wallis Wardropper, of Sunderland, acted as Secretary and Treasurer of the Presentation Committee.

ROYAL PHOTOGRAPHIC SOCIETY'S EXHIBITION.

SECOND NOTICE.

CONTINUING our comments on the more noteworthy pictures on view in the West Room of the New Gallery, the works of Wm. Crooke appear to dominate each wall of the exhibition. These powerful examples of portraiture are as characteristically British as some of the specimens of gum work in the exhibition are characteristically French or German. These pictures are all the more noteworthy when we consider that they are specimens of Mr. Crooke's everyday studio work, and have not been specially prepared for exhibition purposes.

Mr. Crooke's method and treatment is perhaps most strikingly exemplified in the figure study of Sir Henry Irving (133). With exactly the same material, we wonder how many other professional photographers would have achieved this result? Its keynote is directness, and simplicity in treatment has not been sacrificed for effect. A careful inspection of this exhibitor's four contributions will repay very careful attention. His portrait of the late Lord Shand we have already noticed, while Robert Maxwell, Esq. (210), and Lord Lovat (239), are very high-class specimens of straightforward photography. Mrs. Barton this year does not appear to have improved on her work of the last exhibition. Whether this is due to lack of fresh models or not we cannot say, but there appears to be a sameness in this clever lady's work that falls after an inspection of a few examples. We trust this difficulty will be overcome in her forthcoming "One-man (!) show" at Russell Square. In No. 33, "The Repose," the title explains itself on inspection. It is but another phase of her now familiar Madonna and child group which scored at last year's exhibition, and is not so good as that effort. The nude child in this instance is awkwardly held, and the flesh is quite textureless. Were it not for the child's face, it might be a large doll the lady is holding. No. 211, "Turn Again Whittington," is another familiar face in a new guise. The lighting of this head is very effective, and the "poise" is good. No. 258, "The Cherry Girl," is the best example of Mrs. Barton's work in the show, and would be completely successful if not quite so pinky in tone. As an example of flesh modelling it is first class, both the face and the cherries, with which the little maid is bedecked, are delightful. Of A. H. Blake's other contributions, in addition to "Blown Sand and Shadows" previously mentioned, we like "The Old Bowling Green" (209) the most. This is one of the best examples of "open door photography" we have seen. The interior of the old hall, with a peep at the bowling green bathed in sunlight seen through the open doorway, is faultlessly rendered.

The Rev. H. R. Campion has only one picture in the exhibition this year, "The Staircase." This is a clean little print of a not very interesting subject, but it is remarkably well done and displays sound technique. F. J. Mortimer's other two pictures, in addition to his medalled work, "The Reef" (144) and "The Majestic Main" (9) already referred to, are "Sea Horses" (172), one of the largest prints in the exhibition—a breezy seascape, with tumbling rollers that give the title, and a fine sky. "A Winter Sea" (124) is rather killed by the frame, which is much too dark for so light a print. In a lighter frame this representation of sullen rollers breaking over rocks would be very effective and true to nature. W. M. Coultas' "The Four Sisters" (51), is an exceedingly fine landscape, or, rather, tree study. The composition is good considering the material, although there seems a certain weakness on the left. The picture is considerably helped by the clouds. "A Woman of Etaples" is not quite successful in representing the action that should be there, and the figure is rather too low in the print.

J. H. Gash's "Smithy" (69) and "Hold Up" (204) are broad in treatment, as most of this exhibitor's figure work usually is. W. T. Greatbatch is well represented by four examples of good photography, of which we think "The High Street, Campden," is the most successful. It is one of those difficult problems of lighting that Mr. Greatbatch delights to tackle, and here we have the darkest of archways and cast shadows in juxtaposition to the brightest of sunlit streets seen through the archway. The shadows are, however, full of detail and highly luminous, while the vista is not too hard. This little picture is worth a lot of study. "The Marsh" (134) is not strong. It is a good composition, and the rendering of distance is admirable, but the whole is rather flat. "The Glade" (257) is better. Here we have a sunny woodland scene that just misses being a very

fine thing. It is not quite sunny enough, although sunlight is well suggested. There is a lack of concentration also in the composition, and, considering the mass of detail present in the foliage, etc., a great amount of breadth has been retained.

Dr. C. F. Grindrod's second picture, "Going to the Meadow" (10) is not so satisfactory as some of this worker's earlier pictures, and hardly rises above the snapshot stage. The treatment of the enlargement, however, is good, but we think the roadway leading off of the picture on the right should have been toned down considerably. W. A. J. Hensler's work this year is also not up to his usual standard. "A Thames Carrier" (45) is very poor. The sailing boat is almost exactly in the middle of the picture, and the clouds are badly printed in. The water, however, is well rendered.

"Reflections" (128) is better, but here again the composition is weak. The mass of boats and sails are too huddled up in the upper right hand half of the print, and the left hand half is almost blank. The saving point of this picture is the delightful reflections of the sails in the water. "A Swollen Stream" (247) is quite ordinary. Furley Lewis's "Peter Kropotkin" (224) is one of the best portraits in the room, and if it had been for competition would, doubtless, have scored. As an exercise in successful studio lighting this admirable likeness of the Russian Prince and scientist would be hard to beat, and should add considerable lustre to Mr. Lewis's fame as a successful photographer of celebrities.

J. C. S. Mummary's two contributions are also "not for competition." "A Fen Village in Winter" possesses beautiful quality for a gum print, which we presume it is. The slight falling away in tone on the left hand side may be considered a fault, but the excellence of the remainder of the picture amply compensates for this. Arthur Marshall's four pictures are all characterised by super technical excellence, in addition to admirable composition and clear workmanship. His medalled picture, "Devotion" (1), has already been commented upon. "The Last Rest" (82) possesses magnificent quality. Two recumbent figures on a tomb, and a pillar and part of an arch vault, are somewhat difficult materials from which to make a successful picture, but here no fault can be found with composition, lighting, or execution, and the result is one of the few pictures in the gallery that will bear repeated investigation. We consider this a much finer photograph in every way than his medalled work.

We congratulate Mr. Marshall, also, on "The Garden of Sleep," a splendid foreground study of flowering weeds overgrowing this pathway to a ruined doorway, and "Shadows" (163), a remarkably clever and satisfying picture from very indifferent material. The back of a cottage, two bare tree trunks and a cobbled pavement—and a gleam of sunlight; without the latter there could have been no picture. The shadows cast by the branches of the trees—themselves invisible on the cottage wall, and the shadow cast by an adjacent building of the cobble stones, make a picture that speaks much for its author's perceptive powers. "La Terre," by P. Bale Rider (77) is a striking composition, and has been achieved with simple materials. The figures of a man and woman digging, with landscape and glowing sunset behind. The lighting is extremely well managed. "November" (182), by the same exhibitor, is one of the best landscapes in the room, and as an example of hazy-weather photography is very faithful to nature. Mr. Rider should stick to this kind of work.

J. S. Lamb's "Salome" (108), is a successful semi-nude that does not offend in any way. In looking at this picture one almost forgets it is a photograph of a posed model. The dish in the lower part of the picture might have been a trifle lower in tone. John Hepburn's four pictures are all sound photography. We like No. 113, "The Village Doctor," the most. This clever arrangement of figures is a form of photography that should be encouraged, as it brings out not only the abilities of the photographer in dealing with figures in such a manner as to tell a story, but also shows the process at its best. There is little or no call for faking or hand-work here, and the result achieved by direct photography is quite as pleasing and satisfying as anything produced by the advanced schools of "Art" photography. E. T. Holding has again two of his delightful and somewhat curiously lit figure studies hung this year. "Building the Bridge" (116) is charming by its unconventionality, the chubby little child playing with some scattered toy bricks is very well done indeed.

"Summer" (331), Mr. Holding's second print, is distinctly clever, but the trimming off of the lady's parasol seems hardly satisfactory. James C. Batkin's "Repose" is good in many ways. Not only is a somewhat morbid subject—a cemetery—idealised, but

the quality of the print is such that it will bear a lot of careful study and thought. "A Warwickshire Lane" (122) also possesses delightful quality. "The Vesper Hour" (148), by Bertram C. Wickison, is very reminiscent of J. H. Gear's work last year, and leaves little to be desired. S. L. Willard, an American exhibitor, has one or two striking things.

"Deepening Shadows" (299) is a quaintly composed landscape, bearing out the title excellently. A hilly road and the last gleams of sunlight are admirably caught to convey just the air of mystery necessary. "Her First Run" (334) is not quite clear, but apparently represents a young lady in the cab of a locomotive, taking instructions from the very American-looking engine driver. The lighting is well managed. Messrs. Haweis and Coles show two striking works in "Crepusculum" (320) and "Portrait of Auguste Rodin" (306). The former is a somewhat inexplicable nude, and the latter a very "strong" portrait study in gum. Carle Semon, another American worker, displays considerable power in "Portrait of an Artist" (308). This photograph possesses wonderful quality, and is pleasing throughout, in spite of the brilliantly white shirt the artist is wearing. "A Boy" (340) is equally pleasing, the flesh textures being remarkably good. The ball held by the boy is perhaps a trifle too insistent. J. C. Strauss' "Mrs. Hunter of St. Louis" (301) is good portraiture, but details of the shadows are lost in general darkness, and the white mount is not quite happy. J. Steele's "In Old Touraine" is a striking street scene with figures, but a trifle weak on the right-hand side. The effect of strong sunlight is admirably rendered. A. A. Bellingham shows two pictures of rather unequal merit. C. B. Howdill's big picture "The Modeller" is rather unsatisfactory in pose and tone, and Ellis Kelsey's "Ride by Night" has too much obvious hand work to be pleasing. We miss the beautiful flower and fruit studies that J. M. C. Whitehead used to favour us with. This year all his work is of the landscape class, and, although admirable in every way, we should still like to see an occasional example of his former ability. No fault can, however, be found with his four specimens of skill as a landscape photographer on view this year. We do not care for Mrs. Jeanne E. Bennett's "Woman Churning" (65). It is rather too fuzzy, and the woman appears to be somewhat enveloped in the tree behind her.

C. J. King has one little seascape hung this year, and it is a little gem, full of action, but erring a trifle on the dark side.

A. R. Sargeant has a couple of excellent shipping studies, but the sails are rather too solid to convey the idea of canvas.

S. G. Kimber has one small architectural subject, "The Monk's Entrance," which possesses first-class technical quality, and "Lowbb," by J. P. Bushe Fox, possesses a fine dramatic sky, as also does Thomas Wright's "A Break in the Clouds." "Solitude" and "Hoar Frost," by the same worker, are fine examples of mist photography and atmospheric effect. Wm. Clayden's "Gleam of Light" is also a good rendering of mist with the sun breaking through. Wm. A. Clark's four architectural studies are up to his usual high standard of work in this branch of photography, and Wm. Rawlings also has four excellent pictures hung, all of which are worthy of note. C. C. Cook's single contribution is a well-managed street scene. Fredk. Hollier's portrait study can be hardly considered representative.

Howard Mercer's "Hazy London" chief claim for attention is that it is the smallest print in the show. M. Arbuthnot's "Harvest" is big in treatment, but too fuzzy in execution. T. Percivale Padwick's "Towards the Close of Day" is well done.

"Sunlight," by E. Salusbury Tardrew, is a successful picture of the "open door" type. S. R. Brewerton's "Pool, Kardassa," is one of this worker's well-known Egyptian studies. The figures in this case are rather conscious. "The Inn Yard," by Bernard Moore, though well done, is not so good as many things we have seen from this versatile worker. Hilda Stevenson's portrait studies are examples of sound photography and lighting. P. R. Salmon's "Portrait of Miss B." is a good straightforward enlargement, and the last picture in the pictorial section is an admirable little street scene by Arthur W. Walburn. Pictures by Dr. T. G. Crump, Oscar Hardee, Avendish Morton, James Auld, H. W. Bennett, G. H. Bowley, J. Page Croft, Dr. F. Groves, Harold Hood, H. C. Leat, Hector Macan, Hector Marchison, Arthur Payne, Sidney Pitcher, Dr. Otto Rosenheim, H. Gordon Stollard, W. Thomas, F. G. Tryhorn, G. J.

T. Walford, and Samuel E. Wall, are also worthy of note, but exigencies of space allow only a brief reference to these well-known exhibitors.

In the first notice of the Royal Photographic Society's Exhibition, contained in our last issue, we omitted to include among the awards the medal to Dr. C. Thurston Holland for his interesting series of radiographs showing bone diseases. The section devoted to scientific and technical photography in which this award is made will be reviewed at length in a future number of the JOURNAL.

INVITATION SECTION.

THE success with which the Royal Photographic Society organised last year the first invitation section held in connection with its long series of exhibitions has induced it to repeat the experiment, and sober judgment will allow that it puts before those British photographers who do not claim, as do some, to have got beyond the learner's stage a collection of nearly two hundred works which is well deserving of consideration. One cannot help recalling the opposition which was so sedulously preached by certain self-appointed guardians of all that is artistic in photography when it became known last year that the Society was likely to extend the scope of its exhibition and poach upon what they thought their preserves. Having no wish to dwell upon the incident, except as a prelude to a protest against the recent misrepresentation of the Invitation Sections of this and last year's exhibition that has appeared in a leading daily paper, which has been made to announce that, "this year as last, British photographers have failed to respond to the invitation of the Society to contribute to its loan sections."

It cannot be too clearly set forth, in opposition to this uncorrected statement, that British photographers have not been invited this year to contribute to this section, which is devoted exclusively to foreign productions, and that last year the organised opposition to the section entirely failed to rob it of its value and interest. This oft-repeated opposition and misrepresentation defeats its own object, however, and is likely to do little else than bring the best aspects of an excellent medium of artistic expression into disrepute. There can be no monopoly of photography, whether in its artistic or scientific applications, and the sooner this truth is recognised by those who, after all, make the exhibitions, as apart from those who organise them, the better.

The section under notice will attract the visitor still more readily than did its counterpart of last year. It consists principally of collections from the members of the Hamburg Society, the Belgian group of workers taking the title "L'Effort," the Salon Club of America, and the Association Belge de Photographie. Other examples from miscellaneous Continental workers more or less known in this country complete the collection.

It is inevitable that an open invitation will produce works which are by no means uniformly excellent. We have no hesitation in writing that the South Room, in which the section is arranged, contains examples whose quality is very poor, judged by even a very low standard, but they hang side by side with productions of undoubted excellence. There is no absolute necessity to hang as many prints as will be found in this section, and the removal of a number which could be easily decided upon would greatly improve the collection. The Society is evidently opposed, however, to the idea of tampering with invited works, and in this we think it is assuming a correct attitude.

Taking the prints as they are arranged, instead of allowing the somewhat startling collection of the Hamburg workers to engage his attention, the visitor will find some thirty-three examples of American photography as practised by members of the Salon Club of America. This youthful organisation, which is not lacking in energy, and of which we believe more will be heard, shows some clean specimens of camera work, prominent amongst them being Mr. Walter Zimmerman's two prints, "Solitude," and "St. Anne's Day," his third effort, "A Breton Crucifix," being less convincing. "Shadows on the Dunes," a warm brown print on thin Japanese paper, by Miss Fedora Brown, is clever, and the best of her three contributions, while Mr. R. L. Week's "Mississippi" and Mr. W. H. Porterfield's "The Day is Done"—a man toiling home in the failing light—are worthy of attention. The latter has a good little snow piece, "A Winter Upland," which, however, gives way in our opinion to "Over the Hill," similar in character, and very creditable, by Mr. Osborne I. Yellott. With a few exceptions—these

being merely commonplace, but not in consequence lacking in some of the qualities for which we look—the American collection is good, setting forth, as it does, the healthier side of the art instead of those aspects to which the extremist would entirely devote this photography of ours.

The Belgian exhibits are in two groups. Amongst the first, the picture entitled "Coucher de Soleil sur la Meuse," by Leonard Misoune, at once rivets attention. It reproduces a very characteristic mood of a beautiful river, and is decidedly in front of the same worker's five other prints, each of which is highly creditable. Mr. Haussens emerges from a not too easy task in his "Vieille Porte," an old gateway plunged in shadow with brightly lighted white walls in close companionship. His other prints also aim at a rendering of sunshine, and very well do they succeed.

There are many other prints we should like to name and criticise, but to do so would absorb more space than we can devote to this section.

The third wall bears without question the work that will receive the greatest attention. We find, not one but eight or nine large prints measuring 36 x 24 in red, blue, or brown, or the glory of polychromatic impressions. We have already described these prints, which hail from Germany, as startling, but this is not all, for none but the narrowest minded will deny that they combine evidences of the exercise of a thought, an artistic feeling and a boldness of execution which it is refreshing to perceive.

Such workers as Dr. Bachmann, Dr. Arning, Otto Scharp, G. H. Grell, H. W. Müller, G. E. B. Trinks, R. Dührkoop, Bernard Troch, Th. and O. Hofmeister, Ulrich Brandt, combine to offer us a really excellent exposition of some of the applications of photography, and each print might with good reason be the subject of some comment.

To name a few, Rektor W. Bangow shows a number of fine prints in several colours, the process, as in most of the German exhibits, being, we believe, gum bichromate. His study of a poverty stricken old woman and child in a doorway, entitled "Des Lebens Eingang und Ausgang," and his "Zurischen Feld und Wald," in which beyond a brightly lit mass of flowers and corn on either side of a footpath, rise the dark recess of a wood, are those which appeal to us more particularly. Dührkoop's fine large portrait studies are amongst the best in the exhibition, and Bachmann's "Schnee" is a veritable "tour de force," being one of the most realistic snow pieces seen in this country. All of the prints are highly decorative and should not be overlooked.

The German group is followed by the second Belgian collection, the prints in this being by comparison somewhat small and retiring owing to the absence of colour. Mr. Victor Stoff's "En Vieille (castille)" and his sketchy "Tête Sanguine" stand out well, as do Leopold Willems' "Lac de Sarde" and "Canal à Venise." Leon Sneyers' "Les Pavures" is strong, but his other prints are not above the average. C. R. Mathy essays that most difficult study, the representation of the nude, with some success, and Julien Putman shows a bright little picture of girls playing seesaw on the sands. The strong sunshine is here well handled, and the result is good. Altogether, the Invitation Section is quite justified, and we hope that the society will be persuaded to continue the series and show us what others are doing whether the general quality is or is not as high as rigid selection might make it.

FORTHCOMING EXHIBITIONS.

- October 4.—Whitehaven Y.M.C.A. Zoar Photographic Exhibition. Hon. Sec., J. Hayward, 14, Albert Terrace, Whitehaven.
 October 15 29.—Coatbridge Photographic Association. Hon. Sec., Geo. W. Campbell, Ailsa Cottage, Coatbridge, N.B.
 October 18, 19, 20.—Kettering Church Institute Photographic Exhibition. Hon. Secretary, E. Claypole, 112, Hawthorn Road, Kettering.
 October 19 20.—Isle of Wight Photographic Society. Hon. Sec., J. Howard Burgess, 53, Pyle Street, Newport, I.W.
 October 19 22.—Rotherham Photographic Society. Hon. Sec., H. C. Hemmingway, Tooker Road, Rotherham.
 October 26 28.—Watford Camera Club. Hon. Sec., H. G. Trayfoot, 3, The Parade, Watford.
 November 2, 3, 4, 5.—Newark Photographic Exhibition. Secretary, L. C. B. Appleby, Bambygate House, Newark.
 November 2 23.—Plymouth. Hon. Sec. Photographic Section, Chas. R. Rowe, 2, Walnut Villas, Cockington, Torquay.
 November 3.—Frome M.I. Photographic Society. Hon. Secretary, B. J. Mitchell, 3, Willow Vale, Frome.
 November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Sec., James Dunlop, Myrtlebank, Motherwell.
 November 9.—Hackney Photographic Society. Hon. Secretary, Walter Selfe, 70, Paragon Road, Hackney, London, N.E.
 November 15 19.—Sunderland Camera Club. Hon. Sec., Selby-Ord, 52, Frederick Street, Sunderland.

- November 17 18.—Baintree and Bocking Camera Club. Hon. Sec., W. H. Tilston, 81, High Street, Baintree, Essex.
 November 17 19.—Darwen Photographic Association. Hon. Sec., J. G. Thomas.
 November 21 26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.
 November 22 23.—Ipswich Camera Club. Hon. Secretary, Sutton, 37, Henley Road, Ipswich.
 November 23 26.—Hove Camera Club. Hon. Secretary, A. Sargeant, 55, The Drive, Hove.
 November 24 25.—Isle of Thanet Photographic Society. Hon. Sec., G. W. Simmers, Aberdeen House, Ramsgate.
 November 25 26.—Ilford and District Photographic Society. Hon. Sec., W. N. Beal, 155, Thorold Road, Ilford.
 November 26 27.—Glasgow Eastern Amateur Photographic Association. Secretaries, John Brough, 68, Dalmar Street, Park Head, Glasgow; and Geo. R. Johnstone, 591, Alexandra Parade, Dennistoun, Glasgow.
 December 2 8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.
 December 5 17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102 West 101st Street, New York.
 December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.
 December 12 17.—Sefton Park Photographic Society, Liverpool. Hon. Secretary, H. E. Cubery, 3, Langdale Road, Sefton, Liverpool.
 December 13 20.—Southampton Camera Club. Hon. Secretary, G. Kimber, Oakdene, Highfield, Southampton.
 December 28 31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 138, Glasgow Road, Wishaw.
 January 12 14, 1905.—Boston Camera Club. Hon. Sec., H. Hames, 65, West Street, Boston.
 January 14 28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.
 January 20 21, 1905.—South Essex Camera Club. Hon. Secretary, T. Michell, 180, Browning Road, Manor Road, E.
 January 28 February 12, 1905.—Photographic Society of Marseilles. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.
 February 6 11, 1905.—Blairgowrie and District Photographic Association. Hon. Secretary, Wm. D. M. Falconer, James St Cottage, Blairgowrie.
 February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Glasgow.
 March 4 11, 1905.—South London Photographic Society. Hon. Sec., H. Creighton Beckett, 44, Edith Road, Peckham, S.E.
 June, 1905.—Northern Photographic Exhibition. Secretary, H. Issot, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

- September 30.—"Photographic News." Quarterly Competition. "Photographic News," 9, Cecil Court, Charing Cross Road, London, W.C.
 October 1.—Thornton-Pickard. £100 cash prizes for pictures taken with Thornton-Pickard cameras and shutters. Thornton-Pickard Manufacturing Co., Altrincham.
 October 10.—Luna paper. £240 cash prizes for prints on Luna paper. Lucien Allegre and Co., 59a, New Oxford Street, London, W.C.
 October 15.—Belgian Association Lantern Slide Stereogram Competition. Secretary, M. Vanderkindere, 97, Avenue Brugmann, Brussels.
 October 31.—Coxin. 68 prizes for users of Coxin. Judging two pictures. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.
 November 1.—The "Graphic." £50 in cash prizes. Manchester Photo Competition, the "Graphic," Tallis Street, Whitefriars, London, E.C.
 December 31.—Barnet. Nineteen classes. Prizes valued at £100 for lantern slides and prints made with Barnet products. Elphinstone and Sons Limited, Barnet, Herts.
 March 15, 1905.—Ilford. £750 in cash prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

THE Hackney Photographic Society's Exhibition.—The sixteenth annual exhibition of the Hackney Society will be held at the K. Hall, Hackney Baths, N.E., on November 9 to 12. The judges will be Messrs. H. W. Bennett, A. Forsley Hinton, and A. Mackie. open classes are announced and the awards are specially designed plaques. Exhibits will be collected without additional charge at the R.P.S. and Salon Exhibitions. Entry forms can now be obtained from the Hon. Sec., Walter Selfe, 70, Paragon Road, Hackney.

ASTRONOMICAL PHOTOGRAPHY AT OXFORD.

CONSIDER how many of the thousands who daily pass one or other of the two observatories in Oxford have any idea of the work that is done in them, or of the life that the astronomer leads? observes correspondents to the "Oxford Chronicle." We should not be surprised to find that many persons, if questioned, would be found to hold a vague notion that the astronomer has to sit up all night and look at the stars; and so, of course, he goes to bed and sleeps the day. As to the purpose and result of all this star-gazing, would probably be found to have still more hazy notions, and would be surprised to learn that the astronomer is the one man of others on whom we are most dependent for the regulation of our everyday life. In other words, the astronomer is "the man and the clock"; and it is his first and most important work to set the clock exactly to correct time. That is to say, he must make it so that it registers the lapse of twenty-four hours in exactly the period of one revolution of the earth round its axis. This is a work which involves the use of very accurate instruments, and great care in observing, and also in making the subsequent calculations. But this is not all his work. It is part of his duty to map the heavens, and keep account of all the stars he finds therein. The oldest time this was a laborious task, wrought mainly with simple instruments; but in modern days the photographic plate has come to the aid of the astronomer, and star charts are compiled of what is known as the "equatorial" telescope. This is in a circular dome, entering which we find ourselves in a circular chamber. The centre of it rises the great masonry pier which supports the instrument. Close against the pier is the cylinder of the electric engine that moves the floor up and down in obedience to the astronomer's will, for if the star is low in the sky, the eyepiece of the telescope will be high up. In most observatories the way of observing under these conditions is to mount a movable platform and reach the instrument in that way, but in the new dome recently erected at the Radcliffe Observatory, a moving floor has been fitted, and by simply pulling a rope the observer can raise or lower the whole floor, thus not only enabling him to observe with comfort at any position of the telescope, but taking with him his desk with his tables and notebooks. On the other side of the dome is a small dark room, where the plates can be changed; and a powerful water engine whose office it is to wind up the clock which drives the telescope. As the clock weight scales about half a ton, it will be seen that water power for the winding of it is by no means a superfluous luxury.

Ascending the staircase, we reach the floor—now at its lowest point—and get our first sight of the telescope itself. A huge mass of tubing, mounted on one end of a long beam, pivoted near the centre, and carrying a weighty counterpoise at the other extremity, rises in the midst of the steel pillar which sustains the vast instrument. The driving clock—a maze of many-toothed wheels and electrical machinery. "The driving clock?" asks one of the uninitiated. Know, that the field of view of a telescope is very small, and as the earth is constantly turning, prosaically carrying with it even the astronomer and all his goods, the period during which a star remains in view with a powerful instrument is very brief, lasting only to some few seconds, unless the telescope be moved to follow the course of the fugitive. Fortunately, we know the course the star will follow in its apparent motion (because we really we who move, and not the star), and so we can mount the instrument in such a way that a simple motion in one direction will keep the object in sight as long as we desire, and to save trouble and ensure regular speed, a clock is employed to impart the necessary amount of movement. But this clock cannot be trusted fully, any more than can the chronograph recorder of the transit instrument; and in this case it is no wonder, for the equatorial weighs seven tons, which is no small item for any clock to control. We see a solemn pendulum fastened to the wall, whose duty it is to beat seconds and keep the driving clock running strictly to time. But the pendulum itself must work correctly, and to ensure that it does so it is every now and again made to register its beats on the recorder in another building, by which means it can readily be compared with the standard clock, and its rate of going corrected, if necessary, by the addition to its bob of small pieces of metal, the weight of which, though trifling, is sufficient

to make it lose from one to one hundred or more seconds in the course of a day.

And the telescope itself? Do not run away, dear reader, with the idea that it is anything like the collection of sliding tubes and lenses you have so often seen under the arm of the coastguard'sman on the shores of our island home. Two large tubes of sheet steel, lying side by side, and securely bolted to the heavy axis, appear before us. The one is fitted with an eyepiece, and is for visual work; the other is for photography, and is, in fact, a giant camera, with a focal length of between twenty and thirty feet. All about it are levers, and screws, and graduated scales, till it appears to the non-professional eye a most complicated affair; and in very truth it is none too simple, even to its masters.

Most of us have taken photographs of some moving object. But what if we had to give a time exposure on some object in motion, following its movements with the camera, so that the image on the plate should remain stationary? Even if we knew exactly in what way the motion would take place, I think we should most of us shrink from such a task; yet this is what has to be done every time a photo is taken of any part of the starry firmament. Of course, as already explained, the driving clock does most of the work, all the work, indeed, of actually moving the telescope; but as the least deviation if unchecked, would increase and ruin the plate, it is necessary for the astronomer to keep an eye on the star the whole time that the plate is being exposed; and since exposures vary from five minutes up to as many hours, it will be seen that the work of the photographic astronomer is not an altogether enviable one. And many and many a time does it happen that perhaps half-way through an important exposure the clouds will creep up and interrupt the proceedings, it may be for the rest of the night. This need of checking the action of the clock is the *raison d'être* of the visual and photographic instruments being combined in one. While the plate is being exposed in the one the observer is watching through the other. In the centre of his field of view are two fine "cross wires" at right angles, and when photographing a given portion of the heavens a particular star is selected, and the instrument adjusted so that the image of that star appears on the intersection of these "wires"; and if during the exposure it leaves it in the slightest degree, a switch is depressed by the patient watcher, and the clever current pulls up the clock, or urges it on faster, as the case may be, until the star is once more in its proper position. This is perhaps the most tedious of all the work that goes on in the observatory; yet it is the work which yields the best results in the plotting out of the new star charts. After the plate has been taken and developed, there is the work of measuring it and recording its results in tabular form, and this, too, demands the use of instruments of the utmost precision, and the most unremitting care. The professional astronomer has but little time to spare for the romantic side of the star world; it has all to be very matter-of-fact business with him. Yet it is work that is not without its peculiar compensations; and perhaps no other scientist ever experiences quite the same thrill of delight as the observer who finds on his plate the tiny trail that denotes a planet, which he can prove unmistakably to be a new one, or, better still, when, after carefully measuring the position of a star of some considerable magnitude he finds that it has never been recorded before, and is therefore an undeniable "Nova."

But the great work is the correcting of the standard clock; and though all the official work in this direction (for England) is done at Greenwich, yet the work of the provincial observatories greatly aids the Greenwich staff in other highly important branches, and materially adds to our knowledge of the great universe.

The inventor of the Crossed Swords Pigment paper (supplied by Chas. Zimmermann and Co.) has discovered a method which removes what was perhaps the only part of the process which entailed any trouble at all, i.e., the acetic acid bath. He has found that this bath may with advantage be substituted by immersing the print in a tepid 6 per cent. solution of soda bicarbonate, which is not only simpler in use by reason of its not requiring to be kept at a given temperature, but it removes any possibility of rotting the pigment and so losing some of the finer detail, which was a danger with the acetic acid bath. The resulting print is also softer in appearance and not so inclined to contrast. The prints may be handled in larger quantities, and may be left in the bicarbonate solution without danger of deterioration.

ON "OPENING A NEW LINE."

It is a singular fact that the professional photographer is seldom a good man of business. He may be a clever technical worker, instinct also with that artistic taste and sympathy which are emphatically necessary for successful portraiture. He may be, better still, possessed of that tactful and winning manner which pleases the sitter, but still the one thing, from a pecuniary point of view even more important than all the preceding virtues, is lacking—the ability to so keep himself in the public eye, and to push the attractiveness of his wares, that he need never sit down and wait for custom.

No doubt a certain amount of this failure to grasp the essentials of business prosperity arises from a species of false pride, a kind of traditional sentiment that the photographer has a distinctive professional status to uphold, and so must carefully abstain from undue advertisement and commercialism. There is, of course, much to be said for this view of the matter. No zealous lover of the camera craft would wish to see anything done which could at all lower the estimation that the public instinctively feel for at least high-class photography, or which would tend to degrade it into a mere trade. But it is questionable whether this has not already been done to such an extent that the worker who omits to captivate his clients by a sufficient amount of well-judged pushing and puffing is bound to go to the wall. It is infinitely regrettable that the profession of photographic portraiture should have allowed itself to sink so far into the present abyss of suicidal competition, with its resulting low prices and surplus of unemployed; and it is doubtful whether some degree of blame ought not to be attached to the short-sighted policy of those workers who, once entrenched in an easy and lucrative position, could find no means of preventing or avoiding such a pass. That, however, is over and done with; the photographer of to-day must take things as he finds them, and make the best of the prevailing conditions.

For all the complaints of bad business so persistently heard, the amount of photographic work actually done is by no means so large as it might be if an intelligent attempt were made to open fresh sources of custom. An illuminating instance of this may be given. At a sleepy little south coast watering place there were, until a year ago, seven photographers of varying grade. There was the leading man, with a smart, double-fronted shop on the parade, his windows filled with portraits of his Worship the Mayor, the local clergy, and other dignitaries. Three or four second-rate men catered for a middle-class connection in different parts of the town, while the remaining studio might be placed without serious libel in the catalogue of the "cheap and nasty." The amount of business done fluctuated, but it would have been heartily agreed by any observant looker-on that there was absolutely no chance for a new-comer. The aristocratic owner of the studio on the front just managed to decently clear his expenses and leave enough for an occasional visit to the theatre with his family. The four middle-class studios were commonly in a chronic state of insolvency, and frequently changing hands. The cheap worker, curiously enough, did rather better, but had to be content with a tremendous slump in the winter season. Such was the position of affairs when; hardly twelve months ago, an enterprising citizen of Yankeeedom, greatly daring, started a new establishment on the front. Unlike the usual run of his compatriots he did not seek to introduce strikingly original methods of work or advertising, but, beyond the fact that his premises were in every respect handsome and up to date, pursued his way in quite the orthodox fashion. And yet, simply by reason of a keen eye for display and an eager seizing of every possible opening or suggestion of business, it has come to pass that, without at all affecting the amount of work done by his seven predecessors, the American now takes five times the receipts of all the others put together.

The fact of the matter is the British photographer is too apt to forget that portraits are not a necessary of life, and that, therefore, he cannot well rely upon a steady and continuous flow of orders if things are left to themselves. It is no good to take the business that comes, the business that is already there. He must create a new demand by perpetually arousing fresh interest in previously undisturbed directions. He must, in fact, take a leaf from the book of the wide-awake modern tradesman, and "open a new line."

It might be thought that there is very little scope for the introduction of anything really new and original in the photographic business. That such is not the case is amply proved by the remark-

able success now attending the offer of miniatures at a low, probably remunerative, price by a widely circulated daily paper. is a source of income which scarcely one photographer in a dozen cared to turn his attention to, and now, as with the bromide enlargement, it is the outsider who reaps the benefit. The public demands a novelty, and the wise man of business knows how to supply this at just the right moment. It is a common delusion a thing, to be new, must be absolutely novel. It may be employed out in one county and quite a rarity in another, and the local differences should be critically noticed. We remember a well-known worker telling us that his specific for the improvement of business was to go all round the neighbourhood examining his rivals' showcases, and to make a speciality himself of whatever he found others had not got. Incredible as it may seem, there was actually a small town in which, till quite recently, the carte-de-visite had disappeared from all the photographers' showcases. At last, it appeared, one of them noticed the omission, filled his windows with cartes, and is now inundated with orders.

It is the law with everything else, and the photographer cannot expect to ignore it with impunity—something becomes popular, its day, and then steadily declines in public estimation, giving place to a fresh favourite, until, perhaps, the once successful draw becomes so utterly forgotten that it may be safely re-introduced as a novelty good for a second run of prosperity. It is often in the revival of formerly popular but now neglected fashions that a striking success may be achieved. Many examples will readily occur to prove the truth of this to an investigating mind. The renaissance of the miniature is a case in point, and there are numerous other instances every branch of industry and art. What is required is simply a moderate portion of that prophetic foresight which enables one to anticipate what will take the public fancy, and the executive ability to take advantage of and fully supply the demand so created.

Even without the introduction of actual novelties or the revival of past processes and methods, there is ample scope for the presentation of the photographer's present work in a fresh and more attractive light. A new line may be struck in the display of specimens, the decoration of windows and showcases, just as surely as by any other way. The value of frequent change in the showcase or window is not appreciated as it should be. It no doubt involves much extra work and trouble in the preparation of suitable specimens, but this is generally amply repaid. It is better to show only a few specimens with frequent changes, than to have a larger display which is sufficient to become tame and commonplace in everyone's eyes by reason of long familiarity.

It is inevitable, of course, the moment a new line is started, or anything fresh and original introduced in the conduct or methods of business, that imitators will immediately follow suit. This may be expected, but the enterprising photographer will have gained only a momentary start of his rivals but, in many eyes, a reputation for smartness and up-to-date ideas which will linger with him some time. It must then be his object to maintain every temporary advantage gained, and to keep ever to the front in all that is bold and unhackneyed. All this can be done without in the least diverging from a dignified and self-respecting professionalism—in fact, what is contrary to this simply spells failure sooner or later. The man who merely thinks of the present moment, straining all his energies to a temporary triumph over his competitors by an undesirable cut of prices that are already too low, or by other penny-wise and pocket-foolish tactics, may profit exceedingly for a few short months, but will in all probability soon realise with disgust that he has succeeded in permanently damaging not only his neighbours' businesses, but his own as well.

A. LOCKETT

YEADON Photographic Club Sold Up.—The erstwhile flourishing Yeaddon Photographic Society is now dead, and they were sold up Tuesday night last, a melancholy event in face of what might have been the opening of another winter session. Members, however, not attending, interest gradually lapsed, and so the club went down. Little debt remained to be cleared off, and therefore the goods and chattels were disposed of. These included an enlarging camera, fitted with dark slide, lens, and carriers, up to 15 by 12, optical lantern with condenser, lens (with flash shutter), and metal carrying case and lock; and a number of sundries.

FRAMING AND MOUNTING.

MR. JOHN H. GASH has given some instructive advice on this subject at a meeting of the Leeds Camera Club.

Framing, he said, is a question upon which there may be considerable difference of opinion, and a frame one man would condemn another might gloat over. But frames intended for exhibition purposes must be considered from a different standpoint than those which are to be hung up at home. For the former purpose, the quieter and more subdued the frame the better accentuated will be your picture and that is the main object of the exhibition frame. But while giving subordinate to the picture it encloses, it should be in strict harmony and harmony with it, otherwise the observer's attention is attracted by the frame, which ought to be drawn to the picture.

Light delicate prints are often seen at their best when framed close up without any mount showing. But when we turn to the question of mounting, we are confronted with a matter on which there is a wider divergence of opinion. Some foreign works, which were exhibited in Leeds a year or two ago, were excellent examples of grotesque in mounting, and showed how it might be carried to ridiculous extreme. After tone, a secondary consideration should be the subject, when deciding upon the style of mount and frame. Whether the print shall be framed close up or surrounded by a mount, must be determined largely by the type of subject. Strong, heavy subjects, large figures and the like, are, as a general rule, better, and appear more artistic, when framed close up. But in coming to a decision on such matters the photographer's own judgment comes in very largely, and may be said to depend upon the subject and type of printing process employed in producing the print, and it is always best to judge the print in connection with its subject and colour. For exhibition work it may be said, generally speaking, that if the tones of the print permit it, it is best to frame close up, but if the tones are found to be unsuitable for this purpose will then be best to have a decided contrast, and separate the frame from the print by means of a mount. As an example of what he meant by suitability of tones, Mr. Gash referred to a brown carbon print on stained oak frame, remarking that if the tones of the two were in harmony we should, standing at a distance, see the picture but not the frame.

But some subjects will not admit of being framed close up, and must be mounted on suitably toned board or paper. Certainly, if the print and mount be in perfect harmony the former will gain very much by such treatment. White mounts, as a general rule, are unsuitable. At exhibitions all frames with white mounts are relegated to the corner to themselves. Remember, the frame and mount must be entirely subservient to the picture.

For "home consumption" the mounting and framing may be treated as a decorative point, so that it may be in harmony with other things, furniture, etc., in the room. A lighter type of frame may be employed—some with a little gilt or silver may be effective. But these matters let your own taste as to what you like on your own walls be your best guidance.

The question of mounting is a matter of personal equation, and we cannot lay down too hard and fast rule. Generally one must decide what is best suited from an artistic point of view. A thing may be decorative and artistic, but it does not follow that it can be artistic and decorative.

For general work it is best to avoid extreme degrees of mounting. Numerous tints and tones and colours in juxtaposition often become grotesque, if not altogether ridiculous. The colour of the mount and the depth of tone is the first and all-important consideration. Natured mounts can now be purchased in a great variety of neutral tones, and it is a good plan to try the print on one after another until which suits it best is found.

White margins to a print are, perhaps, best got by masking in the print, rather than by employing an additional mount; and if a narrow black margin is wanted, this can be made by means of pen and Indian ink. The same effect as a multiplicity of mounts is so achieved, but much more easily.

In conclusion, Mr. Gash showed a number of home-made mounts, including an ingenious and exceedingly neat "cut-out" mount on a toned bevel opening.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

October.	Name of Society.	Subject.
1.....	Royal Photographic Society ...	<i>Photographic Studies of Marine Life.</i> Mr. F. Martin Duncan.
3.....	Royal Photographic Society ...	<i>Submarine Boats, Past and Present.</i> Mr. Alan H. Burgoyne, F.R.G.S.
3.....	South London Photo. Society...	<i>A Chat on Photographic Chemistry.</i> Mr. Maurice Howell.
3.....	Bowes Pk. and Dis. Ph. Soc. ...	<i>Home Portraiture Indoors.</i> Mr. A. H. Lisell.
3.....	Ilford and District Photo. Soc.	Annual General Meeting.
4.....	Sheffield Photo. Society.....	<i>Bromide Enlarging.</i> Demonstrated. Mr. S. Swinden (Y.P.U.).
5.....	Everton Camera Club	<i>Tabloid Intensification and Reduction.</i> Demonstrated. Mr. W. P. Watnough.
5.....	Boro.' Poly. Photo. Society.....	Affiliation Slides.
6.....	Royal Photographic Society ...	<i>The Sculptures of Chartres Cathedral.</i> Mr. Ernest Marriage, F.R.P.S.
6.....	Hull Photographic Society	President's Address and Social Evening.
6.....	Watford Camera Club	Exhibition Week.
6.....	London and Prov. Photo. Asso.	<i>Constantinople.</i> Mr. A. L. Henderson.
7.....	Boro.' Poly. Photo. Society	Instruction Evening. Apparatus.

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

SEPTEMBER 22, 1904.—Mr. Wright in the chair. Mr. Henderson showed a portrait of himself taken by Mr. Pfenningeert, of Brighton, by the Davidson and Juneaux process in Davidson's patent reflecting camera, with an exposure of 40 seconds in bright light out of doors. He did not altogether like it as the countenance was too green. Mr. Freshwater said the work seemed to follow on the lines worked by Ives, Sanger-Shepherd, Leon Vidal, and others. Mr. Hart showed a postal box for negatives, where the negatives are held by rubber pads, and said boxes are made for various numbers of negatives. Mr. Freshwater opened the discussion on collodion-chloride papers, and showed strips of Paget and Aristo self-toning paper, 1st, unfixed; 2nd, washed; 3rd, salted and fixed. He had also tried them toned, and thought the Aristo stood it best. He also showed prints on Paget, Crossed Swords, Kodak, Seltona, and Valento papers which he had toned to purple, which he said he had no trouble in getting. Mr. Wills passed round prints on the same papers toned with gold and platinum, and said he thought the reduction very great. Mr. Rapson showed prints on Aristo and Paget self-toning papers, 1st, fixed only; 2nd, washed; 3rd, immersed one minute in salt bath; 4th, three minutes salt; 5th, five minutes salt; 6th, toned in sulphocyanide and gold bath. In his hands the Paget paper had given a warmer tone throughout than the Aristo. The matt papers stood the toning well, but with the glossy papers the effect was disastrous. He also passed round prints on the other samples of C. C. paper toned with sulphocyanide and gold with a long range of tones from sepia through browns to deep purple. Mr. Haddon said the scale of tones was shorter in the C. C. than in the gelatino-chloride papers, but prints could be left longer in the fixing bath without loss of density. He found that Crossed-Swords paper required very deep printing, and showed prints toned with platinum and formate, and gold and formate, with a range of deep browns and blacks. He thought the paper difficult to mount on account of its curling at the edges, but it was pointed out that if the precaution was taken of having the first washing shallow and keeping the prints well pressed down for five minutes, there was no further tendency to curl. Mr. Teape spoke of the variation in the strength of the fixing baths recommended, they bring 1 to 20, 3 to 20, and 4 to 32, and thought the weak bath would leave the prints very liable to fade. He showed prints on Paget C. C., toned one with gold and the other with platinum, and on Crossed-Swords C. C., one toned with platinum and another with gold to brown only, which, when dry, were both equally black. Also a number of prints on the various makes of C. C. papers with good brown and black tones. His experience with Paget self-toning was different from Mr. Rapson's, as his all gave cool tones. Mr. Henderson suggested that the difference was possibly due to the fixing baths used. Mr. Teape said his was made alkaline with ammonia. Mr. Hodges showed prints on Kodak, Solar, and Diamond C. C. papers, all toned with gold followed by platinum, which were a very rich black. Prints were also shown by other members. It was mentioned that the bronzing on C. C.

papers was a different colour to that on albumenised papers, being golden colour instead of green. Mr. Teape said the bronzing would be removed if the prints were allowed to remain for a longer time in the fixing bath. The general opinion was that the whole of the papers were easily worked, and great range of pleasing tones were obtainable once the individual idiosyncrasies were noted. Mr. Mackie showed several samples of gelatino-chloride paper which had gone green through keeping in a box with celluloid films, the emanations from which, he thought, had caused the change. He also showed a bromide print which had been toned brown with sulphur, one half had then been again toned in a sulphocyanide and gold bath and turned red. The chairman then presented the bronze plaque to Mr. Hodges, which he had won in the Affiliation of Photographic Societies' Second Lantern-Slide Competition. On October 6, Mr. A. L. Henderson will give a lantern lecture on Constantinople.

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION—EDINBURGH BRANCH.

A meeting of the above was held at 38, Castle Street, Edinburgh, on Friday, September 16.

Present Messrs. Balmain, Bibbs, Young, Pursey, Salmon, and Moffat, hon. sec. Mr. Salmon occupied the chair.

An interesting discussion took place on "Studio Lighting." The general opinion was in favour of a slightly slanted high-side lighted studio, glazed with ground glass, with blinds from the top and bottom. Any effect could be got by placing the subject at various distances from the light; also by using a concentrated light, or, otherwise as the case required.

One member suggested that buttermilk dabbed on to plain glass was a good substitute for ground glass.

Mr. Snowden Ward's proposition to reorganise a new benevolent fund was next discussed. The members agreed to support a benevolent society, if started by the P.P.A., or the R.P.S., in London.

Certificates to qualified assistants.—This was thought to be a move in the right direction, if it could be arranged. It would be necessary to grant certificates for the various branches of photography; such as operator, retoucher, printer, etc. This, of course, would not prevent anyone from having a certificate for each branch.

With regard to operator, it was thought there might be some difficulty, as so much depended upon manner and the gift of putting the subject at their ease. An employer's testimonial would be more valuable than even a certificate in this case. It was agreed that it would be a decided boon to have certified assistants, would save trouble and weed out incompetent men.

A vote of thanks to the chairman terminated the proceedings.

Commercial & Legal Intelligence

METATYPE Company, Limited.—The above-named company has been registered with a capital of £4,000 in £1 shares. Object to acquire, exploit, and work the patented process of metatype plaques, papers, and plates for photographic or other purposes, to take over the business hitherto carried on by H. Ahrlé, and to carry on the business of photographers, artists, etc. No initial public issue. Registered without articles of association.

EXCELSIOR Photographic Company, Limited.—The above-named company has been registered with a capital of £1,000 in £5 shares. Object: To adopt an agreement between F. E. Jones and G. A. Jones of the one part, and C. Sutcliffe of the other part, for the acquisition of the business carried on by the said F. E. Jones and G. A. Jones, and to carry on at 17, King Street, Carmarthen, and elsewhere in the United Kingdom, the business of photographers, photographic and fine art publishers, picture frame makers, etc. Minimum cash subscription, £250. Registered without articles of association.

BASSANO, Limited.—This company has been registered with a capital of £5,000 in £1 shares. The objects of the company are to acquire the business of photographers and photographic miniature painters carried on at 25, Old Bond Street, W., as Bassano Studios, Limited, and to carry on same, together with the business of dealers in photographic sundries, publishers, and printers, etc. There will

be no initial public issue. The first directors (to number not less than two or more than five) are to be appointed by the signatories. No qualification required. Remuneration as fixed by the shareholders.

CHISLEHURST Caves: Expensive Advertising.—Blyfield v. Ryan. At the Bromley County Court last week, plaintiff, a photographer, Chislehurst, sought to recover of the defendants, who are the proprietors of the Bickley Hotel, the sum of £57 13s., balance of account for the supply of three show-cases for advertising the Chislehurst Caves. Mr. H. M. Givens was counsel for the plaintiff, and Mr. Profumo, barrister, appeared for the defendants. Mr. Givens, opening, said this, a remitted action, was to recover the balance of an account for show-cases supplied to defendants' order. There were but three items in dispute, and the question was as to the amount that ought to be charged for the cases. Plaintiff carried his business as a photographer artist, and her husband managed the business. Defendants were the proprietors of the Bickley Hotel, and he believed they also owned the Chislehurst Caves, from which they made considerable profit. In the autumn of last year the defendant, Herbert Ryan, came and ordered some show-cases. The show-cases were to contain photographs of the caves, and plaintiff was to supply them. The cases were for the purpose of advertising the caves, and plaintiff was told that they were to be good and large. No price was fixed. Plaintiff, in accordance with this, went and took photographs of the caves, which occupied him some very considerable time. The show-cases he had to buy elsewhere. The photographs, of course, were photographs which had to be taken underground, which resulted in the spoiling of a lot of negatives. In the end, plaintiff supplied three different show-cases, and thirteen original photographs. They were finished in the spring of this year, and some payments were made on account. £28 was paid before the action was commenced £17 13s. had been paid into Court, and the amount now in dispute was £40. Application for payment had been made from time to time, but without success. Plaintiff's husband, in bearing out counsel's opening statement, said the show-cases were ordered for the purpose of advertising the Chislehurst Caves at different railway stations. He considered that he was entitled to £2 2s. for each of the original negatives. He also had to go to the different places to arrange about the fixing up of the case. After supplying one case, the defendants ordered two more. He had made a charge for taking the photographs, for the printing that had to be done, as well as what he bought for the show-cases. He charged 3s. 6d. for duplicate copies of the original negatives. In the course of the work he saw the defendant several times, but they never complained about the price. He paid over £30 for the show-cases, and another £3 for smaller items. This did not include anything for the labour of taking the photographs and putting them up. Corroborative evidence was given by Mrs. Blyfield. The photographs were taken entirely for show-cases, and not for letter-cards or postcards. Herbert Ryan, the proprietor of the Bickley Hotel, said in the autumn of last year he had thought, in conjunction with Professor Nicholls, that it would be advisable to have some photographs taken of the caves. Postcards and letter-cards were ordered of the plaintiff, and for these he paid £45. When he gave the order for these photographs, he never dreamed of having show-cases. He had the photographs for the purpose of distributing them amongst the members of different archaeological and geological societies, and to sell. He paid £28 on account before he received any account for the show-cases, and he now thought he had already paid enough for the work. It was not till recently that he found out that he was being robbed. His Honor said he could not give more than an additional £10. He was giving the plaintiff the benefit of a good deal that he ought not to give him, perhaps, but he held that the photographs were taken by him for the show-cases. Judgment would be given for an additional £10 and counsel's fee.

BALLOON Photographs of Alps.—Captain Spelterini for several hours during his recent balloon ascent over the Alps had splendid weather and was able to photograph the Jungfrau group, the Blumlisalp, the Breithorn, and the Wildstrubel. A thick fog afterwards prevented him from taking his bearings. The maximum height reached was 20,000ft., the temperature being then 9 degs. (Fahr.) below freezing point.

News and Notes.

Mr. Thornton-Pickard Manufacturing Company's £100 cash prize competition closes to-morrow (Saturday), October 1. Those of our readers who intend competing and have not yet sent in their prints will do so to-day.

Is Radium Taxable?—Customs officials in the United States have decided whether radium is taxable. Hitherto they have imposed 5 per cent. ad valorem duty, but the principal importing firm now contends that radium is a crude mineral, and must be admitted free.

Borough Polytechnic Photographic Society.—This society opens its winter session on October 7. The practical instruction and lecture evenings will be held each week as usual. The society has four dark rooms and an enlarging room. Particulars of membership can be obtained from the Hon. Sec., 103, Borough Road, S.E.

Owing to the increased business of the photographic paper department of the Rotary Photographic Company, Limited, they have found it necessary to appoint Mr. Charles J. Miller to relieve Mr. W. A. Sims of the business management, Mr. Sims continuing the technical (including demonstrating) of the above company.

Entry forms for the Braintree and Bocking Camera Club's Second Annual Exhibition are now ready. Entries close on October 31. There are five open classes, and silver and bronze medals are offered for each. The Rev. F. C. Lambert, M.A., is the judge. Full particulars are obtainable from the Assistant Hon. Sec., W. H. Hon, 81, High Street, Braintree, Essex.

L.P.S. EXHIBITION.—The following lantern lectures will be given at the New Gallery, Regent Street, to-morrow and next week:—Monday, October 1, "Photographic Studies of Marine Life," by Martin Duncan; Monday, October 3, "Submarine Boats, Past and Present," by Alan H. Burgoyne, F.R.G.S.; Thursday, October 6, "The Sculptures of Chartres Cathedral," by Ernest Marriage, L.P.S.

Every lover of breezy sea pictures will hear with regret of the death of Mr. Colin Hunter, A.R.A., who contrived to get into his work so much of the real dignity of the ocean. He was born in Glasgow in 1841, and was brought up within sight of the picturesque ruins of the Firth of Clyde, for his father was postmaster of Helensburgh. When he left school he was made a clerk, but his native talent enabled him in a few years to break out of this distasteful career, and in time he became the most faithful and characteristic painter of Scottish sea-scenery. He was elected an Associate of the Royal Academy in 1884.

Picture Postcard Problems.—The postal administrations of the world are at loggerheads on the subject of picture postcards. Adding written or printed matter on the same side of the card as the pictures is the great bone of contention which apparently nothing less than an international postal congress can settle. England began the movement by insisting upon the address and the written matter appearing on opposite sides, but for internal cards only accepting cards of the contrary arrangement from foreign countries. Belgium, however, surtaxes as letters postcards having the written matter and the pictures on the same side. Now France, owing to the simply enormous growth of the picture postcard traffic, has brought the subject before foreign Governments, and it will form one of the most important items of next year's international congress.

HEFFIELD Photographic Society.—A meeting of this society was held at the Builders' Exchange, Cross Burgess Street, on Tuesday evening last. A lecture was delivered by Mr. James R. Wigfull, I.B.A., on "The Norman Churches of Workop and district." The lecturer, in his opening remarks, described and compared Norman architecture with the Saxon work which preceded it, his illustrations of the latter work being drawn from the churches of Deerhurst, Ford-on-Avon, and Laughton-en-le-Morthen. By means of plans and views the history and characteristic features of the churches of Workop, Steadly, Thorpe Salvin, Edlington, and Laughton-en-le-Morthen were dealt with, the original Norman work and the alterations and additions thereto at later periods being described in

detail. The value of the lecture was enhanced by a series of upwards of 100 lantern slides prepared by Mr. Wigfull.

WE have recently had the opportunity of inspecting a series of portraits and other studies by the well-known photographer Mr. Will Parsons, of 147, North End, Croydon. Mr. Parsons comes of a photographic family long located at St. John's, Newfoundland, the oldest British Colony. His photographic career commenced in New York, and he has since worked in portraiture and photographic engraving in London, Leeds, and Manchester. But his chief direct photographic experiences were gained with the renowned firm of Elliott and Fry (London). Besides studio portraiture of a distinctly original and artistic kind, Mr. Parsons particularly devotes himself to a class of work which we have so long advocated in these columns, viz., at horse-portraiture. In this branch of work Mr. Parsons is distinctly successful. He has located himself in a typical English centre, where work of the kind which he undertakes will be sure of every appreciation, and we are confident that he has the ability to succeed, and assured that he deserves to.

DEATH of Professor Finsen.—The death is announced of Professor Niels Finsen, the inventor of the light treatment for lupus which bears his name. Professor Finsen was in his forty-fourth year, and his great invention in therapeutic science first became known in this country mainly through the instrumentality of Queen Alexandra, who presented a set of the Finsen apparatus to the London Hospital. There is now a large instalment of the light in that institution, and medical men bear testimony that many patients suffering from a distressing and disfiguring disease have derived incalculable benefit from the treatment. Dr. Finsen used the violet and ultra-violet rays, employing a very ingenious device for absorbing the red light. His idea was to expose the bacilli in the skin to the destroying effect of the light, thus removing the cause of disease. For small-pox he excluded the chemical rays of light by the use of red curtains and red blinds. This avoided the fever caused by the rays acting on the diseased and irritated skin, as well as the disfiguring marks, without the necessity of keeping the patient in a totally dark room. Small-pox rarely occurs in Denmark, but the professor always insisted upon the great boon which a general introduction of the red light would confer upon the numerous sufferers in this country.

RECONSTRUCTING History with the Aid of the Cinematograph.—By some occult influence a firm of biograph or cinematograph manufacturers managed to secure permission to operate in the grounds of the famous Palace of Versailles, writes the Paris correspondent of the "Express." At nine o'clock on Friday morning the party arrived, with a hundred supernumeraries dressed in costumes of the time of Louis XV. The omnibuses containing these people were rapidly driven into the park and the gates closed, so that the public should not know what was going on. Some of the ancient Louis XV. carriages had been brought from the Trianon for the purpose of the masquerade, and, with the Palace as a background, a scene representing Louis XV. and his courtiers watching a ballet or divertissement was cinematographed. To add to the effect, the magnificent fountains, which are only allowed to play on special occasions, were set to work. The party then proceeded to the famous Colonnade Grove. In the beautiful marble bath with its fountain a number of women in the scantiest costume were cinematographed as a group representing Proserpine being carried off by Pluto, the women representing water nymphs. Next they proceeded to the spot known as Apollo's Bath, and here a scene of a scandalous character, supposed to have taken place in the presence of Louis XV., consisting of the duels fought between women, was cinematographed. The entire proceedings lasted from 9 a.m. until 4 p.m., during which time the public were excluded from the Palace. At four o'clock the motley company of costumed people returned to Paris. The affair has caused considerable commotion at Versailles, but the curator of the museum and the architect of the Palace were powerless to interfere, having received orders from a high State official. Inquiry was made at the office of the Ministry of Public Education, and it was stated that the firm of cinematograph manufacturers were given the necessary authorisation on their representation that they desired to reconstitute scenes of historical interest for the benefit of public school children. It is hardly likely, however, that the scenes taken in the Colonnade and Apollo's Bath are intended for the education of children.

Correspondence.

- *** Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.
- *** We do not undertake responsibility for the opinions expressed by our correspondents.

INVITATION SITTINGS.

To the Editors.

Gentlemen,—On reading Mr. T. C. Turner's letter, which you print in to-day's issue, I turned at once to my letter published on the 16th to see if anything I had said could possibly be construed into advocacy of the "invitation sitting" system. I find nothing. I recognised that there were a large number of invitation sittings; who could fail to do so? My whole point was that any support the B. J. had given and would give to the professional in the matter of copyright might be diminished in value by an apparent complaint when it had had to pay.

Mr. Turner's expressions are very strong, and, as they are in the nature of a reply to my letter, become almost a personal attack. May I then claim the right to say that, though working in a neighbourhood where the practice of inviting sittings very indiscriminately has been carried on by several men or firms (two of whom I am glad to say have recently had to close), I have not invited any sittings, except in the case of one or two friends of whom I have wished to make portraits for other than commercial purposes, and have always opposed the suggestion when it has been made to me by those who thought they knew my business better than myself.

I think, however, the second paragraph in my previous letter is sufficient to show that I am not one of "the fellows who are damning the future of professional photography." My experience is that the practice of inviting sittings causes as much "irritation and distrust" amongst the public as it does amongst professionals and the press. One continually hears the comments of clients on the matter—Yours truly,

C. H. HEWITT.

The Rembrandt Studio, Gateshead-on-Tyne
September 23, 1904.

[The last sentence in the first paragraph of Mr. Hewitt's letter reiterates a former misapprehension of his. We made no "complaint" at "having to pay," as our correspondent can inform himself by carefully and intelligently reading our original append. What we did was to point out, and illustrate from our own experience, a flaw in the invitation sitting system for the benefit of those who follow that method of business. This correspondence here terminates.—Eds.]

THE INCOME TAX RECLAMATION ASSOCIATION.

To the Editors.

Gentlemen.—The annual report of the Commissioners of Inland Revenue has lately been published, and press and public have generally assumed that the contents thereof reveal national prosperity. This assumption appears to me to be erroneous.

I hold this view because the figures of the Commissioners of Inland Revenue showing gross or net income are not a just basis for measuring national prosperity.

The following reasons will amply demonstrate this fact although additions might easily be made:—

The statistics do not take into account losses of income.—The profits of ten firms making £1,000 per annum would give an income of £10,000; the loss of £1,000 per annum by each of ten other firms would counterbalance this total property, but the national income would still be called £10,000 by the Revenue authorities.

The statistics do not take into account losses of capital, e.g., a coal or other mining concern may spend a quarter of a million and reap no benefit owing to failure to develop mineral in payable quantity. Again, another firm may make a similar total expenditure and develop a rich mine and in the course of years recoup its capital expenditure in the profit of working. All such profit, however, is assessable to income tax without any deduction for redemption of capital. The same principle is involved in the case of annuities purchased, every pound of so-called income proceeding from which includes a repayment of the sunken capital.

The incidence of the income tax likewise embraces items which

cannot be deemed profit from a commercial point of view, preliminary expenses, various depreciations, etc., which in all soundly managed concerns are treated as deductions from gross revenue.

There are but five schedules under which income tax is collected, and of these, schedule A assessments embrace unproductive lands, parks, and woodlands, together with public buildings from which actual income is derived.

Under schedule B profits are estimated by an artificial rule, one-third of the annual value under schedule A without reference to the actual profit or loss (usually the latter) resulting from agricultural operations.

Schedule C:—The aggregate of incomes derived by residents of the United Kingdom and assessed here under this schedule assumes a very large total. Hence an increase may be a sign of decadence of national prosperity.

Schedule D:—Under this schedule there are also large assessments upon concerns carried on abroad but assumed, for revenue purposes, to be managed from this country. Moreover, although the gross income under schedule D—the commercial schedule—increased by 8 per cent., the average increase of population is over 1 per cent. per annum. This fact alone negatives the view of prosperity—assumption.

I have made inquiry of many house and estate agents whose observations are naturally of great variety; from them I learn that the almost universal tendency is towards retrenchment, which would suggest forcibly that the increase of personal incomes is of the stuff of which dreams are made of.

If, in fact, the "increase is non-existent" it might be advantageously remembered that a repayment of tax should be insisted upon in addition to which repayment the sufferer by an actual loss should reclaim the tax thereupon as well as an abatement if his total income has been reduced to or below £700 per annum.—Yours faithfully,

T. HALLETT FRY,

Manager, The Income Tax Reclamation Association,
14, Queen Victoria Street, London, E.C.
September 23, 1904.

MODERN COMPETITION AND THE FUTURE OF PHOTOGRAPHY.

To the Editors.

Gentlemen,—Since writing letter published in your April 22 issue on "Modern Competition," in which I affirmed that "the times years ago were better than these for the photographer," several letters have appeared in your valuable paper (which it has been my privilege to read from its commencement) concerning the practical conditions, present and future, of photography. I have read these with great interest, and, without wishing to make any invidious distinction, cannot but feel that Mr. Arnett, in your issue of September 2, puts the case all round in the clearest light as regards both employers and employees. There is one phase, however, which tends to the production of mediocre work and the consequent satisfaction of mediocre workers, viz., the tendency to buy in the cheapest rather than the best market. The cause for this, as far as photography is concerned, may be illustrated by a little incident in my own experience about five years ago. A certain tradesman, wishing to introduce the sale of photographic views, and knowing something of my work, asked me to call upon him. I did so, when he inquired my prices for the different sizes. In reply to my quotations, he said, "But I can buy them much cheaper." "Probably you can," I remarked, "but of the same quality." "Unfortunately," said he, "there are many buyers than judges of good work." So, not being disposed to cut prices to obtain his custom, I wished him "Good morning."

To this day my prices remain the same, but I hope the standard of the work is still higher. I believe my would-be customer bit his fingers by buying some cheap stuff. I should say serve him right. Though it may cost us something, it should be our aim to educate the public to the appreciation of what is good and artistic, and get them to realise that the best, though dearest, is, after all, the cheapest. As an old wet-plate worker, I agree with Mr. Arnett in thinking "that the simplified methods should have resulted in rising the quality of the work to a higher standard, both technically and artistically. But, technically, I am still inclined to think the wet plate has the best of it. I have handled these in all sizes, and am bound to say that the operator can work to a greater nicety with all kinds

atives when he has all in working order. This reference to the just reminds me of one whose death you have so recently recorded, from whom in early days we used to buy photographic glass at the I expect the present generation would think they should get plates for. I refer to Mr. Forrest. But I have digressed a little. at about the future? Can assistants' wages be raised amid all cutting of prices and competition with dealers not really in the e, for one branch of the business should keep another, and the ng part is of great importance, or should be? By that I mean ographers in provincial towns at least should have a selling depart- of some kind as an adjunct to the working. My observation has me to the conclusion that those who have to depend entirely on own work never make the headway financially that those do are able also to sell the work of others; but this means, of course, capital, and when a photographer thinks of extending in this tion he is at present met with some hindrances that did not exist years ago. This, with your kind permission, I may more fully in later on.

st one word on another topic. I noted you asked for comments e question of buying stale plates of a local dealer, and its con- chases, etc. My experience has taught me never to risk it for ing special—Yours, etc., OLD PROFESSIONAL.

ptember 27, 1904.

New Book.

rbuch für Photographie und Reproduktionstechnik." 1904. Dr. Josef Maria Eder. Published by Wilhelm Knapp, Halle a/S. Dr. Eder had no other claim upon photographers for their in- dness in promoting the welfare of their art, the Jahrbuch would ore than sufficient as a lasting memorial of his services. The uch is looked forward to by many persons as a record of the ace made in all branches of photography during the year, and olume now before us is not less interesting and important than f its predecessors. It is only possible in the space at our com- to indicate the contents of this volume of about 650 pages, but alue of it may be estimated by the names of the authors of the al contributions:—Baron von Hübl, Dr. Hartmann, Dr. o-Cramer, Professor K. Kruijs, Messrs. Lumière and Seyerwitz, R. Neuhauss, Dr. R. Abegg, Professor E. Valenta, Dr. M. esen, Professor Namias, J. Gaedicke, and many others. The and improved apparatus of the year is also brought under review, ere will be found the description of some new forms of lenses. r the heading of Messrs. J. H. Dallmeyer's Stigmatic Portrait e notice an obvious mistake. Our notice concerning the more e series for hand-camera use, given in this year's "British al Photographic Almanac," page 943, has been misinterpreted. e made to say that Messrs. Dallmeyer have increased the aper- of the stigmatic portrait lens to f/4.5. It should be generally n that standard aperture of this lens is f/4, and we believe it has been reduced, not increased, to f/4.5 in these hand-camera lenses e sake of portability, to which end the mount is also made of alium.

e specimens of photographic illustration at the end of the volume eerve more than passing attention. We find among them another e Miesche's three-colour pictures, which have aroused such wide- d interest.

NOTICE TO ADVERTISERS.—Blocks and copy are received subject e approval of the Publishers, and advertisements are inserted ely without condition, expressed or implied, as to what appears in at portion of the paper.

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The Oldest Photographic Journal in the World.

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Answers to Correspondents.

*** All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.

*** Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.

*** Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.

*** For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

J. M. Allen, 31, High Street, Ventnor, Isle of Wight. Photograph of *Archdeacon Scott*.

W. Wiggins, Surrenden Park, Pluckley, Kent. Seven Photographs Showing *Growth of a Stag's Antlers*.

P. M. Clark, Victoria Falls, Rhodesia. Ten Photographs of the *Victoria Falls*.

C. W. Dodd, 11, North Melville Place, Edinburgh. Photograph of the *Marquis and Marchioness of Cholmondeley and Family*.

J. Frankland, 43, Revidge Road, Blackburn. Photograph of the *Blackburn Rovers Football Team, 1904-5*.

W. H. Warburton, Harris Promenade, Douglas, Isle of Man. Two Photographs of *Lord Raglan*. Two Photographs of *Lady Raglan*.

J. Harris, 55, Cromwell Road, Bristol. Photograph of the *Bristol Rovers Football Team*.

G. AND SON.—We know nothing of the firm referred to.

J. C. W.—Better address Messrs. Thorne and Hoddle, Westminster, S.W.

J. PALMER CLARKE.—A list of all forthcoming photographic exhibitions is published every week in the Journal.

F. G. STEGGLES.—The address of the secretary of the Royal Photographic Society is 66, Russell Square, London, W.C.

"S. E."—The paper you mention is made by The Paget Prize Plate Company, Watford. It is a "gaslight" gelatine paper, and is known as "Gravura." The Kodak Company's Egg-Shell matte "Dekko" paper is a similar production.

SPOTTING COLOURS.—"ANXIOUS" asks: "Is there any colour used for spotting P.O.P. prints that will retain the prints still glossy? If so, where can it be obtained?" In reply: Spotting colours, specially prepared for the purpose, are supplied by all the large dealers.

ADDRESSES WANTED.—H. WEST writes that he would be glad of a few names and addresses of houses supplying mouldings and ready-made frames, also cut mounts. In reply: If you will take the trouble of consulting our advertisement pages you will see the addresses of several houses supplying what you require.

COLLOTYPE PRINTING.—SYDNEY BARTON asks: "Will you be good enough to give the names of one or two good German colotype printers for postcard work?" In reply: We only know the addresses of English colotype printers. We should advise you to ask some of the German journals for the addresses of German ones.

DIRECTORY OF PHOTOGRAPHERS.—"A. B. S." writes: "Will you kindly inform me if a Directory of Photographers, or Directory of Photographers in London, exists, in which photographers are classified into, for example, portrait photographers, architectural photographers, press photographers, and so forth." In reply: No such directory is published.

DEVELOPER.—J. BROWN says: "I shall be glad if you would kindly publish a good cheap bromide developer; one that will give a nice rich grey tone. I have tried several but get a greenish tint from them." In reply: We should advise you to employ the developer recommended by the makers of the paper you use. A developer that may be the best for one paper may not be so for another. We suspect the greenish tints you get are due to under exposure, or the use of too much bromide.

RETOUCHING CELLULOID.—"W. T." says: "(1) Enclosed you will find two prints for inspection. Please state if my retouching is satisfactory for the short time it is done in—thirty minutes. (2) Could you advise me how to celluloid some small P.O.P.

prints after tinting?" In reply: (1) We can give no opinion on the work as prints from the untouched negatives were not sent for comparison. (2) The celluloid is attached by soaking the prints in methylated spirit and then rolling them in contact with the celluloid with a heated heavy roller. Appliances for the work are supplied by Fallowfield.

FINISHING ENLARGEMENTS.—B. CLOTHIER says: "I have been working up enlargements with ordinary black stumping chalk bought at pictures and artists' materials shop, but find the chalk turns brown with rubbing on paper. Could you tell me of anything better that I could use? They are cheap enlargements, and I have to do a quantity, and I want a good blue black, as the brown looks rather bad, and will you tell me if chalk is the quickest method of working them up?" In reply: We should advise you to get another and blacker chalk. Such are supplied by artists' colourmen. The air-brush is probably a quicker method of working.

STAINED ENLARGEMENTS.—"TRADE" says: "I should be greatly obliged if you would give me your opinion on the result of the enclosed print as to the tone, making special note on the colour of the paper. The enlargement is made from an amateur film (Kodak) on Morgan and Kidd white bromide paper; developed with metol-kinone, and toned exactly as recommended in your issue of the 9th September. Should not the paper be much whiter? The washing was very thorough after the bleaching." In reply: The stain is clearly due to incomplete washing between the operations. If you read the article again you will see that great stress is laid on the copper being thoroughly removed, or stains, such as you have got, will result.

PANORAMA.—H. JACKSON says: "I am going to photograph an expansive valley, for which I shall require three or perhaps four negatives. I should like to combine them all into one picture. Could you give me the best method of doing this neatly? Could it be done by joining prints up, and, if so, how, or is there any other way of getting all on to one piece of paper? I should be pleased for full particulars through your journal." In reply: The space available in this column is much too limited to give full particulars of the different methods of joining a series of pictures to obtain a panorama. However, if you take the negatives one after the other without moving the camera from its position, simply rotating it on the stand, and giving the same exposure for each, you will have little difficulty in neatly joining the different sections.

BROWN STAIN ON NEGATIVE.—R. NIMMO says: "In order to obtain a hasty print from a 1-1 'Sovereign' plate, I just rinsed the latter after fixing, and placed in printing frame in contact with a piece of Ilford P.O.P. After printing in direct sun's rays paper was removed, and where it had touched surface of negative it has produced a brown stain. The developer was pyro-soda. Have tried to remove stain by immersing the plate successively in the following solutions, washing well before and after each trial: (1) Weak solution of citric acid. (2) Weak solution of ammonia. (3) Weak solution of hydrochloric acid. Neither of these affected the stain. I shall be glad if you will kindly suggest a remedy." In reply: By printing from the plate in the way you have done nothing but a spoilt negative could be expected. We do not think you will be successful in removing the stain. You might try a long soaking in a fresh solution of hypo. The best thing, however, to do is to take a new negative.

VARIOUS QUERIES.—"G. A. W." writes: "During the last few weeks there has appeared in your columns a reference to some booklet, which is illustrated by good photos or something of the kind which I wish to procure, and which you advised readers who were at all interested to get one, and said that one could be had for the asking. I am now unable to find the reference. Can you help me by either giving me the name of the booklet and the address from which it is obtainable, or refer me to the date of the issue of 'The Journal' and page of same? 2. Can you offer any suggestions as to what is the best method of photographing silver goods, and all highly-polished surfaces?" In reply: 1. We must, in the most courteous manner, decline the task of guessing the puzzle our correspondent has set us. If he does not know which is the "something of the kind" he has in mind, how should we? 2. Proceed as for any other branch of photo-

graphy, but back your plates; use a small stop; and the surface of the objects with mutton fat or putty.

REFLECTED IMAGE.—"A. F. P." sends us the following letter, it is amusing we print it in its entirety: "I am taking liberty of sending you prints from a negative which has left with me by a gentleman who would like your opinion to the cause of the strange markings in the picture which is hanging on the wall. You will notice that the things have a resemblance to a pair of skeleton hands playing piano, and if you closely examine the enlargement which I made, you will also see the appearance of a shadowy figure on the back. There had been considerable friction with the occupants of the house next door owing to the continual coming of their piano, which was just through the thin wall, and which was being well thumped during the evening of the plate. The young lady who took the photograph therefore considerably startled when she discovered the picture image she had developed, and the closest investigation had to account for the strange effect. The picture itself is an ordinary half-length portrait." In reply: There is no mystery in the matter. The markings are caused by reflections of things in the room on the glass. You see there are reflections on the other pictures.

SPOTTY PRINTS.—E. WOODCOCK writes: "I shall feel greatly obliged if you will kindly let me have your opinion of the cause of the spots on enclosed prints. I have been troubled for some months with this kind of thing, and half the orders have to be printed on ordinary commercial C.C. of, I believe, the best manufacture, although purchased in London. The instructions have been most carefully carried out, and every precaution taken to guard against a repetition of this nuisance, and prints have been well washed by hand in forty char water for two hours. Is it possible the quality of hypo might be at fault? but, if so, that does account for the trouble with C.C. only. My bromide enlargements, Velox prints, and other kinds of paper being perfect. I have, however, experienced the trouble with five different makes of C.C. reprints. They are fixed in hypo 1-20 for twelve minutes. I may as well say I am a professional photographer of twenty years' experience, and a chemist. Your valuable opinion will be esteemed." In reply: As our correspondent says he is a photographer of twenty years' standing, and a chemist, and he doing the work cannot detect the cause of the trouble, we are afraid we must do so by simply looking at a couple of prints. As he has five different brands of paper it is clear that the paper is not at fault. Some of the spots are obviously due to air bells as to the paper while in the fixing bath. The others are probably due to particles of pernicious matter, as dust, coming in with the prints while they are wet.

RIGHT TO PUBLISH.—"INGLE NOOK" writes: "Some three years ago a customer photographed an old fashioned fireplace at a house tenanted by a woman. She gave every facility for the picture, providing accessories, etc., and two farm boys volunteered to pose beside the hearth. The picture, entitled 'The Ingle Nook,' and it has been published in various papers, besides having a moderate sale as a print, and during the past season as a post-card. Now the tenant of the place has written the following note:—'Dear Sir,—I write to say that I have more photographs or post-cards sold of my kitchen fire and I also wish the negative destroyed.' No reason is given for this demand, and my customer can only conjecture that the request is inspired by some other photographer who has also taken the view and wishes the monopoly of it. The question arises: Can the woman recall the gift of copies given over three years ago, namely, the privilege of taking the picture of the fireplace? No 'valuable consideration' was given for the permission except copies of the photograph, which she has complimented. Nobody is caricatured in the picture, and it is nothing offensive. There was no written right given for the picture, but this was presumptive. My customer does not intend either to cease selling the view or destroying the negative except on a legal ruling to the contrary. In the event of a latter contingency it would be disastrous to the public many interesting views, as thousands have been taken in similar circumstances." In reply: If the photographer has paid for taking the picture he is at liberty to continue to use it. We do not see how he can be stopped.

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THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1905.

Edited by THOMAS BEDDING, F.R.P.S.

The forty-fourth annual issue of THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC will be published on December 1st. This year's ALMANAC reached a total of 1,604 pages, and the entire edition of 25,000 copies was sold out before publication. Of no other photographic book ever issued are two such unique facts be recorded. The edition for 1905 will also consist of 25,000 copies.

The striking favour with which past ALMANACS have been received is the surest proof that the lines upon which the publication is produced meet the requirements of its readers and supporters. Upon such lines we propose continuing the volume for 1905. At the same time, we shall be pleased to receive and consider suggestions for increasing the value of the ALMANAC in directions which may occur to our readers as susceptible of improvement.

The ALMANAC for 1905 will appeal to photographers all over the world as a daily reference guide in practical work. The standard matter and formulae will be revised and added to where necessary, the year's advances in theory and practice will be recorded.

The frontispiece of the ALMANAC will consist of a portrait study specially taken by Mr. Furley Lewis

(medallist of the Royal Photographic Society's Exhibition, 1903).

Secretaries of societies will oblige us by promptly forwarding lists of officers and other details for inclusion in the Directory of Photographic Societies. We shall also be glad to receive any additions that may be made to the list of telegraphic addresses of the trade, etc.

The publishers ask us to remind advertisers that a large proportion of the advertisement pages of the ALMANAC are already booked, and that, to ensure insertion, order and copy should reach them without delay.

**** IMPORTANT NOTICE.**—The attention of advertisers is specially directed to the announcement that this year the entire edition of the ALMANAC (25,000 copies) will be placed in the hands of dealers and the trade on December 1st next—a fortnight earlier than usual, so as to be well in advance of the Christmas publication season.

EX CATHEDRA.

The Dublin Convention.

A preliminary Committee meeting was held at the Hotel Metropole, Dublin, on Tuesday evening, the 27th ult., under the chairmanship of Dr. John Joly, F.R.S., the President Elect. Among those present were Mr. J. A. C. Ruthven, Mr. E. Webb Smith, Mr. H. C. Draper, Mr. Alfred Werner, Mr. H. Goodwillie, Mr. F. A. Bridge, and Mr. R. Benson (Hon. Local Sec.); considerable time being spent discussing the proposed arrangements. Those who were at the last Convention in Ireland in 1894 will not need to be reminded of the great success of the meeting and the hearty welcome accorded to the members, and when we state that the "powers that be" have made up their minds to go one better next time, we are sure our readers will await with some interest the announcement of the programme of good things in store for those who decide to go to Dublin in July next.

* * *

Science

Examinations.

We often hear of the better education given in Germany, more particularly in connection with scientific training in the different crafts, and there is little question that that country in this respect is in advance of our own. But we are advancing, for we are pleased to see that the Board of Education list of successful candidates for Royal Exhibitions, national scholarships, and free studentships (science), 1904, shows that out of the seven Royal Exhibitions five of them were gained by engine and shipwright's apprentices, the other two going to "students." Of the national scholarships for mechanics, out of the five, four of them were secured by engineers' and smiths' apprentices, and the other by an

engineering student. These high honours—and the scholarships—show that the present generation of apprentices have the interests of their craft at heart. We may fairly assume that these young fellows have not had the same opportunities of learning the theoretical portion of their craft as had those who are described as students—one of Cambridge. So much more to their credit, as they have had to get their theoretical knowledge out of their working hours.

* * *

A New Metal.

The makers of photographic apparatus, in common with other manufacturers using metals, will be attracted by reports of a new metal, or, to describe it more correctly, a new alloy, about which wonderful things are being published. This new alloy has been discovered, or fabricated, by two Tuscan engineers, and it has been patented. Possibly with a view to attract public attention, these gentlemen have christened their bantling Radium Argentiferum, and, as the name implies, it includes in its composition the common metal iron, with a certain proportion of silver and radium. We may assume that of the latter metal the quantity is infinitesimal, and probably only occurs as an impurity which cannot be got rid of. Then there is also contained in the alloy copper and phosphorus, the latter being a most important ingredient. As for the properties of the alloy, the patentees claim that it is stronger than steel, that it does not oxidise, that it conducts electricity better than copper, and can be manufactured in large quantities at one-tenth the cost of bronze. There is nothing outside the bounds of possibility in all this, and very possibly a valuable discovery has been made. But one is always suspicious when a triumph of this kind is heralded by the papers with a sensational flourish. The flourish in this case consists in the statement that during the early experiments one of the patentees, exasperated by the delay of the metal in fusing, "after hours of boiling"—we do not quite see how the stuff could boil without fusing first—threw his last two-franc piece into the crucible. "The result was a revelation." But what it revealed, whether the crucible boiled over, or left off boiling, or began to fry, or to stew, or to roast, or to bake, we are left in complete ignorance. The attempt to explain technical processes in sensational paragraphs is a feature of the modern newspaper, which generally fails in its object.

* * *

Certificates to Assistants.

Apropos of the note *re* "Science Examinations," the Professional Photographers' Association is considering the question of the granting of certificates to qualified assistants, and a somewhat knotty one, we imagine, they find it. But it is being duly considered both by the headquarters in London and by the provincial branches. The question was brought forward at the last meeting of the Edinburgh branch, and duly discussed, as it has been at other branches, but no definite conclusion was arrived at. Here are one or two points which, it seems to us, will have to be taken into consideration. For example, operators, printers, etc., may be capable of turning out, in practice, excellent work, but yet know nothing theoretically of the subject. Some, on the other hand (and they are the fewer) have a thorough theoretical knowledge of it and its chemistry, but are of very little value in actual practice. It is pretty well known that some of the best photographers, both employers and employees, have little or no theoretical knowledge of the processes they employ; yet they produce excellent work. Therefore, on what basis are the certificates to be granted,

so that employers are to be ensured that they are engaged proficient hands? There can be no two opinions, in case of a printer, that if he has a complete knowledge of the chemistry of the different printing processes, and at the same time a good practical worker, he is, or should be, a more valuable hand than one who does not possess that knowledge. Will that be taken into consideration granting the certificates, or will it be compulsory that an assistant possesses such knowledge? Then there is the question of operators—raised at the Edinburgh meeting in which some difficulty is anticipated, because, as we know, so much depends upon manner and the gift of putting sitters at their ease. How will the P.P.A. be able to form an opinion on this point in the granting of certificates of proficiency in studio work? However, we hope that the Association will be able to formulate such a scheme, will, to an extent at least, protect employers from engaged assistants who, while professing to be accomplished, know little or nothing of their business.

* * *

A Colour Anæsthetic.

The influence of coloured light upon the human animal organism has often formed a subject of inquiry. Certain insects, we know, are attracted by particular colours, and seem to have an aversion to others so much so that it has been found that protection from some of the biting scourges common to tropical climes has been secured by the adoption of suitably-tinted clothing. Many experiments have also been carried out in order to ascertain the effect, if any, of coloured light upon the human subject. It has been asserted that in cases of mental aberration the patient is calmed by being kept in a room in which the daylight is filtered through coloured glass. But these alleged results do not seem to have received authoritative corroboration. On the other hand, photographic workers may plead that many of them spend half their lives under the influence of ruby light without experiencing any particular harmful benefit from it. And certainly the civilised part of mankind passed much of their time, before the advent of gas and electricity as illuminants, under the feeble yellow light of lamp and candle without experiencing any unusual symptoms. Perhaps the only well-authenticated instances of a human organism being distinctly benefited by the action of coloured light are those cases of small-pox treated by the late lamented Professor Finsen, who proved most decisively that under red light patients suffering from that dreadful malady escaped the horrible scars which were at one time regarded as the necessary sequence of the disease. Now, however, a new claim is made for the benefits derived from the use of coloured light in surgery. An official report from the American Consulate at Freiburg, Germany, credited blue light with having all the virtues of chloroform without its inconveniences and danger. To quote the words of the telegram announcing this discovery, published by the "Daily Telegraph":—"The patient is shut in a dark room with his eyes exposed to the blue light. Three minutes after the exposure his teeth are extracted without pain. Despite the anæsthetic, which apparently only numbs the nerves, the patient sees and hears all the time." This circumstantial account of the discovery, coming as it does from an apparently reliable source, is certainly startling, say the least, and we shall look forward to further information with great interest. We should like to know the source of the blue light employed and to have details of the arrangements adopted by the operator. As the story stands it seems quite incredible; but we must remember that a few years ago the claims of the hypnotist to perform operations without pain would have been utterly discredited. He does not do in these days of scientific wonders to laugh readily at what seems to be impossible.

Disfigurement of Beautiful Scenery. It seems pretty evident that enterprising firms will, if they are allowed, cause a great disfigurement to our Thames.

Some time ago it was proposed to convert one of the islands facing Kew Gardens into a barge-builders' works, and unless a vigorous opposition on the part of the public had been instituted there is little doubt the project would have been carried out. Another disfigurement of the Thames is now projected. It is proposed to build a timber yard and wharf on the beautiful reach opposite Canbury Gardens. But there is, naturally, an objection to the thing, and one day last week a crowded meeting was held at Kingston-on-Thames to protest against the proposal. At the meeting a letter was read from Sir F. Dixon-Hartland, M.P., Chairman of the Thames Conservancy, stating in effect that as yet no application in the matter had been received by the Conservators, and adding that, if made, nothing would induce them to do anything to destroy the amenities of the river if it could be prevented. The Conservators are evidently bent on protecting the upper Thames and keeping it in its pristine state, and as a general pleasure resort. This is evidenced by the recent prosecutions for rowdism on the river, which in some cases has proved of inconvenience and annoyance to those with cameras. While on this topic it may be mentioned that our French neighbours are interesting themselves in the preservation of their scenery, for we read that the French Minister of Public Works has sent a circular to the State engineers which shows that, while he is naturally anxious to provide means for the development of the country, he nevertheless sympathises with the Society for the Picturesque Sites and Beautiful Landscapes. He tells the Chief Engineers that in preparing plans for bridges, etc., they should bear in mind that edifices of that sort, if judiciously placed and properly surrounded, often enhance the beauty of the spot, and that a misplaced detail frequently mars its beauty. He also requests the Chief Engineers to instruct their subordinates that, in the construction of roads, railways, and tramways, and the planting and felling of trees, etc., they should not lose sight of a proper respect for natural beauties, and should try if possible to enhance their æsthetic value. It would be well if English engineers would act on this suggestion when they are constructing a railway here, and not disfigure the scenery, as they frequently do, with hideous bridges and the like, much to painters' and photographers' disgust.

* * *

An Ice-making Machine.

The ordinary photographer does not often require the help of ice to reduce his solutions to working order, unless, that is, he is resident in India or some other very warm climate. But it is different with the plate-maker, who is during the warmer months of the year dependent upon ice to quicken the setting of the gelatine emulsion during its short passage through the coating machine. In London and other large towns and their suburbs ice can be easily and cheaply obtained, but it is different in outlying districts; and we can imagine cases in which it might be highly important for the photographic worker to be self-dependent for his ice supply. For this reason interest is attached to the description of a new ice-maker which appears in a recent consular report from Nice, to the performance of which the highest praise is accorded. Unfortunately, the report does not give the vaguest idea as to the principle upon which the machine depends for its action, and we can only assume from its description that cold is produced by the expansion of compressed air, as in the case of the large refrigerating machines employed on shipboard. We are told that the apparatus is constructed entirely of metal, and that it consists of two parts, one containing the mechanism and the

other constituting the ice-producer. The apparatus can be made in any size, the smallest now constructed occupying little more than a cubic foot of space, and producing about $4\frac{1}{2}$ lb. of ice per hour. It is worked by hand or by electric motor. The largest model made occupies four square feet of space, and with a 4-horse power motor will produce 220 lb. of ice per hour. "The ice is produced without the aid of any ingredients or preparatives of any kind. Once the machine is delivered it produces ice indefinitely, and as long as the metal-work used in its construction holds out, and this is of such a character as to last for many years." It is clear from this description that the machine does not depend for its action, like so many previous contrivances for making ice, upon the action of ether, ammonia, or sulphuric acid, chemicals which mean expense in addition to other drawbacks. Hence we assume that its action is strictly mechanical. The Consul who reports upon the machine is evidently highly impressed with its value, and he invites further inquiries from those interested in it. Any of our readers are therefore at liberty to communicate with him on the subject, addressing their letters to Mr. J. B. Cognet, banker, and U.S. Consular Agent, Cannes, France. One more quotation from the report in question we cannot refrain from making, for, unless the Consul has been very much deceived, it gives evidence of a very valuable invention: "I may add that all systems known up to the present time, and all machines existing for the manufacture of ice in a rapid and economical manner, have been compared with the one forming the subject of this report, and experts have unanimously declared this to have insuperable advantages over any of the systems and machines in question."

* * *

The N Rays. Blondlot's remarkable discovery of rays emitted by the human body, and capable of exerting an influence akin, but of much inferior power, to the Röntgen rays, has been, so far, admitted by eminent scientific men. A number of investigators on the Continent have experimented with the N-rays; the results of their investigations have been brought before the Paris Academy of Sciences, even down to the description of a spectrum of marvellous properties. But, strange to say, English scientific men, no doubt because of their traditional—on the Continent—phlegmatic temperament have utterly failed to see the rays, or to admit their belief in certain phenomenon being justly attributed to any but ordinary and well-known causes. But, still, these papers get sent to the "Academy" and printed in their *comptes rendus*. This force called "od" was discovered a century ago, and many were the effects attributed to that human radiation "odic force;" but now it is never mentioned as a serious scientific phenomenon; and, notwithstanding the photographs exhibited showing, it is stated, the undoubted effects of the N-rays, we opine that this later discovery will follow the odic force into the realms of oblivion. What would appear to be a *coup de grace* is administered in last week's "Nature" in a letter over the signature of R. W. Wood. He describes a series of experiments exhibiting, it is alleged, the N-ray effects. First an electric spark was brightened by concentrating N-rays on it through an aluminium lens. Mr. Wood could not see it, but the others could. But when they were not made cognisant of the moment when his hand was interposed in the path of the rays they utterly failed to discover whether the hand was there or not. A number of photographs, showing the brightening of the image, were brought forward, but Mr. Wood points out sources of error rendering them worthless as evidence. Next came the experiment of deviation of the rays by an aluminium prism. This was put in front of a slit in a piece of wet cardboard, and the experimenters could clearly

distinguish the spectrum spread out, and also the positions of maximum and minimum luminosity. Mr. Wood could not see all this at all, and, more than this, the room was dark, and when Mr. Wood slyly removed the prism unknown to the experimenters, they saw all the results the prism brought about just the same! When a prism is placed with its edge to the right or the left the spectrum should change accordingly. This was done by Mr. Wood, but the others could not say "which was which," "fatigue," they explained. Again: a number of circles in luminous paint were placed on the table in the dark. The approach of a file was to make them more luminous. The file was made to approach. Mr. Wood could see nothing different, but the experimenters could; and, strange to say, when Mr. Wood put the file behind his back, unknown, of course, to the rest, and moved his arm to and fro, they could see a most marked effect! Then a clock-face was to be visible when a file was held near the eyes. Mr. Wood found no difference, yet his colleague could see the face distinctly with a file, but not without, a piece of evidence not of much use, seeing that when Mr. Wood, who evidently came prepared, held a piece of wood in same shape as the file in front of the experimenters' faces it acted in the same way! All this made Mr. Wood rather sad, and he propounds a series of test experiments which would prove the question of the existence or non-existence of the rays in a perfectly satisfactory manner.

AUTUMNAL COLOUR AND HAZE.

WITH each recurring autumn it strikes one with renewed and strengthened regret that the golden yellow of the changing leaf cannot be photographically expressed in colour. Suitable sifting screens may give proper tone value, but this, although the best practicable substitute for the desired colour, is yet a very poor one. The mass of colour in the face of the wood upon the gentle slope of the hill, in the rich glow of autumnal afternoon sunlight, is quite another thing to its photographic representation. Colour and tone are very different things, and we cannot gain the best suggestion of "autumn," because our mental impress of the season is so dependent upon its characteristic colouring. But there is one marked, although, admittedly, a less stimulating feature than that of colour, in autumn, that lends itself more readily to photographic expression, and that is its mists, or, more correctly perhaps, its haze. It seems rather a reversion of function to call in the aid of photography, so eminently a clear-cut, perfectly detailed and accurately focussed an art, to express haziness. But if it can be so utilised, so much the better for the art. To the interested observer—or even, indeed, to the one who does not voluntarily observe, but who is sufficiently sympathetic in a vague way with nature to take a saunter along a country road—there is something extremely soothing, after the brilliancy of summer, in the softening effects of morning and afternoon haze in the later autumn. The world is at the same time contracted and enlarged. Contracted to the physical vision, but enlarged to the imagination in the suggestion of what may be hidden behind the indefinite veiling of the mist. In all ages human nature has accepted veiled, as infinitely more acceptable and tantalising than unveiled, beauty.

The same consideration applies when Nature veils herself in autumnal haze. Nor is there any necessity to

regard Nature in the narrower country or rural sense. The town dweller is quite as happily placed and blessed. For instance, would not a Londoner prefer his beloved river with the added suggestiveness of haze than without it? Or the dome of St. Paul's dimly seen through a haze of air than with every architectural detail showing in a clear light? Does it not look larger, more uplifted into the sky, and more of a piece with its historical and emotional place under the former than the latter conditions? There is no need to elaborate further in support of the contentions for the pleasing effects of haze, and there is no village town, or scrap of country road in which they cannot be noted and enjoyed. Their photographing is also recommended to the worker with anything of an artistic disposition, and its attendant complement of sentiment and touch of imagination. The best effects are to be gained when the sun is fairly but not too low on the horizon in morning or evening, and when the haze is not too thick. It should be at that texture at which it suggests rather than blots out. As the distant effects of haze are better than the nearer, a telephoto lens gives good results, especially when focussed upon a salient object, such as a church tower, showing above the sky line. (It is always necessary, by the way, to include some strong, prominent object to give the necessary solidity to such pictures, or otherwise they look too much like over-exposed or foggy work.) The difficulty of focussing with a telephoto lens is less a bar in this type of work, as extreme sharpness is not desirable, from its tendency to detract from the spirit of the conception. An ordinary long focus lens will also do well at nearer distances. The aperture should not be too small, as all the suggestion of space possible should be aimed for. The exposure should be fairly long, and the developer weak and restrained. But the latter is probably more a question for individual preference and temperament, for experience proves that equally good results have been got by working in opposite ways.

In all cases far better results are got in the print than one would imagine possible in looking at the negative. Probably this is due to an unconscious mental depression of the negative because it presents features directly opposite to those one is accustomed to regard as essential, normally, in a good negative. The reversal of tone, puts the all-important imagination out of court with negative, whereas with the positive it has regained field and power. The experiment of picturing the world in its garment of autumnal mist is at least well worth trying. No new appliance is needed, and if successful—and there is no reason why it should be otherwise—it will lengthen pleasure by carrying photography beyond the orthodox period of summer, and, finally, will aid in forming a high opinion of photographic possibilities, that, once gained and fixed in the mind, may lead by its indirect pressure to successful exploitation of those fields hitherto held, not from lack of experiment than anything else, as sacred to the artist.

WE have received a charming souvenir of the recent £1,000 competition organised by Messrs. Kodak, in which some of the successful photographs are beautifully reproduced.

THE SILVER "GRAIN" IN PHOTOGRAPHY.

[From the "Astrophysical Journal," by courtesy of the Author.]

II.

INFLUENCE OF DILUTION OR CONCENTRATION OF DEVELOPER, AND TIME OF DEVELOPMENT AS AFFECTING SIZE AND CHARACTER OF "GRAIN."

For this purpose a number of exactly similar exposures were made upon Seed "27" plates in the sensitometer and developed separately at the same temperature by different developing agents as follows:—

1. Rodinal. Development begun at 1:12' and continued for 15^m; successive additions of rodinal in single minims were made until the developing solution represented a strength of 1:40, taking 35 minutes more time. The 1:40 solution was then allowed to act for 10^m. Total time of development, 1^h.

2. Hydrochinone and caustic potash. Total time of development, 6^m.

3. Hydrochinone + metol + adurol + caustic soda. Total time of development, 1^m 20^s.

These negatives were then dried in a current of air, and an equal opacity square selected from which photomicrographs were made.

A comparison of the results (Nos. 8—10) shows that in the case of the slow development by rodinal the character of the grain is vastly different from that of the remaining two plates, being decidedly more "ragged" in appearance, and showing an actual and definite increase in size, principally by reason of the running together of the several particles to form a new group-particle. In the case of the plate developed with hydrochinone, the "grain" is better, with less running together, while in that developed rapidly in the hydro-meto-adurol mixture the grains of silver are seen to be deposited in a much more definite and regular form than in either of the two preceding.

These results, in the opinion of the writer, accord well with the theory of increase by accretion, in the length of development; for, according to Abney, when the silver bromide (2Ag.Br.) is acted upon by light, there is first a chemical change to Ag₂Br. (sub-bromide), followed by a physical change of the 2Ag.Br. molecules, and the blackening consists, first, of a slight reduction of Ag₂ and continues by an interaction of the molecules in which the Ag₂ seizes upon the bromine of the adjoining molecule of 2Ag.Br., and reduces that to a state permitting of reduction by the developer, while it in turn attracts the bromine of its neighbouring molecule, and so on. Second, according to Luppo Cramer, the Ag₂ ions give up their positive charge (caused by the impact of light) to the negative ions in the developer (which arise from the soluble salts in the developer), and the resulting super-saturated solution of metallic silver is deposited upon the nuclei of the Ag₂ in the film; therefore, whatever theory be preferred, it naturally follows that the longer the action of development is continued, the greater will be the size of the particle, either by interaction or deposition.

The increase in the size of the individual grains was also readily seen by developing a stained plate under the microscope. A drop of developer was applied while the 2Ag.Br. grains were under observation, and an almost immediate reduction was observed. By repeating the experiment a number of times it was seen that the grains of silver bromide, when first tested upon by the developer, were reduced as individual grains of very small dimensions,⁵ only a portion of the 2Ag.Br. particle appearing to be acted upon at first, but increasing in

size individually and then coalescing into group-particles, which become larger as development is continued.

REDUCTION OF THE SILVER BROMIDE WITHOUT PREVIOUS EXPOSURE.

That there is a definite reduction of the 2Ag.Br. particles in the film even when there has been no light impact, is well known, although not generally understood. The appearance of "chemical fog" upon the film is used by many workers as an indication of the point of maximum development.

That this "chemical fog" begins to be deposited almost from the instant of contact with the developing agent, was shown by a series of experiments as follows: Strips were cut (in darkness) from a number of plates, including Cramer "Crown," Seed "27," Seed "23," and Carbutt "Lantern Slide," and were then partially immersed in fresh hydrochinone developer for

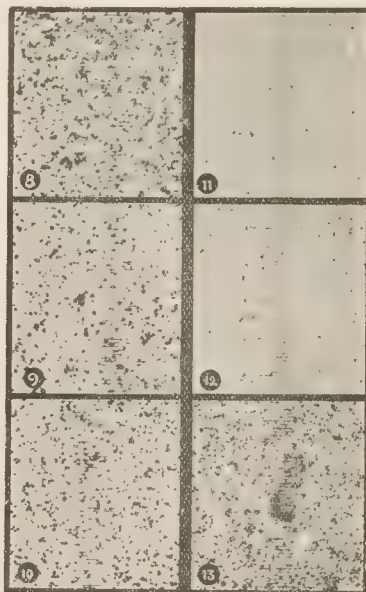


Fig. 3.—Photomicrographs of Silver "Grain."

8. Seed 27. Rodinal, Slow Dev. (3.0 to 8 μ). 9. Seed 27. Hydrochinon, Medium Dev. (1.3 to 2.4 μ). 10. Seed 27. Hydro-Meto-Adurol, Rapid Dev. (1.4 to 1.8 μ). 11. Seed 23. Reduction without exposure. Dev. for 45 secs. 12. Seed 23. Reduction without exposure. Dev. for 10 min. 13. Seed 23. Reduction without exposure. Dev. for 20 min.

different lengths of time, from five seconds to twenty minutes, and passed immediately into the fixing bath. When dry, examination showed that reduction had taken place on all plates in amount varying according to the time of development. This reduction was relatively stronger on the "Crown" plate and weakest on the "lantern slide," the Seed "27" and "23" occupying places intermediate. The gain (by accretion) in the size of the grain particles is also very well shown in this series of plates. Nos. 11—13 (Fig. 3) give the record of the Seed "23" plate at forty-five seconds, ten minutes, and twenty minutes development, respectively. The exceeding fineness of the grain-particles in these plates will be noted, the size varying from 0.0017 to 0.002 mm. mean diameter.

This reduction of the unexposed silver bromide was found to take place with all the developing agents tested, which include hydrochinone, hydro-eikonogen, metol, rodinal, adurol, and elinol. It would therefore appear that there is present in the film a certain amount of that allotropic form of 2Ag.Br. which

⁵ This is in agreement with Liesegang ("Archiv. für Wissensch. Photo." 1, 229), who says, "Since the advance of the reduction on to the unaltered silver bromide proceeds comparatively slowly, we must conclude that it is not always necessary for the groups of particles of silver bromide to be completely reduced. In this way diminution in the size of the grain may therefore be possible."

is capable of reduction without previous light-action, and which amount increases with the sensitiveness of the plate.

The idea generally accepted by a great number of workers that the size of the silver "grain" in a negative is dependent upon the size of the grains of silver bromide originally in the film; or, by still another class, that the slow or dilute development of the plate would give a negative whose "grain" would be distinguished by a particular degree of fineness, is not borne out by the results obtained and herein specified. On the contrary, we are led to deduce from these experiments:—

1. That the original grain-particles of the silver bromide are by prolonged development considerably enlarged, by reason of the formation of group-particles, which are relatively enormously increased in size, so that a method of rapid development (provided the developer is compounded to give not too great a contrast) is the means of obtaining a more definitely uniform deposit of particles, which most nearly approach the size of those in the original 2 Ag. Br.

2. That of high-speed American plates the Seed "27 Gilt edge" is, of the four makes tested, that having the finest grain-particles, of most definite uniformity; of equal speed with the "Crown," but with less tendency to "chemical fog."

3. That the intensification of the original negative should not be attempted where enlargement is to follow.

In conclusion the writer takes pleasure in acknowledging the kind assistance of Messrs. E. B. Frost and J. A. Parkhurst in much of the foregoing work, and also takes this opportunity to sincerely thank those who so courteously replied to his communication of the spring of 1903.

ROBERT JAMES WALLACE.

Yerkes Observatory, July 4, 1904.

NOTE.

The foregoing work was begun about the beginning of 1903, at which time the author sent out a circular letter to the departments of physics and of astronomy at a number of the leading universities and observatories throughout the United States, requesting data relative to the plates and developers in general use by them. The pressure of other duties prevented the completion of the work until July of the present year.

Upon completion of the paper, and after arrangements for publication, there came to the notice of the writer an article published by Messrs. A. and L. Lumière and A. Seyewetz entitled "The Influence of the Character of Developers on the Size of Grain of Reduced Silver" (THE BRITISH JOURNAL OF PHOTOGRAPHY, No. 2,306, July 15, 1904). The method pursued and therein outlined by these eminent investigators, was as follows:—Exactly similar exposures were made upon Lumière "blue label" plates of same emulsion, which were then developed by all the principal known developers (prepared normally and also with modifications) "until the images had reached a comparable density." The portion showing the greatest opacity was then selected from each negative and by the aid of hot water the gelatine was dissolved off. "This gelatine solution, well shaken, and containing the reduced silver, was used for the preparation of material for microscopic examination." Photomicrographs were then made of the same magnification, and prints therefrom compared.

Among other conclusions thus derived, the investigators state:—

"No apparent influence is shown in the size of the grain of reduced silver by temperature, concentration, or duration of development."

An evident discordance between this conclusion and that of the present writer calls for a word of explanation. This apparent discordance would perhaps be easiest resolved if it were decided what is to be regarded as the "grain" of the negative. In the opinion of the writer the general description "grain" is taken to mean the particles of silver reduced in the negative

and in situ. It has been shown that the grain-particles of the 2 Ag. Br. are more or less modified in character, both by the method and duration of development, and the tendency of the grains to coalesce and form group-particles. A group-particle is undoubtedly formed of individual grains, but, inasmuch as their units are now to be taken collectively as a new whole, they must be so considered. Granted even that the size of individual grains remains unaltered by variation in development; yet, if a number of these particles be so welded together (as it were) by chemical or electrolytic action, their character would be altered, and hence necessitate a new consideration of their gross size.

A PROCESS OF PHOTOGRAPHIC DEVELOPMENT FOR THE PRODUCTION OF IMAGES OF FINE GRAIN.

In a previous communication¹ we indicated two developing substances—paraphenylene diamine and orthoamidophenol—which used in aqueous solutions with soda sulphite, enabled us to obtain images of fine grain and of an appearance similar to that shown in the collodion process.

In the present study we have examined, firstly, the possibility of obtaining fine grain images with developers other than paraphenylene diamine and orthoamidophenol; and secondly, have endeavoured to determine the precise conditions for the production of this special state of the silver.

Our experiments with the various commercial developers show that simultaneous realisation of two conditions is apparently indispensable to the formation of images of fine grain—viz.:—

1. Slow development, either by adding restrainers or by dilution of the developer.

2. Introduction of a solvent of silver bromide into the developer. In order to avoid solution of the silver bromide before development of the image, this solvent should not be in too large a quantity.

Chloride of ammonia appears to us to be the most suitable product to produce these conditions, using from 15 to 30 grammes to 100 cc_g of developer.

Chloride of ammonia slightly dissolves the silver bromide of the sensitive coating, and thus the developer contains a mixture of soluble silver salt and developer. Under these conditions the developer tends to reduce the dissolved silver which it contains, and we are brought back to the case of wet collodion: simultaneously with the ordinary chemical development a true physical development is produced. The images have the appearance of collodion images. In this case, therefore, it will be understood that the phenomenon arises under precise conditions. It is unquestionably necessary that there be an exact determined relation between the rapidity of the direct chemical development and that of the formation of reduced silver, the liquid in which the plates are immersed. Moreover, the effect is not produced by all solvents of silver bromide.

Paraphenylene diamine and orthoamidophenol developers, we have shown, give images of fine grain without the addition of special substances which restrain development or dissolve silver bromide, and also yield better images than those obtained by various other developers. We find that with these developers the conditions necessary for the formation of images of fine grain are supplied from the substances composing them. They have, in fact, a weak developing energy, and dissolve appreciable quantities of silver bromide. (We find that paraphenylene diamine developer dissolves 0.140 gramme of silver bromide in 100 c.c., and orthoamidophenol 0.134 gramme.)²

If paramidophenol be employed with soda sulphite under the same conditions as its isomer ortho, fine grain does not result.

¹ "Bulletin de la Société Française de Photographie," June 1900.

² A solution of soda sulphite of similar strength to that of the developers (6 cent) but containing no reducing substance, dissolving only 0.112 gramme of silver bromide.

but it must be noted that the energy of paramidophenol developer is much greater than that of its isomer ortho. If in the first the reducing power be lessened by the addition of ammonium chloride, the resulting silver grain is as fine as that obtained with orthoamidophenol.

PRACTICAL CONCLUSIONS.

The best developing formula for rapid emulsions, which gives images of normal intensity and free from fog, provided always that the plate be sufficiently exposed, is the following:—

Water	1,000 c.c.
Paraphenylene diamine	10 grammes.
Anhydrous soda sulphite	60 „

This method should be found of great interest for the development of negatives which are to be used for the purposes of enlargement. The grain forming the silver of the image being much finer than that of ordinary negatives, it should be possible to produce enlargements of greater size and with a continuous gradation of the half-tones.

With slow emulsions this new method of development should prove equally interesting, especially in the case of lantern-slides, for by its means beautiful brownish-violet tones are produced which vary according to the composition of the developer. Independently of paraphenylene diamine, in which the relative proportions of the reagents may be altered according to the tone desired, a normal hydroquinone developer may be used, to which has been added from 5 to 30 grammes of ammonium chloride per 100 c.c. of developer, according to the desired tone.

A. AND L. LUMIERE AND A. SEYEWETZ.

SOME PECULIARITIES OF DYES WHICH PRODUCE TOTAL SPECTRUM SENSITIVENESS.

Total spectrum sensitiveness is a term I have chosen for a sensitiveness that can be imparted to photographic plates which is distributed more or less throughout the whole spectrum. To produce even sensitiveness throughout to the spectrum of normal "daylight" has so far been found impossible, but it is a comparatively easy matter to extend the colour sensitiveness of the ordinary plate, in a less degree, to the red end of the spectrum without any gap at all.

The action of most dyes is quite incomprehensible, but it seems within the limits of possibility that fluorescent dyes sensitise a plate for colours complementary to their own, and that non-fluorescent dyes sensitise more or less for their own colours. This is undoubtedly a rule with a very large number of exceptions; but it certainly seems to hold good in a number of instances.

Some recent experiments with dark blackish-violet and kindred dyes have given remarkably interesting results, although they have shown themselves unsuitable for practical work in comparison with the more modern sensitisers, such as orthochrom T, etc. Two dyes which behave extremely similarly are Wool-black 4 B and Columbia-black, and these, in reference to their absorptions and sensitising actions, furnish striking examples of one peculiarity to which we would draw attention. The absorption spectra of both Wool-black and Columbia-black show that the yellowish-green rays are partially extinguished, and the sensitising action of both dyes also leads to a marked deficiency in yellowish-green sensitiveness, which is, however, only readily apparent when employing the plates bathed with them in three-colour work.

Further experiments with other non-fluorescent dyes, some of which have not—to my knowledge—been tested before for three-colour work, give rather similar results. One dye, new patent blue (Bayer's), is remarkably satisfactory from a theoretical point of view, and gives a total spectrum sensitiveness which is better than that obtainable with either Wool-black or

Columbia-black. The fogging action of these dyes is pronounced, and thus makes it difficult to recognise minima when reading the densities of the bands; it also renders plates sensitised with them very unfit for half-tone work, as it is more difficult to obtain the best differentiation in the dots.

But now, before summing up any general notes, we must consider the special case of Titan-scarlet, which, although a red dye, as its name indicates, confers upon plates bathed with it a total spectrum sensitiveness equal to any of the above-named dyes, very similar in character notwithstanding. Here, then, are a set of non-fluorescent dyes, blackish-violet in colour and red in colour, yet both produce such similar results that it is difficult to correctly ascertain the differences in their sensitising actions.

If we consider this as an exception for the moment, I certainly think it can be claimed that *all* non-fluorescent dyes produce sensitiveness to a more or less degree, and in proportion to their colour transmission powers; also that those fluorescent dyes which excite colour sensitiveness in emulsions do so in a reciprocal proportion; that is, they sensitise for the rays which they absorb, whilst non-fluorescent dyes sensitise for the rays they pass.

As regards interpreting the curves shown in Fig. 1, it must be borne in mind that they are to be compared with the sensibility curve of an ordinary undyed plate. Thus the plate is in the first instance sensitive to violet, blue, and bluish-green;

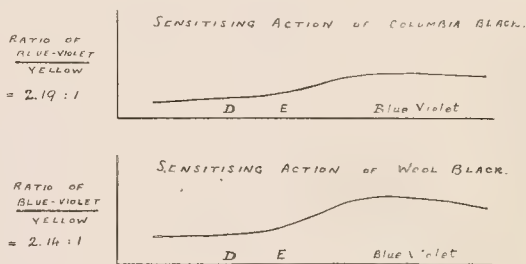


Fig. 1.

the action of the dyes is to extend this sensitiveness into the yellow and red regions of the spectrum, and very frequently to reduce the blue and violet sensitiveness originally possessed. The action of Titan-scarlet, new patent blue, Wool-black, and Columbia-black, is almost identical in each case. Titan-scarlet perhaps gives greater red sensitiveness, and this is comprehensible if the above-suggested law be true.

An examination of Fig. 2 will show that the absorption spectra of Wool-black and Columbia-black are so similar that it is difficult to detect much difference with the eye. The readings were made by means of the spectro-photometer, 1:100,000 solutions being used in a cell of 10-mm. width. The noticeable yellowish-green absorption is fully represented in the sensitising action of these dyes, as in many others tested; plates with either Wool-black or Columbia-black are remarkably deficient in yellowish-green sensitiveness. They are consequently quite useless for three-colour work, as in order to adapt a green filter to them it would be necessary to give with it an enormous exposure for the pink printing negative.

I will ask the reader to refer again to Fig. 1, where it will be observed that the ratio of yellow-sensitiveness to blue-violet sensitiveness is 1:2.19 in the case of Columbia-black, 1:2.14 in the case of Wool-black; that is to say, the ratio is almost the same, and it is so because the absorption spectra are almost identical.

A little thought devoted to the above-mentioned facts leads us to a conclusion which has doubtless been suggested before, but I leave it to the photographic historian to provide details.

This is that non-fluorescent dyes exert a screening action on the sensitive particles in the film, and that fluorescent dyes impart to the particles a screening effect which is reciprocal, i.e., the fluorescent colour is transmitted. New patent blue for example provides a "screen" through which all rays but yellowish-green pass, hence these are the rays to which the plate is least sensitive; erythrosine, on the other hand, permits the passage of greenish-yellow rays through its "screen," and thus the plate sensitised with it is chiefly susceptible to greenish-yellow. The original blue-violet sensibility is of course discounted in this consideration. When plates bathed with Wool black or Columbia-black are exposed behind the three filters used in colour photography, it is found that the ratios for the blue-violet and red exposures agree fairly well with those usually required when working with commercial plates. An exposure given for the green filter, will, with normal time give a good record of the bluish-greens, but a very feeble record of the greenish-yellows. This is only compatible with the results one would expect from the curves in Fig. 1 when one bears in mind the discount for the original blue and bluish-green sensitiveness in the unbathed plates. In commercial work, this would mean considerable re-etching of the pink "printer" or an inevitable over-redness of the resulting picture.

The method of employing an auxiliary dye is not a new one, and cannot be said to be of much value with the dyes under

ABSORPTION SPECTRA CURVES.

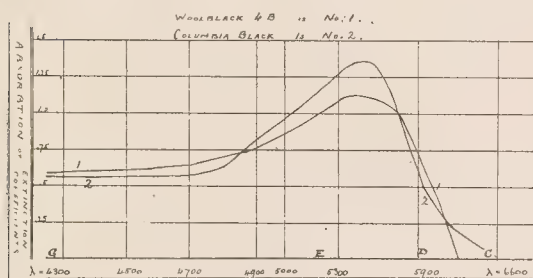


Fig. 2.

discussion. Cyanino blue sensitises very powerfully for red rays, when compared with Columbia black, etc., and the addition to it of erythrosine, glycine red, or chinoline red not only makes the results more brilliant and cleaner but it also makes the band of sensitiveness to the spectrum very much more even. This is not the case, however, with Wool or Columbia black, nor any of the dyes of which they are typical. A bathing solution containing erythrosine, for example, in conjunction with Columbia black gives a spectrograph which is vigorous in density as far as D 4 E, and then tapers down very abruptly to the insignificant red sensitiveness the black dye alone confers; it does, however, render the image more brilliant.

A plate bathed with a dye of this type requires specially adapted filters; the blue-violet filter must be darker than can be employed with other panchromatic plates; the green requires to be very luminous in the greenish-yellow region; the red filter must permit much the same light to pass as usual, but I have found a filter which works satisfactorily with all commercial makes will record some bluish-green rays, owing to the great proportional bluish-green sensitiveness.

A perfect panchromatic plate, when three successive exposures are made on it through the blue, green, and red filters, should reproduce the spectrum as an absolutely even band. With the standard filters used for these experiments, most commercial makes gave this result readily, but a plate dyed with colours of the above type entirely failed.

An interesting dye to colour workers is chlorophyll, unless properly isolated it varies very greatly in its sensitising properties. A solution is easily made by raising to boiling point a little alcohol in which some blades of grass are placed. This method saves the preliminary ether treatment, though it probably gives a very impure and inconstant solution. It behaves to some extent in accordance with the suggested theory but is of little value except in conjunction with collodion emulsion.

It might be mentioned that most of the above "data" confirmed by experiments with collodion emulsion. When variations have been experienced has been in the application of silver nitrate. Thus the addition of silver nitrate solution to Pluto black intensifies the red sensitising action, though it does not appear to materially influence Wool black; this can perhaps be accounted for by different chemical constitution.

A continued study of these and other dyes, which is, of course, carried out by spectroscopic means and camera exposures through the filters, may lead to some more definite conclusions, which I shall hope to communicate to the British Journal in due course. Meantime, every additional experiment points to the superiority of dyes of the cyanine type, the derivation of which can certainly claim precedence so far.

T THORNE BAKER, F.C.S.

THE QUESTION OF ART IN PHOTOGRAPHY.

[Translated from the "Photogramme".]

THE question of art in photography is not a new one. It dates back almost to the time of its discovery, but now it is recognised that photography is artistic, or at least capable of being so.

The reason of my returning to this question is that various articles published in important reviews are again bringing it to the front. It is the topic of the day, and as I always endeavour to keep the readers of this magazine in touch with what is taking place, I would like to say a few words about it.

First of all I must refer to an article by our distinguished confrère M. L. Gastine, which is the beginning of a study of art and professional photography. M. Gastine acknowledges with much truth the influence the exhibitions by amateurs have had upon the change which has taken place in professional photography, and he owns "that notwithstanding the great importance of the art movement in photography," there are still so few professional artists, that they could be easily counted on the fingers of one hand. They are not, however, altogether responsible for this want of progress. They have not the time to spend on a single work like the amateur, and they also have to take their customers into account. But let us leave the professionals alone, many of whom have yet to travel far on the road to art, and let us without ceremony turn to the great fight of which our review gives us the echo.

The cause this time is an article by Dr. Reiss,* published in the January number of the "Revue Suisse de Photographie," which, on account of the high reputation of the author is of vital importance. He says, in running through recent publications, and on visiting the exhibitions we have been stupefied by what one has actually dared to submit to the public. Although the attack is rather rough (our readers may form their own opinion of it, if they read the entire article), it contains much that is true. We have all seen, especially amongst the contributions of certain English and American exhibitors, pictures in which fuzziness oversteps the limits of the permissible and the vagueness of the drawing is such, that it is difficult to trace it in the grey indistinctness of fog.

According to Dr. Reiss the great evil is the abuse of the bichromate, which, nevertheless, "in the hands of a clever, conscientious worker may be very serviceable." We will return to this subject presently. But there is a closing criticism in

* See "BRITISH JOURNAL OF PHOTOGRAPHY" July 8, 1904, p. 600.

ard to which we are not in complete agreement with our eminent Swiss friend—it is concerning the selection of juries for our artistic exhibitions, or rather their composition. Dr. Reiss would like once more to see the majority composed of photographers—he might even permit the inclusion of a few painters and sculptors.

Our artistic exhibitions have quite a special character. M. Castigne's article shows what influence they have had and the progress they have brought about. It is not too venturesome to affirm that this fine result is largely due to the enlightenment of these juries, so happily brought into being by the Paris Photo-Club, and which the provincial societies have also found it worth while to adopt.

The reproaches which have been flung at gum bichromate have been met by a most competent opponent, M. René Le Begue. We find, in an article in "Home" of March 15, the situation described thus by our eminent colleague:—"From the day photography was divided into documentary and artistic—a division which is now admitted by all—two different paths have been clearly defined. Documentary photography renders such invaluable services that it would be puerile to discuss its indispensability and the immense interest attached to every branch of this new discovery. But as soon as we direct our attention to some other end than the document; as soon as we use technique only as a means; as soon as our ideal and our dream are not the production of an image fastidiously correct, scrupulously true to nature, but possessed of charm and beauty impressing itself upon the imagination; what does it matter about the purity of the negative and the perfection of the lens, the complete, scrupulous exactitude, so admirable, so precious in a document, but often so objectionable in art?" M. Le Begue continues by indicating the end the artistic photographer has in view and the means he employs. He answers the criticisms of Dr. Reiss concerning gum bichromate, and after pointing out its merits concludes very justly in the following terms:—"These qualities, which are so precious to the man of taste and the artist, become a stumbling-block to the expert operator. But it is not the process that should be criticised, but those who do not know how to use it." Our distinguished colleague could not speak with greater truth, and it seems to me that he has answered the criticisms of his learned opponent triumphantly.

Like all enlightened people M. Le Begue does justice to the photographic document and praises its value in highest terms. In this case the purity of the image cannot be dispensed with. It would be puerile to deny it. But if photography wishes to proceed, along the road to art, its freedom of action must be complete. If fuzziness, more or less pronounced, is necessary to produce the impression he desires, his work should not be rejected on that account.

The truth will always be found in those words of M. Le Begue which we have quoted above:—"It is not the process that should be criticised, but those who do not know how to use it." If fuzziness gives artistic qualities to a picture, it does not follow that fuzziness is artistic. If such works are shown at exhibitions (and we agree with Dr. Reiss that such unfortunately exist), we have the right to criticise them severely.

Artistic exhibitions have had a great influence upon photographic art, and even upon professionals, as we have seen. They should not be turned from the path, so happily traced for them, and sacrificed for regrettable snobbism. The eminent artists who form the juries at the present day extend to us their entire confidence, and their enlightened taste will certainly save us from such a fall.

A. LIEGARD.

The Kodak Competition Pictures are on view at the Kodak Gallery, 10, Strand, until December 17. Admission free.

CONTINUITY OF THE PHENOMENA OF SOLARISATION OF GELATINO-BROMIDE PLATES.

[Translated from the "Photographische Correspondenz."]

If a gelatino-bromide plate receives prolonged exposure, the well-known phenomena of solarisation make their appearance, since the normally exposed negative image, which has been developed, is covered by the solarisation image,¹ which gives a positive image on development. These phenomena until recently were looked upon as a process which acted continuously, but when Dr. Englisch published his studies entitled "The Periodicity of Solarisation,"² the use of magnesium light, with progressive exposures, disclosed the fact that there were light and dark intervals in the image, which appeared to give the solarisation phenomena a periodic character. For this reason I have investigated the question if it is a rule that solarisation is continuous or discontinuous in its nature, as it is of importance to the theory of photochemical processes with gelatino-bromide plates. In arranging my experiments I adhered to the working method adopted by Englisch, only, instead of magnesium light, I used an incandescent burner,³ because magnesium is not a sufficiently constant source of light, and also because it is questionable if the same amount of light is always emitted for a given unit of time. The incandescent gas burner was tested⁴ for its intensity with a Scheiner sensitometer by means of gelatino-bromide plates, and it was found to be 159 Hefner candles. I used various kinds of gelatino-bromide plates⁵ to obtain the phenomena of solarisation. They were exposed at one metre from the source of light by drawing successively the shutter of the dark slide at periods ranging from two seconds to one hour thirty-nine minutes, thus producing exposures ranging from 318 to 944,450 C.M.S.

The plates used were Schleussner's, Schatter's, Westendorp-Wehner's, and Lomberg's. The developers: ferrous oxalate, pyro-soda, metol-soda, and the time of development ranged from thirty seconds to five minutes.

In all these experiments, without any exception, the phenomena of solarisation were continuously progressive.

The addition of 10 per cent. of bromide of potassium to the pyro-soda developer,⁶ and 10 per cent. of ammonium bromide to the ferrous oxalate, set back considerably the appearance of solarisation, which agrees with the results given by Dr. J. M. Eder.⁷

Treatment of the solarised plate with chromic acid⁸ destroyed the solarised image to a degree representing an exposure of 255,000 C.M.S., and a normally exposed negative was obtained.

In all these reactions the phenomena of solarisation were continuous. In none of the experimental plates, which numbered about 100, could I detect the occurrence of any "periodicity of solarisation," which Englisch observed with intermittent magnesium light. Periodicity also appears to occur in exceptional cases only when using magnesium light, as I could not discover it when I rigidly complied with the conditions of experiment laid down by Dr. Englisch (repeated exposures of the gelatino-bromide plate with small pieces of magnesium ribbon burnt in succession).

In any case, my experiments prove that gelatino-bromide of silver solarises continuously, with great regularity, when exposed to the continuous action of light.

Vienna.

VICTOR VOJTECH.

¹ Archiv für wissenschaftliche Photographie, Vol. 11, p. 248. See also Eder's ausführliches Handbuch der Photographie, Vol. 111, 5th Edition.

² Physikalische Zeitschrift, 1901, Vol. 111, p. 1; also Physikalisch-chemisches Zentralblatt, Vol. 1, 1904 p. 434, and Zeitschrift für wissenschaftliche Photographie, Vol. 1, p. 364.

³ An incandescent gas burner under constant pressure may be looked upon as sufficiently trustworthy for these experiments during a period of about an hour.

⁴ Dr. J. M. Eder, Photometrische Untersuchungen der chemischen Helligkeit von brennendem Mg, Al & P. Sitzungsberichte der Kais. Akademie der Wissenschaften in Wien (1903); see also Photographische Correspondenz 1903, p. 457.

⁵ They were partly unbacked, but some were backed with asphalt and some with "Solarm" to reduce the halation at the back of the plate.

⁶ To each 100 c.c. of developer prepared for use 10 grammes of potassium bromide were added.

⁷ Photographische Correspondenz 1902, pp. 645 of 703. Also Eder's Jahrbuch für Photographie 1903, p. 20.

⁸ 1 gramme of bichromate of potash, 3 grammes of sulphuric acid and 100 c.c. of water.

ROYAL PHOTOGRAPHIC SOCIETY'S EXHIBITION.

TRADE EXHIBITS.

In our previous notices of this Exhibition now open at the New Gallery, Regent Street, we have dealt only with the Competitive and Invitation Pictorial Sections. Turning now to the exhibits in the Trade Section, tastefully displayed in the Fountain Court, we find most of the leading manufacturers of apparatus and material represented. One or two well-known makers have elected to be represented only in the North Room—in the section more particularly devoted to professional photography. We will deal with these firms when reviewing this section.

In the Fountain Court, at the now familiar stall of Messrs. WELLINGTON AND WARD a series of big enlargements on "Wellington" platino-matt bromide paper from negatives on "Wellington" anti-curling celluloid films are again on view. The majority of these negatives are shown with others in an illuminated stand, and may be compared with the enlarged prints referred to. This enterprising firm, whose factories at Elstree are increasing in number with surprising regularity and rapidly, have also on exhibition tastefully mounted prints on rough, smooth, extra rough, and toned bromide papers, "enammo" glossy, thick and thin, S.C.P. glossy and matt, including their latest production, porcelain gaslight paper, which is an absolutely white paper with egg-shell finish, giving absolutely pure blacks with a full range of gradations.

MESSRS. J. H. DALLMEYER, LTD., show a small selection of their high-class cameras and lenses for all purposes, including the Adon telephoto lens, with comparative examples of its work with that of an ordinary lens. The stigmatic lens, series 2, continues a favourite with the public, and a new descriptive pamphlet setting forth its characteristics has been prepared. "The Service" prismatic binoculars, which have attained a great popularity, may be seen, and visitors may test for themselves the firm's camera back and shutter for facilitating studio work. The shutter is of the double flap variety, actuated pneumatically. The operator focusses the carriage, pushes the dark slide into position, the shutter being automatically withdrawn, and presses the bulb. The device is simplicity itself and should save much valuable time.

There is much to interest the visitor on Messrs. SANGER SHEPHERD AND CO.'S stall in the shape of apparatus and material for orthochromatic and natural colour photography. An item that will at once attract attention is a new one-exposure camera for colour photography. The three negatives are taken simultaneously on one plate by one lens. The camera is compact, especially when one considers what it has to contain; and the arrangements for splitting up the light rays into their three primary components are little likely to become disordered. The adjustment for the varying degrees of sensitiveness pertaining to different batches of plates is accomplished by a novel form of diaphragm so devised that the setting of the camera to ratio is merely a question of adjustment of diaphragm, a compensating screen being unnecessary. Two or three finished transparency pictures taken with this camera may be seen on the stall, and very good they are. The camera is made in three sizes. The smallest takes a $6\frac{1}{2} \times 2\frac{3}{4}$ in. plate (half of a $\frac{1}{2}$ -plate); the second, $8 \times 3\frac{1}{4}$ in.; and the third, a stereoscopic pattern, takes a plate 8×5 in. The Chapman-Jones sensitometer is on view, and it may be pointed out that this is now supplemented by a new instrument for ascertaining the relative red, green, and blue sensitiveness of colour sensitive plates. The device consists of a graduated plate, $4\frac{1}{2} \times 3\frac{1}{4}$ in., covered by three strips of coloured filtering medium, each furnished with a numbered scale. The relative sensitiveness to the several colours is at once obtained by exposing a plate to daylight behind this screen, developing, and consulting the facts thus recorded. The well-known spectroscopic camera of this firm is now made in a cheaper form, with slight modifications, one of which is the enclosing of the train of prisms to protect it from injury. New models of apparatus for speed determination, after Hurter and Driffield's method, may be seen as well as one of a half-plate camera for survey work. Another exhibit that will attract attention and be useful in photographic work in many ways is the small automatic arc lamp, giving a light equal to about 125 c.p., with a consumption of $1\frac{1}{2}$ amps. on a 100 volt direct current circuit. The consumption is so small that the lamps may be safely attached to the ordinary installation for incandescent lamps. We were also shown a pneumatic shutter and repeating back for use in colour photography,

devised to facilitate the successive exposures of the three plates. With this it is possible to take an open landscape on the three plates or after another in as little time as three seconds.

For direct portrait work in colour and many aspects of medical work to which three-colour photography is extensively applied, such a means of rapidly exposing and changing the three plates is very necessary.

There are some excellent lantern slides in colour made by the firm's method, and a very fine large portrait on paper by the same method. The colours are delicate and free from any crudeness. We understand that a special camera for portrait work will probably be on the market very soon.

We were shown one or two interesting examples of the employment of three-colour photography in medical work. Several of the hospitals make use of the process, a stereoscopic camera having been employed for recording the colour of the affected parts and the form of the eruption in skin diseases. Bacteriologists likewise find colour photography by this method invaluable in their researches, and many of the Universities and teaching bodies now use colour slides in place of the older, slower, and less satisfactorily methods of class demonstration.

Finally, we must draw attention to the frame of accurate colour filters or screens, which are now supplied for any brand of plate on the market.

The enterprising house of HOUGHTONS, LTD., has put up an attractive stall for the display of an interesting collection of cameras and accessories. The following models of the popular "Sanderson" hand camera may be seen—Regular, Tourist, Junior, Roll Film, and Deluxe—and the "A," popular, and Junior popular types of the "Sanderson" field camera are also on view. The "Holborn" and "Klito" hand cameras also find a place, and we must not omit to mention the "Ensign" roll films, for the "Ensign" and all roll film cameras. The firm is also demonstrating the "Standa" tank for the stand development in daylight of glass plates and flat films. The tank consists of an upright metal vessel and a removable inner chamber grooved for twelve plates. The developing solution is poured into the outer vessel up to an indicated level, and the inner chamber containing the plates, securely capped, is slowly introduced. The developer enters the inner case through a light-tight aperture at the bottom, provision being made for the escape of air at the top. The tank is made in $\frac{1}{4}$, 5×4 , and $\frac{1}{2}$ -plate sizes. The "Dalo" developing chamber for one plate can also be seen. The firm show numerous other pieces of apparatus, amongst which may be mentioned a compact daylight enlarger with which from $\frac{1}{4}$ to $\frac{1}{2}$ plates can be enlarged to any size not exceeding 15×12 in. The apparatus can be employed without difficulty as a 15×12 camera. With the approach of the winter, their lantern list, which describes much that is interesting to the lanternist, may be perused with profit.

C. P. GOERZ, of 1 to 6, Holborn Circus, E.C., has again the centre stall this year. Various articles of the firm's manufacture will be found here. Their new model focal plane shutter is now made to give short exposures of $\frac{1}{2}$, $\frac{3}{4}$, 1, 2, 3, 4, and 5 seconds as well as prolonged time, bulb and snapshot exposures. On giving the setting screw a half turn—against four or five in the older form—instead of the adjustable slit appearing, the whole aperture is exposed; this, with another slight turn, is ready for use with the bulb for the short time exposures which are regulated by means of an air escape. A further half turn winds up the slit, and the shutter is then ready for the ordinary flash work. To again obtain the full aperture it is only necessary to press the trigger on the right-hand side of the shutter, holding down in the meantime the small metal knob on the top left-hand side.

MESSRS. W. WATSON AND SONS, of 313, High Holborn, W.C., show several forms of the "Antinous" release for shutters, replacing the rubber ball and tube. The latest form is provided at the end with a loop to engage with the trigger of shutters of the Bausch and Lomb type. An instrument we were rather pleased with is the new model "Vril" for half-plate and stereoscopic work. This camera is of the familiar Goerz-Anschütz form, being held out at the full extension by means of springs. The front panel takes the two lenses, the centre being adjustable from $2\frac{1}{2}$ to $3\frac{1}{4}$ inches, and in this form is used for stereo work. For half plates the panel holding the two lenses is removed, and in its place is put what is really a second similar camera thus obtaining the necessary extra extension. The focal plane

utter (Messrs. Watson's own pattern) serves for both forms. The well-known "Acme" camera by the same makers has been brought to date by the addition of triple extension and an extreme rise of front. On this stand will also be found the "Argus," a reflex camera with focal plane shutter. The machine is small, of light weight, and fitted with front extension by rack and pinion. Several of the firm's stigmat lenses are exhibited, as also are examples of work done therewith. The two combinations are corrected for use singly as long as lenses.

The Watson-Conrady system for photomicrography, which is also known, consists of (1) the condenser, fitted with an Iris diaphragm; (2) a glass tank—easily taken apart for cleaning—to contain heat-absorbing or coloured media; (3) an Iris diaphragm, with or without an auxiliary concentrating lens; (4) the illuminant. A very neat and effective stereoscopic camera in the shape of a book is also worthy attention.

The ROTARY PHOTOGRAPHIC CO., LTD., have a tastefully enclosed case in which are shown prints upon Rotograph bromide paper, matt and glossy, in seven grades; Rotox gaslight paper, matt and glossy, in three grades; Rotary carbon tissue in twenty colours; Rotograph bromide and Rotox gaslight postcards in three sizes; Roto roll film; and, finally, specimens of their three-colour pigment stripping film for colour photography. On the outer wall of the stall will be found a smaller print, though still of good proportions, of the large photograph of the Bay of Naples, which was sent to the St. Louis Exhibition.

The small stall of Messrs. SANDERS AND CROWHURST, who this year have opened a branch at Hove, contains much that is worthy of examination, including the Birdland camera, a focal plane reflex of triple extension, in its latest form, with reversing frame, and the very small and serviceable "Bloknote" camera. The Southport enlarging stand, 15 x 12 may be seen, and it may interest our readers to know that this is now made in special form to suit the purchaser's particular requirements.

Messrs. BURROUGHS, WELLCOME, AND CO., of Snow Hill Buildings, London, C., have a very tastefully decorated stand, and show a number of the well-known "Tabloid" brand compressed chemicals for use in all branches of photography. Let into the two towers flanking the stand are a number of lantern slides, some of them being toned to various colours by means of copper ferrocyanide and other reagents in "Tabloid" form.

The PLATINOTYPE Co. occupy their usual position. They show a number of American photographs, the major part being on the company's sepia paper. Various examples on the different grades of paper are on view, and frequent demonstrations of the development of the papers are given. The firm also exhibit their tissue storage box for carbon and platinum. This is in form of a metal cylinder cased in wood, provided at the bottom with a tray with perforated top for holding the calcium. The top of the cylinder has a domed copper top with a thick band of rubber round the edge, and when the lid is in position the knob is pressed, forcing out the rubber and thus ensuring an airtight joint. The Platinotype Portrait Lamp is also to be seen.

KODAK, LTD., who reoccupy the space for some years associated with their name, have a very comprehensive display. There is a complete range of Kodak and Premo cameras, whose features are too well known to call for detailed description. The daylight developing machine may be seen in use and specimen prints on the firm's papers, negatives on kodoid and seed plates and roll film will be found. The latest model of the Brownie is also exhibited.

Altogether we are glad to note that this section maintains its popularity and interest. The firms who are represented are to be congratulated on a very attractive display.

Mr. R. R. BEARD, the well-known lantern expert, of 10, Trafalgar Road, Peckham, London, S.E., sends us his latest catalogue of scientific instruments, optical lanterns, cinematographs, oxy-hydrogen jets, governors, and carriers, and general apparatus. It is a freely-illustrated publication, of about fifty pages, which should be in the hands of all those interested in optical projection work, on which subject Mr. Beard is one of our highest practical authorities, whose advice and experience may quite be relied upon by both the expert and the novice.

THE MANIPULATION OF PLATINUM PAPER.

In an article which appeared in these pages recently, the successful treatment and working of old platinum paper and the saving of over and under-exposed platinum prints was so thoroughly treated that nothing further in that direction seems requisite. It is my purpose in the present paper to set forth the possibilities of the platinum process, treating the subject from a different standpoint. Upon the regular or "black" papers, colours may be obtained ranging from a very cold to a very warm black. A most beautiful red or green may be secured by simply toning the print; a sepia colour can be obtained by the introduction of bichloride of mercury into the developer. Moreover, prints of a greater or less contrast may be made from the same negative by altering the developer, by manipulation in printing, and by other means. It is to this side of platinum printing that I shall give my attention, writes Mr. W. E. DASSONVILLE in an American contemporary.

When it is desired to give to the print that sense of warmth felt in late afternoon and twilight landscapes the sepia colour obtained by the hot developer or the use of mercury is best suited. These varying shades of sepia will also be found pleasing for many portraits. The red colour is particularly adapted to sketchy effects both in portraiture and in landscapes, suggesting as it does red crayon. The green is not so suitable for landscapes as might be supposed but for marines it probably answers better than any other colour.

These formulæ have stood the test of my every-day practice for several years. They have in my hands been found the simplest and most suitable of a great number of published formulæ which I have given careful trial. Since it is impossible without illustrations to show the exact colours and gradations obtained it would be advisable for the worker wishing to fully avail himself of the processes outlined, to make up a set of prints, showing the different results obtainable from the same negative. Such a set of prints will permit him to make an intelligent selection of the process most desirable in any given case.

RED OR GREEN PRINTS.

To make a red platinotype, proceed as follows, making up three solutions:

No. 1.	Uranium nitrate	48 grs.
	Glacial acetic acid	48 min.
	Water	1 oz.
No. 2.	Potassium ferricyanide	48 grs.
	Water	1 oz.
No. 3.	Ammonium sulphocyanide	½ oz.
	Water	1 oz.

When ready to use take one part of each solution and add 100 parts of water. In this final solution place a finished print; one developed, cleared, and washed. It will immediately commence to tone to a colour termed Bartolozzi red; the longer the print is immersed the darker the colour will become. When the desired depth of colour has been obtained remove the print, washing it in several changes of water made slightly acid by acetic acid, and then dry.

These acid baths are important since the slightest trace of alkalinity will entirely remove all of the red colour, leaving the print as it was before being toned. It may be seen by this that should the print be toned too dark it can be cleared of its colour by being rinsed in water to which has been added a small amount of any alkali. After this the print may be well washed and again toned to the colour desired. When mounting prints which have been toned with nitrate of uranium it is advisable to add a few drops of acetic acid to the paste used.

To produce a green platinotype, tone the print red as just describe 1; rinse in an acid bath and then immerse for a few minutes in a bath of bichloride of mercury; 18 grains to the ounce of water. From this bath the print is transferred, without washing, to a solution of trichloride of iron, 10 grains to the ounce of water. In a few minutes the desired colour is obtained. The print is then well washed in several acid baths and dried. It is generally supposed that prints treated in this manner are not permanent, but some prints made about four years ago show no signs of deteriorating.

INTENSIFYING PLATINUM PRINTS.

It often happens that prints when finished are too weak, and, ordinarily, are thrown away. Such prints are easily saved by intensification. Make a solution of:

Hydroquinone	2 grs.
Citric acid	60 grs.
Water	3 ozs.

When the chemicals are entirely dissolved add 10 grains of nitrate of silver. The platinum print is placed in this solution and allowed to remain until sufficiently intensified, when it is removed, given a slight washing, and fixed in a weak solution of hypo, after which it is well washed and dried.

SEPIA PRINTS BY THE USE OF MERCURY.

The introduction of bichloride of mercury into the developer changes the resultant colour from a black to a sort of sepia. The amount of mercury required depends upon the effect desired and also upon the paper which is used. As a general rule, with the American platinum, from one-quarter to one-tenth of a grain to the ounce of developer will be sufficient. With the Willis and Clements' paper, from one to one and a-quarter grains to the ounce will usually be found necessary. Using greater quantities than these produces a rather disagreeable colour, and it will also be found that the greater the amount of mercury used the less the half-tones are preserved. Prints treated in this manner have one great drawback; they are permanent only when the iron contained in the paper is entirely removed by the acid baths, but washing the prints in these baths has a very strong tendency to remove all traces of the sepia colour, owing to the action of the hydrochloric acid upon the mercury. A print developed in a mercury developer will have lost all its colour by the time the iron is entirely removed if an average strength of acid clearing bath be used.

The only way which I have found to overcome this difficulty is to leave the prints in the developer for at least four minutes, thus giving the mercury plenty of time in which to act, and then clear the prints in three weak acid baths of: Muriatic acid, 1 ounce; water, 200 ounces. By following this course the loss of colour will be very slight and the iron will be entirely eliminated.

EXTREME CONTRASTS, COLD AND WARM BLACKS.

It often happens that for some reason a print very strong in contrast and cold in colour is desired. To secure this, the following developer answers admirably:

Neutral oxalate of potash	16 ozs.
Phosphate of potash	4 ozs.
Sulphate of potash	$\frac{1}{2}$ oz.
Water	100 ozs.

The solution should be used cold and the print immersed as usual. The length of time required to develop is at least five minutes, the image appearing and developing very slowly. After development the prints should be rinsed in the three customary acid baths of: Muriatic acid, 1 ounce; water 50 ounces. In mixing up formulae containing neutral oxalate of potash, the oxalate should be first entirely dissolved and the solution then tested with litmus paper. Should it prove acid, neutralise with carbonate of potash; if alkaline, slowly add oxalic acid until neutral.

Another method of securing greater contrast without at the same time producing cold blacks is to place a piece of blue glass over the negative while printing. As it is difficult to procure such glass entirely free from spear points and bubbles it is advisable to paste over one side of the glass a piece of French tissue-paper. With the papered side toward the negative place the glass over the printing frame, never in contact with the negative. By this means the shadows from the bubbles are prevented, and the print will show no mark from them. Using the developers which are supplied by the various manufacturers of platinum paper one generally obtains a medium gray print when they are used at a normal temperature, say 70 degrees Fahrenheit. By heating the developer, even to the boiling point, the colour becomes warmer, varying according to the temperature of the solution. The increased temperature of the developer plays another important part by materially reducing the contrast of the print. By holding the print over the steaming solution before developing, and until the surface has had an opportunity of becoming slightly moist, a still further decrease in contrast will result. Another method of producing a print with lessened contrast is to remove the paper from the tin the evening before printing and allow it to remain over-night, without the package of preservative, in a closed drawer. The paper will become slightly dampened and give, when used judiciously, beautiful soft effects without the warm black colour produced by the use of a hot developer.

SPOTS ON C.C. PRINTS.

Of the more frequently recurring questions of the many ever pressed ones asked and answered in the correspondence columns of this Journal that regarding the cause of yellow spots on C.C. prints appears to be among the more pressing. As—judging from the answers given—it appears to be some slight haziness on this subject, I hope the following note may be of use, especially as I wish to draw attention to one or two usually unsuspected causes of what has been not inaptly termed "the yellow peril." Yellow spots may appear at any time during and after the manipulation of the prints, but usually are noticed after the prints have been mounted and dried, either at once or at varying intervals, according to the particular cause of the evil.

It is noteworthy that prints toned in the gold bath alone seldom show the blemishes, these latter nearly always appearing on prints toned in both gold and platinum. As this is the process usually worked by the professional, let it be understood that the double bath method is particularly referred to in the following. Washing gold toning and platinum toning are in themselves not liable to lead to trouble if pure chemicals are used; the first likely cause is the necessity of washing after toning in platinum. This washing must be thorough, acid from the platinum bath will be carried into the hypo, causing sulphur toning, and in course of time yellow spots. Washing prints to discharge the acid must be done by hand, as running water is quite useless. Six changes in fifteen minutes will be right for a medium batch, but increase this if prints number more than about a hundred cabinets. To make absolutely certain that prints shall be neutralised in fourth washing water, put a few drops of carbonate of soda solution. Then give three farther changes in clear water, also placing a little of the alkali in the hypo.

Insufficient fixing is another frequent invitation to the enemy. The makers of many papers recommend for the bath: Hypo, 1 ounce; water, 20 ounces. I have always thought this ridiculously inadequate, and always use, not only without detriment, but probably with great gain, hypo, 3 ounces; water, 20 ounces, for from fifteen to twenty minutes.

The best way to wash these prints is to give several hand washes immediately after fixing, then wash in running water for two or three hours, and again hand wash. Say, running water two hours, hand washing twenty minutes. Hand washing is best done by transferring prints from one bowl into another containing clean water. If prints are to be dried for cutting out, blot between pure paper and then spread on clean sheet or fresh blotter.

Mounting should be done with pure starch, made same day, certainly not more than twenty-four hours old. The reader will probably think that the prints, having got so far, are now quite safe. Such is not the case, for one of the most insinuating, and, in England, at least, the most unsuspected dangers is yet to come.

After mounting the prints must be dried as quickly as possible, and not placed on top of one another until quite dry. Why slow drying should cause spots I am quite unable to understand, but such is undoubtedly the case, not only from bitter experience, but also from the experience of others. Moreover it will be noted that I say unsuspected in England, but in America the fact is well known, the Aristotype Company laying great stress on this point. They recommend that each print be put through very hot rollers, with card over face. This is doubtless a safeguard, but I think that if the danger is recognised very few precautions will guard against it. The precaution of drying prints in rooms with fire during damp weather will, of course, be obvious, and at the same time do not place too near fire or dust therefrom is likely to be another cause of the everlasting yellow spot. It will doubtless have been noticed by some at least of my readers that these complaints of yellow spots on C.C. are more frequent at damp periods of the year. How important the above is to all members of the profession can only be judged by the professionals themselves, for blemishes of the startling description of the yellow spot cannot but in the long run ruin, not only the work and reputation, but the photographer also. The C.C. process is, however, very beautiful, and, we think, well worth the extra

able to guard against faults, for a well made print is well nigh permanent when once made. To ensure perfect results, do not forget that requires the greatest attention and personal supervision at each stage. Also do not do too large batches; you will find it quickest to make two batches of one hundred and fifty cabinets than one batch of two hundred and fifty at a time.

W. FOSTER BRIGHAM.

THE "BRITISH JOURNAL OF PHOTOGRAPHY" IN AUSTRALIA AND NEW ZEALAND.

THE August number of the "Australian Photographic Journal," published in Sydney, contains the following: "So far back as the year 1864, Lord Salisbury (then Lord Robert Cecil), in a lengthy article upon photography, wrote; 'Of all the marvellous discoveries which have marked the last hundred years, photography is entitled in many respects to take its rank among the most remarkable.' The Marquis did not venture a prediction of what might happen in the future. The BRITISH JOURNAL OF PHOTOGRAPHY, under the title of the 'Liverpool Photographic Journal,' had come into existence just ten years before the above quotation was penned, and in the present year is celebrating its jubilee. Sitting back in our chair, here in far away Australia, to permit ourselves for the moment to wonder what the Right Hon. Marquis would say could he join in the Journal's celebration and review its fifty years' records of facts? We may safely suggest that, with us, he would voice the opinion—'a faithful report of splendid achievements!' It is impossible for us to find space to satisfactorily hint at the work done by the 'B.J.P.' in its life of fifty years, as to the diamond lines of some old tome, the remembrances, the recollections, the reminiscences of men who have been actively engaged in photography, and contributors to the B.J. columns, for the whole of the fifty years. Mr. H. N. King, one of the oldest and most experienced professional photographers, and Mr. G. Watnough Webster, F.R.C., F.C.S., and others write from this standpoint, while to name the interesting and instructive article on special subjects, such as 'The Present Position of Pictorial Photography,' by Dr. P. H. Emerson; 'Half a Century of Camera Evolution,' by E. J. Wall; 'Handling the Adult Sitter,' by H. Snowden Ward, F.R.P.S., would mean practically to name them all. In a word, the number is excellent, and the Editor may be proud that he is entirely justified in holding it forward for criticism, not only on its own merits, but on the contingent merits of the past weekly issues. The 'B.J.P.' holds an unique position. Of the weekly journals it is the hub. From it ray forth to photographers the lights which guide them, and in it may be found the records of scientific photography, of professional photography, of amateur photography, and of all pertaining thereto. Advice and news from its columns are to be relied upon for correctness, and they are thoroughly up to the hour. Our dependence upon it we readily and with pleasure admit, for at this distance from the world's headquarters the 'B.J.P.' tells us in the quickest possible time exactly what is going on. It may well be proud of its past."

"Sharland's New Zealand Photographer" says:—"The Jubilee Number of the BRITISH JOURNAL OF PHOTOGRAPHY has just come to hand. It is a very bulky number, of about a hundred pages, issued at the usual rate—the modest twopence. It contains a history of photography during the half-century, and a series of most interesting papers on subjects which to-day are engaging the attention of experts in their various departments, illustrated with portraits of the leaders in the literature, art, science, and technique of photography. A list of the contents would nearly fill one of our columns, and the Editor has secured the assistance of many names well known to readers of photographic journals, so that this Jubilee Number presents a rich treat to all its readers. We wish the publishers had sent us a few hundred copies; they would have been very quickly disposed of. Such value was certainly never previously offered."

Exhibitions.

NEWBURY.

THE members of the Newbury Guildhall Camera Club are to be congratulated upon the success, from an artistic point of view, which attended their second exhibition of pictures, the product of the camera and its devotees, both professional and amateur. Encouraged by the success achieved on a former occasion with a modest project, the Club this year were much more ambitious in their aims, and the collection of some 1,300 or 1,400 pictures that were on view in the Town Hall, which for the nonce was turned into a photographic salon, was undoubtedly the best that has been seen in Berkshire and the adjoining counties, and would prove a strong rival to some of the more famous collections in some of the big cities and towns of the country. The hall itself would not accommodate the whole of the exhibits, and the gallery and staircase had to be requisitioned for the purpose. Not only were the number and quality of the photographs shown of a large and high character, but the manner in which they were displayed and the whole arrangement of the exhibition reflect the greatest credit on the members of the Club who formed the various committees who were responsible for the same. The Club has as its president the Rev. J. M. Bacon, M.A., F.R.A.S., while Miss Gertrude Bacon, his daughter, who is scarcely less famous, is the president of the exhibition.

The exhibition was formally opened on Tuesday in last week by Lady Wantage in the presence of a distinguished company.

Space will not permit of our describing the exhibits singly, and we cannot do more than give a list of the prize winners. The judges were:—Harold Baker, A. Horsley Hinton, Reginald Craigie.

Portraiture and figure study (open to amateurs or professionals).—First prize, £5 5s., A. M. Walters, Forthampton Vicarage, Tewkesbury, "A Dutch Cap"; second, £2 2s., Andrew Paterson, 15, Academy Street, Inverness, N.B., "The plotter"; highly commended, Miss Agnes B. Warburg, 8, Porchester Terrace, London, W., "The Noah's Ark."

Architecture, exterior or interior (amateur or professional).—First, £3 3s., Rev. H. R. Campion, West Fen Road, Ely, "Quomodo dilexi"; second, £1 1s., S. G. Kimber, Southampton, "From transept to nave, Winchester."

Landscape, river scenery and marine (amateur or professional).—First, £4 4s., A. Marshall, Nottingham, "Shadows"; second, £1 11s. 6d., D. Murray, Wolverhampton, "On Cannock Chase"; highly commended, F. J. Phillips, Brighton, "A sandy track."

Instantaneous, showing evidence of motion (amateur or professional).—First, £3 3s., A. S. Orlebar, Tetworth Hall, Sandy, Beds., "Start of the Redwings"; second, £1 1s., G. Cleland, Edinburgh, "Lowest"; highly commended, B. H. Bentley, M.A., F.L.S., University College, Sheffield, "Queen of the Air."

Flowers, fruit, still life, or any subject not otherwise classified (amateur or professional).—First, £3 3s., E. Seymour, Watford, "Flower Study"; second, £1 1s., Miss M. C. Eames, Wedford-on-Avon, Stratford-on-Avon, "Poppies"; highly commended, A. W. Walburn, West Hartlepool, "Ivy Geranium."

Local portraiture and figure studies.—First, £2 2s., Miss C. E. Power, Watership, Newbury, "Portrait of Robert Etheridge, Esq., F.R.S."; second, £1 1s., A. R. Pym Sutton, Bucklebury Place, Reading, "Dragoman, Syria"; third, 10s. 6d., Mrs. Yates Bainbrigge, Donnington Villas, Newbury, "Greek Figure."

Architecture (local).—First, £1 11s. 6d., A. R. Pye Sutton, "Milan Cathedral"; second, T. C. Beynor, "Cheriton," Newbury, "Five Arches, Tenby"; third, 10s. 6d., T. M. Morris, Newbury, "Old House, Strasburg."

Landscape, river scenery and marine (local).—First, £2 2s., C. Rupert Dolton, Newbury, "The Avenue, Highclere"; second, T. C. Beynor, Newbury, "Cheriton Church"; third, 10s. 6d., P. F. Davis, Craven Road, Newbury, "On the Lambourn."

Instantaneous photographs (local).—First, £1 1s., Rev. H. A. Sealey, The Vicarage, Hungerford, "Wave Study"; second, 7s. 6d., Miss C. J. Bacon, Earlstone, Newbury, "Off to Glasgow."

Flowers, fruit, still life, animals.—First, £1 1s., P. F. Davis, New-

bury, "In summer shade"; second, T. C. Beynon, Newbury, "Craven Hounds."

Novice class.—First, camera, value £4 4s. (presented by Miss G. Bacon), Mrs. A. S. Batson, Hop Benham, Newbury, "Views near Boxford"; second, £2 2s. (presented by Miss G. Bacon), Miss Osmond.

Old Newbury class, prizes given by the Mayor of Newbury.—First, £2 2s., T. M. Morris, Newbury, six views of historical Newbury (the same exhibitor was second prize, but was debarred); second, £1 1s., J. Steptoe, "Donnington Castle"; third, 10s. 6d., W. N. Whaley, Newbury, six views of Newbury.

Photographic postcards (amateur or professional).—First, £1 1s., W. H. Foxall, Trinstall, "Toilers of the harvest"; second, 10s. 6d., H. S. Talbot, Cold Ash, Newbury, "In the Jama, Musgid, Delhi, India"; third, 5s., F. B. Richardson, Scarborough, "Sleep."

Junior Class (local).—First, £1 1s., W. Freemantle, Northbrook Street, Newbury, three views of Ilfracombe Harbour, Capstone Rock, and Newbury Bridge; second, 10s. 6d., A. H. Davis, Northbrook Street, Newbury.

Lantern slides (any subject), sets of four.—First £3 3s., S. G. Kimber, Southampton; second, G. A. Booth, Preston; highly commended, G. Cleland, Edinburgh.

Lantern slides (any subject), sets of four (local).—First, £1 1s., J. Steptoe, Newbury; second, 10s. 6d., T. M. Morris; highly commended, Miss G. Bacon.

Stereoscopic (any subject), sets of four (open).—First, £2 2s., H. Wormleighton, Leicester (who was also second but debarred from taking the prize); second, £1 1s., H. E. Lewis, Colville Road, Essex; highly commended, A. W. Westropp, Bridgnorth.

There was a remarkably fine loan collection. Amongst the exhibitors were H.R.H. Princess Christian, H.H. Princess Louise Auguste, Lord Stanmore, Rev. J. M. Bacon, the Kodak Company, whose Russo-Japanese war pictures attracted general attention. Walton Adams, of Reading, had some attractive portrait studies. The Autotype Company exhibited a selection of their most attractive work. Victor White, of Reading, had a number of landscapes, Mr. G. W. Palmer sent views taken of his recent travels in Japan. A series of pictures were lent by the Royal Photographic Society and the Camera Club. Mr. Frank Thoyts' photos were those of the funeral of the late Queen. Mr. Righton showed interiors of many of the mansions in the neighbourhood and specimens of portraiture. Other work was sent by the Platinotype Company, the Langflier Company, J. H. Dallmeyer, Ltd., a series of children's studies by Messrs. Speaight. Sir Benjamin Stone had on view a selection of his famous Parliamentary and historical pictures. Miss Acland lent several of her examples of colour photography. Dr. E. S. Grün was showing the three-colour process and work done by the Grün liquid lens. Messrs. Hawker, Messrs. Wellington and Ward, Mr. Pym Sutton, Mr. W. Whaley, Messrs. W. and D. Downey, Mrs. G. A. Barton, Miss King, "Focus," Mr. E. H. Carpenter, Mrs. J. E. Nelson, Mr. C. F. W. Peirson, Mr. Horsley Hinton, and others also showed pictures, which helped to make up a splendid collection of loan exhibits.

Mr. Richard Kerr, F.G.S., F.R.A.S., was engaged to give a series of scientific expositions on Wireless Telegraphy, Tesla's High Voltage, Microscopic Wonders of Marine Life, Radium, the Harmonograph, the Gyroscope, Colour Photography, during the exhibition. Miss Gertrude Bacon lectured on "In odd corners with a camera." The Guildhall Dramatic Society gave performances of Jerome's comedy "Barbara," and Hurst's "True Colours." The musical arrangements were in the hands of Mr. A. H. Drury, A.R.C.O., and concerts of high-class music by leading local amateurs were given twice daily. Cinematograph displays were frequently given, also exhibitions of prize lantern slides. There were demonstrations of various photographic processes, and a cabinet of stereoscopic transparencies lent by Messrs. Lumière afforded much pleasure.

The committee are to be congratulated upon the artistic catalogue which they issued, containing some excellent reproductions of famous photographs.

FORTHCOMING EXHIBITIONS.

October 15-29.—Coatbridge Photographic Association. Hon. Sec., Geo. W. Campbell, Ailsa Cottage, Coatbridge, N.B.

October 18, 19, 20.—Kettering Church Institute Photographic Exhibition. Hon. Secretary, E. Clappole, 112, Hawthorn Road, Kettering.

October 19-20.—Isle of Wight Photographic Society. Hon. Sec., J. Howard Burgess, 53, Pyle Street, Newport, I.W.

October 19-22.—Rotherham Photographic Society. Hon. Sec., C. Hemmingway, Tooker Road, Rotherham.

October 26-28.—Watford Camera Club. Hon. Sec., H. G. Telford, 3, The Parade, Watford.

November 2, 3, 4, 5.—Newark Photographic Exhibition. Secretaries, L. C. B. Appleby, Barnbygate House, Newark.

November 2-23.—Plymouth. Hon. Sec. Photographic Society, Chas. R. Rowe, 2, Walnut Villas, Cockington, Torquay.

November 3.—Frome M.I. Photographic Society. Hon. Secretary, B. J. Mitchell, 3, Willow Vale, Frome.

November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Sec., James Dunlop, Myrtlebank, Motherwell.

November 9.—Hackney Photographic Society. Hon. Secretary, Walter Selve, 70, Paragon Road, Hackney, London, N.E.

November 15-19.—Sunderland Camera Club. Hon. Sec., Selby-Cox, 52, Frederick Street, Sunderland.

November 17-18.—Braintree and Bocking Camera Club. Hon. Sec. W. H. Tilston, 81, Iligh Street, Braintree, Essex.

November 17-19.—Darwen Photographic Association. Hon. Sec., J. G. Thomas.

November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.

November 22-23.—Ipswich Camera Club. Hon. Secretary, R. Sutton, 37, Henley Road, Ipswich.

November 23-26.—Hove Camera Club. Hon. Secretary, A. Sargeant, 55, The Drive, Hove.

November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., G. W. Simmers, Aberdeen House, Ramsgate.

November 25-26.—Ilford and District Photographic Society. Hon. Sec., W. N. Beal, 155, Thorold Road, Ilford.

November 26-December 3.—Glasgow Eastern Amateur Photographic Association. Secretaries, John Brough, 68, Dalmar Street, Park Head, Glasgow; and Geo. R. Johnstone, 591, Alexander Parade, Dennistoun, Glasgow.

December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.

December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-1 West 101st Street, New York.

December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.

December 12-17.—Sefton Park Photographic Society, Liverpool. Hon. Secretary, H. E. Cubery, 3, Langdale Road, Sefton Park, Liverpool.

December 13-20.—Southampton Camera Club. Hon. Secretary, G. Kimber, Oakdene, Highfield, Southampton.

December 28-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 138, Glasgow Road, Wishaw.

January 12-14, 1905. Boston Camera Club. Hon. Sec., H. Hames, 65, West Street, Boston.

January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.

January 20-21, 1905.—South Essex Camera Club. Hon. Secretary, T. Michell, 180, Browning Road, Manor Road, E.

January 28-February 12, 1905.—Photographic Society of Marseille. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.

February 6-11, 1905.—Blairgowrie and District Photographic Association. Hon. Secretary, Wm. D. M. Falconer, James Strath Cottage, Blairgowrie.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

March 4-11, 1905.—South London Photographic Society. Hon. Sec., H. Creighton Beckett, 44, Edith Road, Peckham, S.E.

June, 1905.—Northern Photographic Exhibition. Secretary, F. G. Sol, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

October 10.—Luna paper. £240 cash prizes for prints on Luna paper. Lucien Allegre and Co., 59a, New Oxford Street, London, W.C.

October 15.—Belgian Association Lantern Slide Stereogram Competition. Secretary, M. Vanderkindere, 97, Avenue Brugmann, Brussels.

October 31.—Coxin. 68 prizes for users of Coxin. Judging twelve lectures. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.

November 1.—The "Graphic." £50 in cash prizes. Manager, Photo Competition, the "Graphic," Tallis Street, Whitefriars, London, E.C.

December 31.—Barnet. Nineteen classes. Prizes valued at £500 or lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

March 15, 1905.—Ilford. £750 in cash prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

THE SAME OLD STORY.

The following is taken from the Berlin correspondence of a recent issue of the "Daily Express":—

"The German scientist Dr. Koenig, of Hoechst, announced this afternoon to a congress of scientists assembled at Breslau that he had succeeded completely in solving the problem of coloured photography, which has hitherto baffled the most expert photographers. Dr. Koenig said he had discovered a perfectly simple process whereby every shade of colour in the photographed object was reproduced to perfection in the photograph. The process was so easy that any amateur would be able to carry it out with the same facility that he now takes snapshots. Further, it is only a fraction more expensive than ordinary photography. The process reveals whether a man wears a black or dark blue coat, whether a gold or silver watch-chain, whether he has ruddy or pale complexion, and other details to perfection. After the negative is taken the coloured photograph can be copied in forty seconds, and retains all the shades of colour in the copy. Dr. Koenig is to explain the technical details to the congress. Experts who have investigated his claims declare that the discovery is amazing."

Patent News.

The following applications for patents were made between September 12 and September 17, 1904:—

Plates and Films.—No. 19,940. "Improvements in and relating to photographic plates and films." (Date applied for under Patents Act, 1901, September 17, 1905, being date of application in Germany.) Complete specification. John Henry Smith.

The Scottish Salon.—The second annual Scottish National Salon of the Scottish National Federation, will be held in the galleries of the Royal Glasgow Institute of Fine Arts, 270, Sauchiehall Street, Glasgow, from January 14 to January 28, 1905. Entry forms and all further particulars may be obtained from the hon. secretary of the salon committee, Mr. W. A. Frome, 28, Bank Street, Hillhead, Glasgow. The prospectus states that the exhibition will be open to the works of all photographers (professional or amateur) resident in Scotland; also to the works of Scotsmen not resident in Scotland and that independent of their being associated to the Scottish Photographic Federation.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

October.	Name of Society.	Subject.
8	Royal Photographic Society ...	{ Slides by Members of the North Middlesex Photographic Society.
10	Royal Photographic Society ...	{ A Popular Talk on Colour Photography. Mr. T. K. Grant.
10	South London Photo. Society...	{ Cameras and Apparatus. Mr. H. Creighton Beckett.
11	Architectural Asso. Cam. Club	{ Westminster Abbey. Messrs. S. B. Bolas, F.R.P.S., and D. M. Mackenzie.
11	Hackney Photographic Society	{ A Talk to Beginners about Improving the Negative. Rev. F. C. Lambert, M.A.
11	Birmingham Photo. Society.....	{ Annual Meeting.
11	Glasgow Southern Photo. Asso.	{ Hat Night.
12	G.E.R. Mechanics' Institution	{ Affiliation Lecture.
12	Boro. Poly. Photo. Society	{ Some Practical Hints. Mr. R. R. Rawkins.
12	Royal Photographic Society ...	{ Marine Photography. Mr. F. J. Henderson.
13	London and Prov. Photo. Asso.	{ Henderson Award Meeting.
13	Hull Photographic Society	{ Gas-Light Papers. Demonstrated. Mr. W. J. Williams.
14	Bowes Pk. and Dis. Ph. Soc. ...	{ R.P.S. Exhibition.
14	Boro. Poly. Photo. Society	{ Instruction Evening.
14	G.E.R. Mechanics' Institution	{ Visit to the R.P.S. Exhibition at the New Gallery, 121, Regent Street.
14	Wakefield Photo. Society	{ Retouching. Demonstrated. Mr. John Way.

MOTHERWELL YOUNG MEN'S INSTITUTE CAMERA CLUB.

The annual general meeting was held on Monday evening, September 19. The secretary, in reading his report, gave an excellent account of the club's work during the past year. At the last annual general meeting the membership roll was 38; during the year 19 new members have been enrolled, making a total of 57, thus showing that the club is in a flourishing condition. The treasurer, Mr. Dugald Taylor, presented his report and accounts for the past year, showing a very satisfactory balance on the right side. The election of office-bearers for session 1904-5 resulted as follows:—Hon. president, Alex. Findlay, Esq., M.P.; president, Mr. Robert Kilpatrick; vice-president, Mr. J. S. Taylor; treasurer, Mr. Dugald Taylor; secretary, Mr. James Dunlop; auditors, Mr. John Whillas and Mr. D. Martin; council, Mr. William Millar, Mr. Dan Dunlop, Mr. Arch Bishop, Mr. Alex. McDonald, Mr. Robert Frew. The council are at present busy arranging a fine syllabus of lectures and demonstrations for the winter evenings; non-members are invited to these meetings. The third annual photographic exhibition of the club takes place on November 3rd, 4th, and 5th next, and promises to eclipse any former exhibition held in the town. The secretary, Mr. James Dunlop, "Myrtle Bank," Wilson Street, will be pleased to forward full particulars to anyone interested, on receipt of post-card.

BELFAST Y.M.C.A. CAMERA CLUB.

The annual meeting of this club was held at Wellington Place on the evening of the 20th ult., the President, Mr. Moffett, occupying the chair. The secretary read the annual report and statement of the club's finances, showing a very satisfactory balance at credit. Both statements being adopted, the members next proceeded to elect the officers for the season. Mr. R. J. Moffett, who had filled the presidential chair during the past two years, was unanimously re-elected. The following were elected vice-presidents: William Downing, J. J. Macauley, A. K. Hogg, Richard Hamilton, Dr. Allworthy, T. F. Bell, W. McLean, T. H. McMurray, and D. W. Elliott. A committee, consisting of eight members, as follows:—D. J. Hogg, H. Hill, H. Rew, H. Crawford, J. M. Busby, P. Kilgour, J. B. Anderson, and S. McNiece McLaughlin. Mr. Cochrane continues in the dual office of honorary secretary and treasurer. Mr. John Maccomson was appointed honorary assistant secretary, and Mr. A. George honorary lanternist. The next business was the presentation of the championship cup and medals won during the past season. Mr. Hill secured the cup and gold medal for the highest average marks for prints and lantern slides, and the same gentleman also received the silver medal in the lantern slide competition. In the enlargement competition, Mr. J. B. Doran was the successful competitor, and was awarded the silver medal. Mr. H. Cochrane, jun., obtained the club's bronze

medal for enlargements. In the juniors' class for prints, Mr. H. Crawford obtained first and bronze medal. In the juniors' class for lantern slides, the bronze medal was presented to Mr. D. W. Elliott. The prints for the recent enlargement competition were on view for the inspection of members. Mr. A. R. Hogg then proceeded to give a demonstration on the "Making of Lantern Slides" by contact and reduction, thereafter showing some slides on the screen, which were obtained by various processes, including the three-colour process.

WOODFORD PHOTOGRAPHIC SOCIETY.

WEDNESDAY last saw the first meeting of the Winter Session of this Society. The proceedings were not so formal or so scientific as usual, and consisted of lantern lectures of ten minutes duration interspersed with instrumental and vocal music. Mr. Ernest Marriage, F.R.P.S. showed a short, all too short, series of his inimitable renderings of architecture, which included many fine specimens of telephotographic work, and which were much admired. Mr. W. L. F. Wastell put in a very strong plea for greater and more general use of that much abused instrument, the hand-camera. He showed a series of "snap-shots" taken on Saturday afternoons during the present summer, including waves at Hastings, scenes from rural Surrey, Epping Forest, and barges on the Thames. Mr. Wastell made his hearers laugh by holding up to obloquy a certain camera he had borrowed on one occasion, which he described as making a noise like a machine gun in winding up, thereby causing a hitherto unconscious model to look round and spoil the picture, but as this and the others taken with the same camera on the same day were amongst those that evoked the heartiest applause, we think he had little to complain of judging by results. An old campaigner like Mr Wastell should remember to wind up his shutter on another occasion before going into action. The musical portion of the evening was most enjoyable. Some fine slides by Messrs. R. and H. T. Malby were also shown.

News and Notes.

THE annual exhibition of members' work in connection with the Wearside Camera Club was opened last week. There were 150 exhibits, and the display showed a marked general improvement.

THE members of the Southampton Camera Club opened their winter programme on the 3rd inst., when Mr. W. A. Sims, of London, gave demonstrations on Rotary stripping films for three-colour photography, and with Rotary bromide printing papers.

At the South-Western Polytechnic, Manresa Road, Chelsea, S.W., a course of about twenty-five lectures, fully illustrated by demonstrations and examples of processes, on photography was commenced on Monday, October 3, by Mr. E. Senior.

THE classes in the photography and printing crafts' department of the School of Technology, Manchester, have opened for the session, 1904-5. The full syllabus may be obtained of the principal of the school, Sackville Street, Manchester.

THE winter syllabus of the photographic section of the G.E.R. Mechanics' Institute is to hand. Practically every Wednesday evening from October 5 to May 3, 1905, is filled with an interesting lecture or demonstration.

MUIRKIRK Photographic Association.—On Tuesday evening last, Mr. J. W. Eadie (Airdrie Federation lecturer) delivered an instructive lecture on "Mounts and Mounting," to the members of the association, in the Baird Institute. The lecture was illustrated with lime-light views.

HUDDESFIELD Naturalist and Photographic Society.—The opening meeting of the new sessions of the natural history section took place at the Technical College, on Saturday evening last. Mr. Wm. G. Smith, Ph.D., B.Sc., gave an excellent lecture on the "Distribution of Coniferous Trees."

THE hon. secretary of the Sheffield Photographic Society has sent us the programme of fixtures for the winter session. The items that will occupy the attention of the members from the beginning of this month to June next, promise to be exceedingly interesting and instructive.

'MR. R. J. STRUTT finds that a radio-active gas or emanation be obtained by drawing air over hot copper or bubbling it through hot or cold mercury. By repeated circulation through mercury considerable activity can be obtained of quite a different order to that of metals as ordinarily observed.

MESSRS. KODAK, LIMITED, have been favoured with the loan of a series of photographs of Macedonia, which were taken by Prof. P. N. Milnkoff during a recent tour in that country. From the negatives a collection of enlargements has been made and are on view at the Kodak Gallery, 115, Oxford Street, W.

THE Brooks-Watson Daylight Camera Co., Limited, of 119, 121, Holborn, London, W.C., informs us that owing to the success of the new "Rajar" and "Claron" specialities, they have been obliged to considerably extend their film and paper works at Moberly, Cheshire. In order to enable them to cope with the sudden increased demand they will be glad if customers will be good enough to place their orders as far in advance as possible.

MESSRS. J. EPSTEIN AND Co., of 33, Broad Street, Bristol, write as follows:—(1) Owing to great increase in our business we have taken and fitted up in the most modern style very large works at Rutland Street, Hot Street, which are fitted with electric lifts and machinery. (2) We make our frames with electric machinery and therefore, give prompt execution of orders. (3) Greatly increased stock of mouldings, which comprises hundreds of patterns all up to date. (4) New enlarged price lists will be ready the middle of October in which we are introducing several new lines.

THE announcements of the Northampton Institute, Clerkenwell, E.C., for 1904-5, include the following new developments:—Technical optics: Day courses appear for the first time, and are believed to be the first complete day courses in technical optics attempted in this or any other country. The evening classes are separated from the applied physics department and have been remodelled under Mr. S. D. Crompton, who now devotes his whole time to this work as head of the department. Artistic crafts: Day courses for these crafts also appear for the first time. The subjects taken, besides drawing and design, are goldsmiths' and jewellers' work, silversmiths' work of various kinds, engraving and decorative metal work.

"PEOPLE bother me," said Judge Addison, K.C., at the Southwark County Court on Tuesday, "to take my photograph—I suppose because I am a Judge, I can think of no other reason—and say they charge nothing; but I pay no attention to such applications." His Honor made this remark in advising a litigant not to believe that people would give something for nothing, even though they advertised to do so. When, in a subsequent case, a barrister stated that his client, although an Englishwoman, had been so mixed up with foreigners that she had either never acquired or had forgotten her native tongue, the Judge remarked that he was reminded of people he had read of in the newspapers. "They are found in the streets," he said, "having forgotten who they are, where they come from, or what language to speak."

THE Plymouth Exhibition.—The photographic section of this exhibition bids fair to exceed in popularity that of last year, when it proved to be the best thing of its kind up to then held in the West. On the present occasion the arrangements made for housing the photographic section have been amplified and increased, so that it will be presented in a better manner than before. Some of the best work will probably be represented by their finest efforts. Three classes have been added which may appeal strongly to those who may have been spending a holiday in Devon and Cornwall, those for "Devon and Cornwall Scenery," "Postcards," and the class for boys and girls in which the subject may be anything the photographer may choose. Of course, other classes have attractions also, but they have all been drawn liberally and with wide scope, so as to afford everybody an opportunity. Entries close on the 15th inst. Particulars may be found in our advertising pages.

SOUTHEND Photographic Society. — "Very ingenious" was the unanimous opinion of the members in regard to the "home-made apparatus," which formed the subject of a lecture by Mr. Fairclough on Thursday last. This gentleman must have taken an immense amount of trouble to get up the lecture and bring his bulky apparatus all the way from Leigh. His contrivances for enlarging, reducing,

and all the thousand-and-one operations of a busy photographer were explained, and proved him to be a man of many parts. On the previous Saturday, the society were booked for Hadleigh, but, owing to wet weather, did not get beyond Leigh. However, there is plenty of material there, and numerous plates were exposed on mudscapes and skylines, etc. The clouds were a great feature on this occasion, and were made the most of. The outing on Wednesday brought the season to a close for 1904, as far as outdoor work by the society is concerned.

At the Leeds Institute Technical School, classes in the principles and practice of photography will be held during the session 1904-5. Mr. S. E. Bottomley. The elementary class will meet on Wednesdays; the advanced class will meet on Fridays, commencing on September 23. On each evening an hour's lecture, with practical demonstrations, will be given at 7 p.m. It will be followed by individual practical work in the photographic laboratory (rooms D 6 and 7), from 8 to 9.30. Students who cannot afford the time for this will take the lecture course only, but no one will be allowed to take practical work alone. Fee for the lecture course only, 5s. for the session; fee for the lecture and practical work together, 12s. 6d. for the session. The course is specially arranged to meet the requirements of both amateur and professional photographers, and is intended to give them a thorough knowledge of the principles underlying the theory and practice of pure photography.

Otley Camera and Art Society.—This society, which begins its winter session this week, has an excellent programme, and there is plenty to occupy the attention of the members week by week. Out of the twenty-four lectures and demonstrations arranged, no less than fifteen are in connection with the Yorkshire Photographic Union, who send out lecturers free to the affiliated societies. Amongst the gentlemen who will speak under the auspices of the Union are Messrs. Alex. Keighley, R. Stockdale, F. W. Plews, J. Way, Percy Lund, E. Eliff, C. B. Howdill, Godfrey Bingley, F. Seaman, R. Fortune, and W. H. Atkinson, the majority of whom will deal with photographic topics. There are three trade lectures—Messrs. Wellington and Ward, Kodak, and Thornton Pickard—and lantern slides will be shown on October 13 (members), and January 19 (Y.P.U.). Interesting lectures will doubtless be those by Mr. W. Kaye on the history of printing machines, and Mr. G. R. Warnes on "Drawing and Caricature." Prizes are offered in the photographic and art sections of the society, and a circulating portfolio goes the round of the members. The meetings are held on Thursday evenings, in the Mechanics' Institute, Otley.

LECTURE ON Radium at Southampton.—"Radium" was the subject of an inaugural lecture delivered at the Hartley University College, Southampton, by the Principal (Professor Richardson, D.Sc.), on Friday last. There was a large attendance, comprising students of the college, and many others interested in scientific phenomena. Dr. Richardson, in the course of his lecture, observed that the study of matter during the last eight years had been full of surprises. The discovery of X Rays particularly marked a great advance. There was evidence to show, said Dr. Richardson, referring to radium, that that substance changed in time to helium, one of the rare gases investigated by Sir William Ramsey. Upon the first discovery of radium it was thought that it was similar to the X Rays, but examination showed that they differed in a most remarkable degree. Radioactivity was first discovered in 1896, when it was observed that rays from uranium would pass through thin sheets of metal, and that it was analogous to X Rays as regards its photographic and electrical effects. Radium, which was discovered by M. and Madame Curie, was a million times more active than uranium. It was produced from pitchblende, and the cost of one milligram (about the size of a pin's head) was £3 10s., which worked out at £99,000 per oz. the most expensive subject known. The lecturer explained the spinthariscopes. The instrument invented by Sir William Crookes, to show the effect of radium, and gave exhibitions upon a screen of the action of the instrument, by means of a model. The dream of the alchemist had, Dr. Richardson remarked, in conclusion, to a certain extent, become true. They had believed that it was possible to transform the baser metals into gold, and while this had not been brought about, it had been proved that one element, radium, changed in the course of time to another, helium. The lecture was illustrated by experiments.

WORKING UP PLATONA PRINTS.

BESIDES affording one of the most beautiful and artistic methods of photographic printing, platinum paper possesses the additional advantage of a grained surface that is easily worked up. With Platona prints, says Mr. J. I. Pigg, in "Photographic Scraps" for October, defects in the negatives due to careless or faulty manipulation can often be partially or entirely remedied by a judicious handling of the prints; clouds can be added when there is a bare expanse of sky, and obnoxious portions of a view toned down or altogether removed. If a negative prints slightly through the sky portion, leaving a tone or veil over that part of the print, clouds to suit the picture can be easily and effectively added, by gently rubbing away the deposit from portions of the sky with the finger, while the print is still wet. The platinum film will be found to come away in a granular form, instead of lifting in patches as would be the case with a carbon or silver print under this treatment. A little practice will soon make the amateur an adept at producing cirro-cumulus. If the negative is too dense to print a tone in the sky, the tint must be supplied before the print is developed. Take the printed picture out of the frame and tear a piece of brown paper so that the skyline of the picture is approximately followed; it is not necessary to be very exact in this operation. The paper is then held over the printed portion of the picture, leaving the bare sky exposed to the action of diffused light for a minute or so. The paper must be kept moving while the secondary exposure is being made, or an unsightly mark will appear on the picture where the paper was placed. The paper should be held well over the landscape and project partly into the sky, or the horizon line will be darkened. The print is developed and fixed and the clouds are added as previously mentioned, by rubbing away so much of the tinted portion as may be necessary to produce the desired effect. Lights may be added to water or any portion of the foreground, in the same manner, if the negative lacks vigour. Any black portions of the picture, such as dark corners caused by an extravagant use of the rising front, may be reduced or altogether removed by this method and if carefully carried out no trace of the working up will be visible. Only the removal of the film has so far been considered, but when portions of the picture itself require darkening the foregoing methods are obviously useless. A platinum print has almost exactly the appearance of a picture drawn with a B pencil, consequently a lead pencil of this type can be used for adding the necessary shades. The pencil must not be pressed heavily on the paper or a metallic sheen will be given to the shading. This effect can be easily seen by sharpening a pencil over a sheet of white paper; the graphite falls as dead black specks, but if the pencil is drawn firmly across the loose dust, the metallic lustre immediately appears. When comparatively large portions of the print require darkening, the pencil point must be at least a quarter of an inch in length, and cut slightly curved. The rounded edge of the curved point is laid lightly on the paper and moved gently to and fro. No lines will be visible on the print, as the extreme point of the pencil is above the paper, and a "matt surface" shading is produced without difficulty. If the pencilling is properly done the retouching is practically indistinguishable from the rest of the print even when the picture is viewed obliquely, but if pressure is exerted on the pencil the added work does not harmonize with the platinum deposit. The retouching can be fixed in the way usual with pencil drawings by dipping the picture in milk, but unless the print is likely to be roughly handled this will not be necessary. When heavy shadows require lightening, a good method is to dip the tip of the finger in French chalk and dab this on the dark parts of the picture, afterwards rubbing the chalk in with the fingers. By this means the dust is fixed in the grain of the image and a considerable improvement is effected.

Correspondence.

- * * *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*
- * * *We do not undertake responsibility for the opinions expressed by our correspondents.*

THE PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION AND THE PROPOSED BENEVOLENT FUND.

To the Editors.

Gentlemen,—On Friday, October 21, the fourth annual general meeting of the above association will be held, and one item of vital importance will be brought up for consideration, viz., the proposal of Mr. H. Snowden Ward to institute a benevolent fund. Now this is a matter that no professional photographer can ignore, and there is one thing I should like to see, that every member of the P.P.A. sends in his approval of the scheme, and gives these gentlemen who are nobly doing their best for the future of professional photography the encouragement they deserve. Let them know that the association is behind them, and ready to back them up to a man. I believe the membership roll is well over 500, and I should like every one of that 500 to subscribe 5s. as a beginning. This would create a fund of about £125. Then let them subscribe 6d. per week, to be paid quarterly or half-yearly. I believe this works out at about \$650 yearly, not bad for a beginning, and it would not hurt a single one of us. Many a working-man pays as much, and more, to a sick club. I think our leaders have done splendidly with that little subscription of 5s. per year, and feel confident if photographers could see the benefit they would get by binding themselves together in one strong society, the good ship P.P.A. would weather all storms. It would be a powerful means of drawing every professional to our ranks, as he must see the advantages of belonging to such a society. I feel it would do more to curtail the system of "price cutting" than any other means, as it would create a mutual respect and brotherly feeling, now unhappily absent. And in time the Great British Public would get to know that, in dealing with a man who carried the letters M.P.P.A. behind his name, they were doing the best for themselves in every way, those letters meaning he was a member of an honourable society of gentlemen, a society instituted for the upholding of photography as a business and an art. Now, photographers, "altogether, please."

FRANK WATSON.

Brighton,

October 3, 1904.

[A very practical and encouraging letter—one of a kind of which we should like to see more from our professional readers who are, or should be, interested in the proposed benevolent fund. With regard to the suggestion that the P.P.A. should take the matter in hand, we may be pardoned for pointing out that the idea is by no means new. At the inaugural meeting of the association on March 23, 1901 (see this Journal, Vol. XLVIII., p. 215), the chairman, Mr. Thomas Bedding, F.R.P.S., observed, inter alia, "Such a body as your proposed association, it seems to me, forms the best agency for tackling a question like this." As we have over and over again remarked let photographers themselves once stir in the matter and the benevolent fund will not long lack the support of the photographic world.—Ed. B.J.P.]

NOTHING LIKE BUTTONS.

To the Editors.

Gentlemen,—We think the enclosed letter so replete with unconscious humour as to be deserving of having extracts from it published in your journal. We appeal to you, can nothing be done to avert the horrible doom that awaits us, or must we, indeed, succumb to our fate, and relinquishing all our ideals, henceforth consolidate our interests in the "button business," and become "button manufacturers"? Taken seriously, are we to regard this as one of the numerous ominous signs of professional decadence, and as an additional proof of the low level to which photography as a profession is sinking? Here we have the high-art photographers, who are yet not above "touting," and who write continually to the best people (one lady assured us she had received about a dozen letters) begging the favour of a sitting, free, and proof submitted; while in the principal

streets there are numerous "three retouched cabinets for half a crown," artists, and gentlemen who supply twelve promenades for 7s. 6d. 10s. 6d. Our "Evening Echo" produces a permanent enlargement 5s. 6d., and a large general store is advertising twelve postcards any photograph, 2s., sittings 1s. extra. No wonder that clients little value on photographic portraiture and constantly tell us it is "all profit" in photography. It can hardly be a matter for surprise that assistants find their salaries decreasing, that "sweating" is prevalent, or that your advertising columns contain so many notices "businesses for sale."—We are, yours truly,

29, Bold Street, Liverpool.

MEDRINGTON'S, L.

October 4, 1904.

The following is extracted from the letter referred to:—

"Your name and address were given us by our consular office, your city, and at his suggestion we mailed you our catalogue, list, and samples. We also wrote you extensively and tried to draw your interest in the button business. Inquiring the reason why you have failed to hear from you is the main object of this letter. As a photographer, one of not several branches of our industry shall appeal to you, as it is one of the most ingenious applications of photography ever made.

"Several chemical ingredients have been looked for to lengthen the life of a picture. Many expensive solutions were prepared to preserve the products of photographic art. Our formula is the easiest, cheapest, and most effective we know of. Celluloid is the name. Celluloid is the base of our industry. We copy pictures, mount them under celluloid by means of heat, mount them into any button or medallion, illustrated in the catalogue. We also insert into brooches, charms, bracelets, lockets, in different sizes, qualities, and designs. A plain or tinted picture united to the celluloid and in a frame, charm, etc., makes a neat and up-to-date jewel, universally by people of different ranks. We sell celluloid, by parts, jewellery, and all the material required. Also the machinery which will wonderfully transform all this material into beautiful buttons, medallions, etc., by simply following the instructions furnished every manufacturer that we start. It is our desire that become a button manufacturer; sooner or later you will have become one in order to hold your trade and keep your rank as one of the photographers who have already created the demand for our goods.

PHOTO JEWELRY MFG. CO.

Chicago, September 22, 1904."

[Our correspondents take, we think, an unwarrantably pessimistic view of the present condition of professional photography, although there is no doubt that, as the phrase goes, it is very much "cut" just now, and suffers from its full share of the prevalent commercial depression. But there is, in our observation, a rapidly growing appreciation of the work of such men as Crooke, Hollyer, Barrow, William Gill, J. Craig Arran, Furley Lewis, Histed, T. C. Turner, and many others whom we could name, which augurs well for the future of the art, if we may so designate it. In photography, as in everything else, it is the fittest that survives. On our table as we write are many crude specimens of portraiture, sent to us for our criticism and opinion. They possess every possible fault of which photography is capable and none of its excellencies. Vast quantities of such are supplied to the public day by day all over the land. Is it to be wondered at that in these times of high mental and artistic development such abominations should provoke disgust and contempt? There is no room to-day for the incompetent and illiterate dabbler who establishes himself in a frowzy tenement in a mean street; the educational influences of the sumptuously illustrated publications that have come from the press have been at work, and his doom is sealed. We honestly believe that if the present magnificent exhibition of photography at the New Gallery, Regent Street, were visited, not by the paltry or eleven thousand persons it at present attracts, but by the workers of the educated classes, there would be such a demand for the kind of work there shown that a new era of prosperity would set in. The public knows a good thing when it sees it; but, as we hinted a few weeks back in reply to a complaining correspondent, it will have mediocrity at any price. And it is the mediocre photographer who is going, and must go, to the wall.—Eds. B.J.P.]

WANTED! A GOOD PHOTOGRAPHIC PAPER.

To the Editors.

Gentlemen,—Probably many will say on reading this heading, "there are too many already." After forty years' experience

photographer, and during that time having experimented with almost every kind of material and paper for photographic printing, I still regard the ideal paper for simplicity in working, the correct rendering of detail of a good negative and permanence is yet to be produced. I would combine the simplicity and permanence of platinum with the rich detail of collodio chloride, the speed of bromide, the colours of carbon, and the cheapness of albumenised, we should be near the mark. The subject is a very exhaustive one, but it is my intention simply to mention a few photographic papers and their characteristics. Albumenised paper must be freshly sensitised day by day, as it will not keep well. Is slow to print, blisters badly, requires toning, shadows bronzing, stretches and distorts, is not permanent under all conditions, fairly hard surface standing rough usage, is easily dried and mounted, and is cheap.

The commercial article is often made with decomposed albumen, which accentuates its bad qualities.

Gelatine chloride can be obtained ready for use, prints fairly quick, is so easy to handle, surface being tender, very uncertain in toning, heavy shadows even to bronzing, cannot be dried quickly, keeps better than albumenised, and does not stretch so much; is not permanent though popular; rather low in the scale of photographic papers.

Bromide.—Sold ready for use, prints very quickly, troublesome dark-room development, fine detail in some brands, in others heavy shadows; good keeping qualities, colour rather objectionable, surface tender and liable to abrasion, fairly permanent, much more so than either of the foregoing; useful for either thin or dense negatives; not paper for general use.

There are several children belonging to the bromide family some of whom are popular with amateurs. A good range of colours can be obtained by troublesome methods.

Collodio Chloride.—Several varieties sold ready for use. Prints well. Bright rich image, beautiful detail, making it most suitable for photographs from which to obtain half-tone process blocks. Has a hard waxy surface, is difficult to tone with gold, easy with salt. It curls and cracks dreadfully, liable to blister. It will not keep long; turns yellow. Is not permanent, or rather not uniformly so; some brands turn out well, others show yellow fading quickly. Is not easy to mount. This paper has many good points, and would become very popular if the curling, cracking, and blistering faults could be overcome and the price be lowered.

Carbon.—Difficult to print, troublesome in the after process, tissues liable to tear, detail good, best range of colours; permanent.

As at present not altogether suitable for every-day use, but in this direction I think must be looked for the paper of the future.

Platinum.—A beautiful paper, prints fairly quick, difficult to judge when done, easily developed, quickly washed, no great length of time required in its manipulation. Its colour beautiful when at its best, with rich plum-like bloom; permanent. One of its weaknesses is the tendency to attract moisture; keeps well in air-tight tins in a dry place. When sepia developed it is one of the finest papers in the hands of the photographer for artistic purposes, but not so suitable for reproduction.

All things considered platinum holds the premier place in my judgment amongst photographic papers at the present time.

It might have been better if this were headed: "Wanted, two Photographic Papers." We must retain platinum, and for the other, the same ease in working but giving all the sharp points of the negative. No doubt there are many who will defend the good name of the papers mentioned, and I do not say good results cannot be obtained with each, but still I am of opinion we want an ideal photographic paper.—I am, yours, etc.,

Cambridge, October 2, 1904.

J. C. BURROW, F.R.P.S.

[Mr. Burrow's long practical experience entitles him to be heard on this subject, but we are bound to rejoice that his ideal printing paper is not likely to be placed on the market until photographic chemistry has become something altogether different from what it is. Ideals vary with individuals; cannot Mr. Burrow conceive that each of the printing processes he criticises amply meets the needs of many workers in photography? *Chacun à son goût!*—Eds. B.J.P.]

SPOTS ON C.C. PAPER.

To the Editors.

Gentlemen.—The trouble with spots which many of your correspondents experience in working C.C. paper may be avoided by drying the prints quickly after mounting, either before a fire or in a proper

drying cupboard; it is better to let them stand half an hour before drying them, and not to use too much heat, else they will curl off at the edges. The cause of the spots is fermentation. They never appear on unmounted prints. The quick drying of the prints seems to add to their brilliancy. It is important that every trace of the strongly acid platinum toning be washed out before the hypo bath.—Yours truly,

T. FITZGIBBON-FORDE.

15, Waterloo Place, Sunderland.

September 30th, 1904.

SUNDAY WORK.

To the Editors.

Gentlemen,—Please allow space for the following, and I will be much obliged. I see that "Sunday work advertisements" are on the increase. Let us look at the matter from two points. The proprietor is greedy, he wants seven days a week for himself and cares little or nothing for his God's claims on him. Further, the proprietor is selfish, he does not consider his workers. The proprietor is also foolish. Solomon says, "He that hasteth to be rich hath an evil eye, and considereth not that poverty shall come upon him"—Proverbs xxviii., 22. It is no use arguing, for facts, as well as right, is against such a proprietor. Very early in the world's history our Creator orders one day a week rest. I have spoken to "seven day" workers, and have always found them to a more or less extent, irritable, tired, "run down" in health, and inclined to be slovenly, etc., in business, etc., etc. The One who made us knew best what the human machine would stand, and that the brain needed to be rested and the nerves relaxed. He is all-wise. Seven-day workers are foolish. Even an inanimate thing, such as a razor, works better for a period of rest.

Let us look at it from the assistant's point of view. Competition and over-stocked labour market lead many with weak principles to engage themselves to "seven-day-a-week" employers. They get into a commoner class of trade and generally degenerate into "wasters." For "whatsoever a man (or woman) soweth, that shall he (or she) also reap." "Be not deceived." "God is not mocked"—Gal. vi., 7.

The difficulty is to get any remedy for the "bad place." It will be dealt with, however, at the "judgment"—Revelation xx., 11. In the meantime, let me ask those employers mentioned to be wise, merciful, and less greedy; and that assistants may, for their own sakes, give "seven-day-a-week" ads. a wide berth.

S. H. WRIGHTSON.

Sunnyside, Kirkley Park Road, Lowestoft.

September 30th, 1904.

[The question of Sunday work can, we think, be discussed without reference to religious considerations, which probably weigh little with the majority of people nowadays. To be logical, our correspondent should stop locomotion, close all shops, and forbid every kind of amusement and entertainment on Sundays. We do not seek to defend the practice of photography on the first day of the week, but it is perhaps permissible to speculate that "the day that comes between a Saturday and Monday" affords the only opportunity for many persons to indulge in the harmless occupation of being photographed. And after all, if an assistant has conscientious scruples in the matter, he need not engage himself to an employer of Sunday labour. We do not invite further letters on this subject, which was fully discussed a few years ago in the Journal.—Eds. B.J.P.]

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The British Journal of Photography.

The Oldest Photographic Journal in the World.

ESTABLISHED 1854. PUBLISHED EVERY FRIDAY. PRICE TWOPENCE.

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Answers to Correspondents.

- ** All matters intended for the text portion of this JOURNAL, including queries, must be addressed to 'THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C.' Inattention to this ensures delay.**
- ** Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.**
- ** Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & Co., 24, Wellington-street, Strand, London, W.C.**
- ** For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.**

PHOTOGRAPHS REGISTERED.—

- L. J. Pinworth, 14, Campbell Road, Southsea, Hants. Photograph of Interior of Royal Garrison Church, Portsmouth.
- P. Charleton & Son, Garrison Studio, Newbridge, County Kildare, Ireland. Three Photographs of Drum Horse, 11th Hussars.
- G. A. Seaman, Pelham Street, Ilkeston, Derbyshire. Photograph of Shipley Hall, near Derby.
- H. Lowthian, 144 and 146, Freeman Street, Glimshy. Photograph of St. Andrew's Church, Glimshy.
- J. E. Reeves, 18 and 50, Hermit Road, Canning Town, London. T. Alison, F. Piercey, W. McCartney, D. Gardner, J. Flynn, C. Sammons, J. Fletcher, W. Bridgman, T. Bartlett and M. Kingsley, all of the West Ham United Football Club.
- H. L. Fry, The Rectory, Ballyvaunlon, County Kerry, Ireland. Photograph of Ballyvaunlon R.C. Church.

F. H. P.—The specimen of retouching sent is very good of its kind.

ADDRESS WANTED.—"HYDER" says: "In 'Ex Cathedra,' September 2, you give an account of railway station lighted with acetylene, can you tell me where I can get further information re dry generation of acetylene gas from calcium carbide?" In reply: See answer to "J. C. W." in last week's issue.

W. SYDNEY TAYLOR writes: "I should be greatly obliged if you could kindly inform me how to become a member of the Royal Photographic Society?" In reply: If you write to the secretary, Mr. A. W. W. Bartlett, 66, Russell Square, London, W.C., full particulars will be supplied you.

OLD NEGATIVES.—"E. S." says: "I have a great many old waste 12 by 10, 10 by 8, 1-1, $\frac{1}{2}$, and $\frac{1}{4}$ negatives. Could you inform me if there are any firms who buy waste glass of this sort, and whether it is worth the carriage?" In reply: No. The glass is not worth the trouble of cleaning for recoating. Did you read the article on the sale of negatives in our last issue?

BURNISHER.—J. HIPGRAVE says: "I am sending you two rough prints of a burnisher I bought at a sale a few days ago. Will you kindly explain how it is used, where I could get the bar polished, what A is for, and if it is any use at all?" In reply: It seems to be an ordinary bar burnisher. Any of the dealer's will, no doubt, get the bar re-polished for you.

PRINTS ON CELLULOID.—H. MOORE writes: "I am informed that 'celluloid positives' can be obtained for the basis of miniatures. Can you tell me anything of the process, or where I could get some done? I have a demand for cheap miniatures and the carbon transfer on ivory is too expensive." In reply: Carbon prints can be produced on celluloid in the same way as they are on ivory, and the celluloid would be much cheaper.

GAS HEATING.—"GAS STOVE" asks: "Will you kindly say if you know of any small gas stove on the market suitable for heating a small dark room, one that gives out no light; perhaps you know of something better?" In reply: Messrs. Fletcher and Co., 134, Queen Victoria Street, and Warrington, have a great variety of gas-heating stoves, some of which give little or no light. Write to them for a prospectus.

MATT PAPER.—F. ESSOM asks: "Will you kindly give me a good formula for matt surface P.O.P., or tell me in what way it differs from the glossy P.O.P.?" In reply: The difference is that the one has a glossy and the other a matt surface. We must confess we are not in the secrets of the matt-surface paper-makers. Even if we were, we fancy they would not like us to publish them for the benefit of other makers.

STAINED PRINTS.—T. RIDOUT asks: "Will you kindly inform me the cause of stain on the enclosed print? I have had whole

batches like it, although the dishes are well cleaned. It occurs with various makes of P.O.P. These stains appear to be affected by light, and some of them only appear when dried. In reply: The cause of the stains, we should have thought, would have been obvious to any photographer. The prints are only fixed round the edges. They have been allowed to dry together in the fixing bath so that the hypo has not had an action.

VARIOUS QUERIES.—"DAMP" writes (and we reproduce his queries verbatim et literatim): "(1) I have a 1-1 plate lens and looking at the glasses of it you can see it full of a kind of spots or damp and some by looking through it. Will they do any harm, or can they be cleaned off? (2) What is the best way to hold a ball of the shutter of a camera, to not bust it when releasing it?" In reply: (1) If the spots are superficial they can be cleaned off with a slightly moist piece of chamois leather; if they are not superficial better have the lens recombed by a working optician. (2) Dear man, do not try the effect of holding it not too firmly in your right hand?

STUDIO QUERY.—"OPERATOR" says: "I should esteem it a favor if you would enlighten me on the following:—I wish to build a studio in the garden as shown in plan. Is it possible to do good work under such circumstances? What would be the best form of studio to build, the light on the left is unobstructed, but would be troubled with the sun, on the right the church cuts off the north?" In reply: A very useful studio could be erected on the ground as shown in the sketch. Of course, the sun would be on it towards the after-part of the day, but blinds will remedy that. We should recommend you to get Bolas' book, "The Photographic Studio"—a guide to its construction. That will give you much useful information.

DISPUTED QUALITY.—"A. J. L." says: "I bought a camera complete with lens, and paid £13 5s. cash for same. The lens did not answer my purpose, so I asked the firm to exchange it (the lens for a better one, which they agreed to do. They had not the lens I required in stock, but recommended me one which they said would suit me, and would let me have the same on trial for two weeks if I paid the price of lens, viz., £8 16s., as security. This I did, and found the lens was no use to me, so I returned it in one week. They now refuse to refund the cash, say they only agreed to exchange it. Your advice on the subject will be greatly esteemed." In reply: We take it that if you can prove the lens to be qualitatively bad your remedy would lie in the County Court. But your complaint is very vague.

ARC LIGHT IN LANTERN.—"PHOTOPHIL" says: "(1) I should be much obliged for some hints about the management of hand-fed arc lamps, I find it difficult to maintain uniform position of the carbons, and do not quite find out what is the best position for projection working at about 20 amperes; with 20 amperes I get a five-metre picture by transparency not too well illuminated in well-lighted street. Shall be grateful for advice." (2) What is the best way to avoid fracture of condenser tubes frequent?" In reply: (1) If you have a good arc lamp, such as is now supplied with the best lanterns, there will be no difficulty in the adjustment of the light. Every provision that is made. We should advise you to get such a lamp. The best way is to have a good current of air through the lantern so as to carry off the excessive heat; also not to expose the condenser suddenly to cold air.

RIGHT TO EXHIBIT PORTRAITS.—"PUZZLED" writes as follows: "I shall be glad if you can give me your opinion on the following case: A gentleman brought his children to my studio to be photographed. I took eight negatives of them, two of each in four positions, group of two. I submitted rough proofs of seven, which were good, at his request, and he selected four and then asked me to sell him those four, which I did. I afterwards made an enlargement from one of the negatives left in my hands, and made certain introductions into the picture and exhibited this in my window. Now this gentleman is writing and asking me to give him this picture as he states it is not my property, and I had no right to do this, as his objection in buying the negatives was to prevent my showing them all." In reply: You have no right to do what you have done. You have rendered yourself liable to law proceedings by exhibiting the picture against the father's wish. Better withdraw it at once.

THE BRITISH JOURNAL OF PHOTOGRAPHY.

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FRIDAY, OCTOBER 14, 1904.

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THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1905.

Edited by THOMAS BEDDING, F.R.P.S.

Forty-fourth annual issue of THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC will be published on December 1st. This year's ALMANAC reached a total of 1,604 pages, the entire edition of 25,000 copies was sold out before publication. Of no other photographic book ever issued two such unique facts be recorded. The edition for 1905 will also consist of 25,000 copies.

The striking favour with which past ALMANACS have been received is the surest proof that the lines upon which the publication is produced meet the requirements of its readers and supporters. Upon such lines we propose continuing the volume for 1905. At the same time, we shall be pleased to receive and consider suggestions for increasing the value of the ALMANAC in directions which may occur to readers as susceptible of improvement.

The ALMANAC for 1905 will appeal to photographers all over the world as a daily reference guide in practical work. Standard matter and formulae will be revised and added to where necessary; the year's advances in theory and practice will be recorded.

The frontispiece of the ALMANAC will consist of a portrait study specially taken by Mr. Furley Lewis of the Royal Photographic Society's Exhibition, 1904.

Secretaries of societies will oblige us by promptly forwarding lists of officers and other details for inclusion in the Directory of Photographic Societies. We shall also be

glad to receive any additions that may be made to the list of telegraphic addresses of the trade, etc.

The publishers ask us to remind advertisers that a large proportion of the advertisement pages of the ALMANAC are already booked, and that, to ensure insertion, order and copy should reach them not later than Tuesday next, October 18.

*. IMPORTANT NOTICE.—The attention of advertisers is specially directed to the announcement that this year the entire edition of the ALMANAC (25,000 copies) will be placed in the hands of dealers and the trade on December 1st next—a fortnight earlier than usual, so as to be well in advance of the Christmas publication season.

EX CATHEDRA.

Lithium in Photography. According to a report of the United States Geological Survey, the production of lithium salts in the present year will considerably exceed that of any of the last year or two, and with a larger demand for lithium compounds they may be marketed at prices which place them more nearly in the category of common chemicals than in that of laboratory compounds. Caustic lithia, or lithium hydroxide, to give it its chemical name, has been recommended more than once as a substitute for the common and infinitely cheaper alkalis, soda and potash in developers. But the advantages have not been convincing, questions of price even separated from the comparison. In one particular only can lithia boast of superiority over the well-known alkalis, and that is in the preparation of a highly-concentrated single-solution developer. The atomic weight of lithium is the smallest of any of the ordinary metals, viz., 7, and so 24 parts of lithia will do the chemical work of 40 parts of caustic soda or 56 parts of caustic potash. To balance this advantage, lithia is not quite as soluble as these alkalis, but the difference is not enough to bring down the energy-giving properties of the substance to the level of these others. Sarbe, in the "Almanac" a few years ago, put it down as doing the work of twice its weight of soda and of three times its weight of potash, figures which are not a great way out from those given on purely chemical grounds.

* * *

The Advent of Cold Weather.

The spell of cold weather we have had the past week has been sufficient to remind us that winter is fast approaching. Already the depressed temperature has a marked effect on the development of plates where the solutions have been allowed to remain in cold, dark rooms, and may lead many workers with limited experience to imagine that their plates have been under-exposed, while, as a matter of fact,

such may not be the case. A sudden depression of temperature would, of course, not mislead an experienced hand, but it may novices, many of whom may now be setting about developing the plates exposed during the autumn holiday. With them, in many instances, the dark room is not artificially heated, and if the room is in an exposed situation, as is frequently the case, and the solutions are kept there, they get very cold. The consequence is the image is very tardy in making its first appearance, and thus often leads the novice to imagine that the plates are under-exposed (and are dealt with as such), while they are nothing of the kind, the exposure having been ample. A word to those who have plates yet to be developed is to keep the solutions where they will be at a temperature of not less than 60 Fahr., and to employ water in their dilution of not less than that. In this way they will not be misled in their work by the long time the image takes in making its appearance and in gaining the requisite density.

* * *

German Dry Plates.

It really seems as if our German friends were many years behind us in most points connected with the dry plate. In a recent number of the "Photographische Industrie" is a leading article headed "Thinner Glass for Dry Plates for the Hand Camera." How long is it since English manufacturers satisfied this demand of the English amateur photographer? We are now so accustomed to the thin quarter-plate, and so fully appreciate its lighter weight, that the manufacturer who returned to the thicker glass of former times would find a sensible diminution in his returns. Yet, according to the article we have mentioned, photographers in Germany have to use imported plates if they want them of light weight. It appears that the average thickness in Germany of a dozen 9 by 12c plates is 24 m.m. This is the size used abroad instead of the quarter-plate. We have just taken hap-hazard a dozen quarter-plate negatives, and find the total thickness is 17 m.m. It follows from this that the German has to carry in plates half as much weight again as his English colleague. But this is not the only disadvantage. The price of the German dry plate is about 50 per cent. higher, and therefore the English photographer for the same amount of money gets 50 per cent. more plates without adding to the weight he has to carry, if we compare him with his German confrère. Something might be said in regard to speed, too. In explanation of this difference it may be remarked that there is an import duty upon dry plates in Germany to protect the manufacture of glass. But although the photographers pay this duty, it does not appear to bring them any corresponding advantage.

* * *

Photography and Art.

On July 8 we published a translation of a paper by Dr. Reiss, which has attracted general attention. On October 7 we also published a reply by M. Liegard, so that our readers might have an opportunity of studying both sides of the question. M. Liegard quotes from M. René Le Begue, and thinks he has found an answer to Dr. Reiss's flagellation of the ultra school in the words: "It is not the process that should be criticised, but those who do not know how to use it." We need scarcely point out that this refers to gum-bichromates, and we desire to remark that if the question is permitted to rest here, the discussion is only a verbal one, and that M. Liegard is in actual agreement with Dr. Reiss. Dr. Reiss instanced the abuses of some of the workers in gum-bichromate, who, by adopting the medium of some expert photographers of taste, and imitating, or exaggerating, their style, regardless of its suitability, wished to

attribute the quality of art to their trickery. But the question remains, can a work, which has been developed with a brush, or some means which gives us the artistic impression, be called a photograph? Dr. Reiss wisely calls the attention of the photographer to the question whether it is expedient under such circumstances to give the preponderating power to painters and sculptors in the constitution of a jury for a photographic exhibition. If such a jury is to give a verdict concerning pictures which are supposed to be the effect of light, surely preference should be given to men who make such judgements, and who have the capacity to appreciate æsthetic qualities. The two qualifications should be separated, and it is a mistake, which Dr. Reiss justly protests against, to minimise the voice of the photographer in the estimation of his own branch of work.

* * *

Photography of Bird-Life.

All that is beautiful in this fair corner of ours we jealously guard as our national heritage, and photographers are among the first to resent any action which tends to destroy or diminish the charms which cling to the rustic scene. Of late years, the work of the naturalist has been much aided by the camera, and there are many patient students whose delight it is to spend hours in tracking rare and timid birds to their isolated nests, so that they can, unobserved, get photographs of them as they are "at home." In a lecture recently given by one of these photographic naturalists, much indignation was expressed by him at the ruthless manner in which some of these wild birds are slaughtered for the sake of gain. And it is a matter of common knowledge that if some bird of a rare kind makes any attempt to settle in the country, he does so at the risk of being shot, either by a gamekeeper or by a collector. So it comes about that for every lover of nature who does his best to defend birds from injury there are dozens of interested persons who compass their extermination. We may suppose that tender-hearted ladies would be the first to resent the suggestion that they are principally responsible for the slaughter which goes on, but it is a fact that if they do not encourage the fashion by wearing birds, and parts of birds, in their headgear the market demand for the bodies of these poor feathered bipeds would cease, and the birds would be left alone. We may be sure that in this case "evil is wrought by want of thought," rather than by want of heart, and if our photographic friends who love birds would hint to their womenfolk the cruelties which are committed in order to meet the demands of a vain and senseless fashion, much good would accrue to our native warblers, as well as to the numberless birds of foreign origin which at present fall victims to the traders' guns.

* * *

Discovery of Old Masters' Work.

More than once of late we have referred to the fact that there are, probably, at the present time a goodly number of valuable pictures by the old masters possessed by people who have no idea of their commercial value, and do not at all appreciate them as pictures. Some ignorant people in country places, for example, would even give place to them not knowing the value—to a genuine Vandyck, or other old master, for a common "chromo" with plenty of vivid colour. Hence many good works become lost—consigned to the loft, or perhaps destroyed. It was reported last week that the two ancient paintings recently discovered in the old Roman Catholic Cathedral at Leeds are by Rubens and Vandyck, and that the broker who bought them for a few shillings has been offered, by two different dealers, 2,000 gs. for them. This sum has, so it is stated, been refused, as the pictures will be put into an approach

London sale, when he expects to realise £8,000 or £9,000 for them. It is further stated that whatever sum the pictures may fetch, 25 per cent. of it will be handed over to the Roman Catholic community in connection with the Cathedral. Be all this as it may, there is little doubt that there are now in existence many very valuable pictures stowed or hidden away because their owners do not appreciate them and have no idea of what is their market value. A few years ago a friend of ours bought at the Islington Friday market an old dirty oil painting for a trifle—half-a-crown, if we remember rightly. A week or two afterwards a picture-dealer offered him five-and-thirty guineas for it in its then state. This serves as a practical illustration of how valuable works are sometimes dealt with through the ignorance of those into whose hands they may fall.

* * *

Who is to Blame?

It was a large, illustrated work of undoubted value, published by a firm of wide repute, and the photographer who invited our attention to it was an expert hand. He asked us if we had ever seen worse half-tone blocks in a book of such high pretensions, and we had to confess that we had not. This conversation naturally led us to think about blocks generally and the way in which the advent of process had completely revolutionised the methods of the printer and publisher. And we endeavoured to find out the reason why the illustrations in the volume referred to were so inferior. We knew well enough that if it had been in our power to make inquiries at headquarters the author would have blamed the block-maker, the block-maker would have blamed the printer, the printer would have abused the ink, and the ink manufacturer would have traced the fault to the paper. The scapegoats would have been many, while the probability is that no one of them was particularly at fault. Where, then, should we find the culprit? It is a question that does not affect this one firm alone, but is of grave importance to many other long-established businesses, and is therefore worthy of grave attention. The reason for the defection is summed up in three words, "antiquated printing-presses." When the half-tone, or Meisenbach block, as it was then called, was first introduced the printers regarded it as an impossible thing—an attempt to supersede wood-engraving which could never succeed. Such shallow lines and microscopic details seemed to be ridiculous, and it was no matter for wonder that the ink quickly filled up the delicate interstices of the block, and an unsightly impression was the inevitable result. But the block-makers knew that they were right and that the printers were wrong. Instead of making bolder blocks they made still finer ones, and soon proved that if ink and paper were of the right kind the half-tone blocks would do good work. Then it was that more attention was paid to the press itself. The excellent presses which had been used up to that time for type and comparatively coarse wood blocks would not respond to the needs of the half-tone block. Happily, the improvements which had been gradually evolved in mechanical contrivances generally came also to the printing-press, and modes of adjustment of pressure, distribution of ink, and so forth were adapted which were not dreamt of in the philosophy of the printers' devil up to this time. Hence the modern, up-to-date printing-press is far in advance of anything known twenty years ago, when the half-tone block first came to be seriously considered by publishers, and he who would produce the best work must give up the old and adopt the new contrivances. It is, of course, a serious undertaking for a large printing-office, founded perhaps three decades back, with the most perfect appliances then to be obtained, to throw its machines into

the scrap heap and to buy new. This, we are told, is constantly being done in America, not only in the printing trade, but in every other industry dependent upon mechanical contrivances, and this is one of the reasons why American methods and products are so successful. The printer of to-day, if he would take full advantage of all that photographic process has done for him, must set his house in order.

* * *

Fashions and Photography.

Some time ago we noted with satisfaction and interest that the drawings of the human form divine, with their eccentric anatomy, which had hitherto served as "fashion plates" were being gradually superseded by photographs from the living model. And we congratulate society upon the change, for wasp-like waists and other deformities, brought about by the abuse of the corset, are not to our liking, and are opposed to everything that savours of Art. Besides, some of these photographs are really masterpieces of their kind, and we understand that in Paris a regular system has been established by which the best dressmakers, the best photographers, and girls with the best figures work in concert, with the result that artistic pictures of the latest modes are sent broadcast over the world with the least possible delay. In this way the shopkeepers are able to place before their clients the very newest confections. These photographs have probably been the means of educating the public into a desire for better things in the way of fashion drawings than they were content with a few years ago, and we find a notable improvement all round in the representations of bedecked femininity which adorn the catalogues of the leading costumiers and the various journals which devote themselves to the service of the fair sex. For drawings are still largely used for fashion work, in spite of the rivalry of the camera, and from what we can learn from an authoritative source they are not likely to be soon displaced. The reason for this adherence to an old custom does not arise from any prejudice against the camera; indeed, our informant, a lady who has for years been a fashion artist, made no secret of her admiration for many of these photographs. She praised the pose, the lighting, and the general arrangement, and considered that in these aspects they were beyond reproach. But she pointed out that a milliner who attempted to work from these pictures would find herself sorely handicapped, for in many of them the detail in the trimming and the laces is quite lost. In other words, the photograph is too good as a picture to be serviceable as a model. It would seem, therefore, that the ideal fashion drawing is one in which the anatomy of the figure shall not be distorted, but that it must be strictly up-to-date, and that the detail must be such that both design and texture of material is adequately rendered. It must, in short, be pleasing to the educated eye, while at the same time it must have the exactitude of a working drawing. The conclusion of the whole matter is that photography can no more supplant the best fashion drawing than it can hope to replace the working drawing of a bridge, a locomotive, or any other engineering enterprise. To show the general effect of a costume it is excellent, but for actual details which the worker requires it is found wanting.

* * *

Lantern Lamps.

The societies in different parts of the kingdom are now commencing their winter session, and there is little question that the lantern will be largely in evidence with them during the coming season, notwithstanding that it has been alleged that its popularity is waning. Without the lantern it is a little difficult to see how many societies would find pabulum for their meetings. At most of the societies the lanterns are

furnished with the limelight, but the lanterns of the members, which they employ at home as a rule, are not; with them oil is the usual source of light, and it is with them we are now dealing. They were laid aside at the end of last season, and it would be a safe speculation to say that a very large proportion of them were put away just in the state in which they were last used, with the result that when next employed, unless some work is done to them, they will emit malodorous fumes that will make themselves exceedingly unpleasant throughout the house. A hint or two on the treatment of lamps in the state of those just referred to will, we know, be useful to many who neglected to take the precaution of emptying and thoroughly cleaning them at the close of last season. In the first place, the wicks should be removed and thrown away, as they will be of no further use if smell is to be avoided. Then the oil should be thoroughly drained out of the reservoir, well rinsed out once or twice with fresh paraffin or benzoline. The outside as well as the wick tubes should also be well cleaned with the same material. It is well to finish the cleansing with benzoline, because it evaporates quickly and leaves the parts dry. New wicks must now be provided. These should be selected with care that they accurately fit the burners, and before they are put in they should be baked in the kitchen oven for a time so as to drive away all trace of moisture. Wicks so treated will last much longer than those which are not. The trimming of new wicks is of some importance, as it materially influences their life and also the brilliancy of the light. When first put in they should be cut with scissors level with the tops of the burners. Then the wicks should be racked up for the sixteenth of an inch or so and lighted, and allowed to burn themselves out; this will secure a proper burning level. The reservoir may now be filled with oil, and allowed to stand until the wicks are completely saturated, and no attempt should be made to light them until they are. If the lamps are treated according to the above hints they will be found to work as well as they did when first supplied by their makers. When wicks are perfectly fitted and levelled, in the first instance they should never again require scissors treatment, simply wiping off the ash being sufficient. One frequently hears such exclamations as this, "I hate oil lamps, they stink so." With a good oil lamp, such as is now supplied with lanterns at quite moderate prices, we venture to say that in nine cases out of ten the "stink" is due to want of cleanliness on the part of the user. Stale oil is allowed to remain on the outside of the cistern and the wick holders, or the wicks are not carefully attended to. All parts of the lamp, wick holders included, should be carefully wiped with a dry cloth just before the lamp is lighted for use, and when these little matters are attended to no unpleasant emanations will be experienced.

MR. A. L. HENDERSON informs us that he would like to know of a few photographers, professional or amateur, who would join him, during this winter, for a tour in Palestine, preferably under the auspices of Cook and Sons. Address, after October 20, care of Cook and Son, Nice, South France.

DEATH FROM X-RAYS.—The "Standard's" New York correspondent, telegraphing one day last week, says:—"Mr. Dally, who was formerly Mr. Edison's assistant in his fluoroscope experiments, died yesterday, after seven years of torture resulting from exposure to X-rays. His hands developed red patches, like scalds, which were at first painless, but refused to heal. Eventually cancer appeared, necessitating frequent amputations of the fingers and hands, and finally of both arms. The stumps caused such suffering that he was only able to sleep by immersing them in troughs filled with water. Nothing that skill or money could do gave him any permanent relief. His case had been observed with interest throughout the medical world."

SUPPLEMENTARY LENSES.

It is somewhat singular that so little attention has been given to the subject of supplementary lenses for altering the working focus of an achromatic objective of possibly expensive construction. It is not necessary for us to remark that many hand-cameras have for some time past been supplied with these additions, often under the name of magnifiers, though why "magnifiers," seeing that, at any rate, their usual function as applied to a camera is to diminish instead of increasing the size of the image? Of course, it is equally possible to use a "supplementary" to increase the size; but it is not a usual form, and certainly not to a fixed-focus camera. When used with a hand-camera their function is generally to permit a fixed-focus instrument to be used satisfactorily for objects between the distance point and the camera; that is to say, for objects so near to the worker that with the fixed focus they would give an absolutely useless image, utterly blurred, and unfit even for a disciple of the fuzzy-type school. With a set of these additional lenses a range of possible distances from the camera, varying from three or four up to twenty feet, may be utilised. A possible drawback to their more general employment is the circumstance of their being generally made use of for portrait work, when no stop would be inserted, as the largest possible aperture of the lens would, for the sake of rapidity, usually be employed. Then the conditions—open aperture and a near object—would necessitate a thorough nicety of focussing or extreme accuracy of placing the object at the correct distance from the camera, as at these distances an object is so quickly put out of focus. When a stop is used, it need scarcely be said that such nicety of position is not necessary—to a greater or less extent as the stop is larger or smaller.

With regard to these magnifiers—they do act as magnifiers when an object is examined through them as an aid to vision—it should be observed that it is not, for the class of work we refer to, necessary to employ expensive lenses. We do not profess to have examined those supplied to every instrument in the market to which they have been adapted; but this we do know, that all practical purposes are subserved by an ordinary eyeglass, and if a circular form be preferred, as the usual ovals are awkward to handle, and represent but a small circle when trimmed or screened to a circle (though at an emergency they may be employed unaltered), one can be purchased at a working optician's for mere coppers. The question naturally arises, if a lens of sufficient importance to do the work we allude to does not require to be of an expensive character, why use a costly lens at all? And we must leave it at that. Our remarks are not part of a treatise on optics; they are merely for the purpose of drawing attention to neglected opportunities and our readers may rest assured that for ordinary hand-camera work these cheap additions are of practical usefulness.

But there comes also another aspect of the subject. Many photographers possessing a focussing camera can afford but one good lens, and occasions arise when its limitations are troublesome. It is wanted to take a photograph of a spot or an object so close that when it is attempted to focus, the camera is found not to rack out far enough, with the result either that the work is left undone or the scale of reproduction is disappointingly small. A new lens cannot be afforded, but if a supplementary convex lens be used the difficulty is subdued at once. Again, a particular view is wanted, but from the only available standpoint it takes up such a small space on the plate that it is felt to be not worth while to waste an exposure. A telephoto or an Adon even is beyond the pocket of the photographer. If his lens be of the double type he may unscrew back or front and take a picture double the size (more or less). But the

type of lens fitted to the camera may be an achromatic landscape, which cannot be halved, or it may be found when the lens is halved that the utmost possible extension of the camera is not sufficient for the new focus; this happens with a popular camera and lens of a well-known type. But once more a supplementary lens will find its place. If a concave of the right focus be used a view may be taken at the utmost extension the camera will give, and its size will of course be exactly in proportion to the increase of the focus. If it be made, say, from a six to a nine inch the picture will be half as large again, and so on. It will be found that the quality of the image is little interfered with.

So far we have mainly referred to outdoor work, but the usefulness of the addition need not be restricted. We have been in studios where a picture has been brought to be copied to about half the size, or other similar proportion, for such purposes as placing in a locket. We have heard the remark, "Oh, what a nuisance! Our camera won't take it; it won't rack out far enough." Well, with anything like a suitable set of lenses and a good system of adapters or of loose fronts, the difficulty ought to be easily surmountable; but if no such plan can be adopted, it will be perfectly easy to do the work satisfactorily by the aid of a convex lens placed in front of the studio lens. A little fitting is all that is required, and there need be no trouble about that. We will on a future occasion give a few working details as to the use of supplementary lenses for the studio or enlarging room.

THE MANUFACTURE OF DRY PLATES.

[A paper read before the Croydon Camera Club.]

It is now fifty-four years since the first gelatine dry plate was made by Poitevin, who must be considered as the originator of the use of gelatine as a vehicle for the silver salts. Crude as his process naturally would be, it marked the beginning of a new era in photography, destined to revolutionise all the then existing methods and aspirations, and eventually to build up new trades and completely change the policy of other trades which originally had no connection with photography. Twenty-nine years later Dr. Maddox brought forward a gelatine emulsion process, which immediately put dry-plate making on a practical working basis, inasmuch as he disassociated his method from the existing wet-plate practice, which had cramped the utility of Poitevin's invention, and boldly emulsified the sensitive salts in the gelatine with which he coated his plates.

Two years later the first commercially made gelatine dry plates were placed on the market by Burgess. So much for the historical side of my subject. I have touched on it very briefly, its history is generally considered a dry subject; but I feel certain that could I ably tell you of the strivings and struggles of the pioneers, and the manner in which they literally fought their way to a knowledge of the laws of Nature affecting their particular calling, you would feel with me that the early history of dry-plate manufacture is full of romance and interest.

At the present time the dreams of the earlier experimentalists have been more than realised, and gelatine dry plate a hundred thousand times more sensitive than the earliest make are now in general commercial use, and it is about the manufacture of the present-day dry plate that I now wish to speak, and, with your permission I will take the different stages of manufacture as they appeal to me.

The factory devoted to dry-plate manufacture consists practically of five departments—the glass cleaning, the emulsion, the coating, the drying, and the packing departments—in all of which the strictest cleanliness and freedom from dust is demanded. Until comparatively recently all glass used for dry plates was of English manufacture. For a long time after

the quality of Belgian glass had reached the standard required; incorrectness of the cutting prohibited its use. The rectification of this very small but important matter was due primarily to an English manufacturer, who, feeling that he could set a superior glass, if once the correctness of cutting could be assured, went to Belgium and personally instructed the glass-maker how to overcome this trouble, and in the special requirements of dry-plate makers. To-day the glass of from twenty-five to thirty plates to the inch comes from France; the greatest portion of imported glass, that running from twelve to twenty-five to the inch, comes from Belgium; and it is only in glass of a heavier nature that the home market maintains its supremacy.

Of the agents used for cleaning the glass, which is now nearly entirely done by machinery, sod. carb. stands pre-eminent. The character of the matter to be removed sometimes varies, and to meet these variations, caustic soda, iodine and alcohol, whiting, tripoli, and alum are used, and if the substance is still obstinate, soaking for twenty-four hours in weak muriatic acid is resorted to. After being thoroughly cleansed the plate is dipped or flooded with a substratum bath, which is generally a mixture of chrome alum and gelatine, very weak, but sufficient when dry to give a better adhesive surface for the emulsion coating. The cleansed plates, having been thoroughly dried, are next taken to the coating room, wherein and henceforth all operations must be conducted in a properly screened light. The emulsion with which the plates will be now coated is a mixture of gelatine, iodide, and bromide of potass, silver nitrate, and ammonia. These components are all mixed together, care being taken that the brom. pot. is always in excess to prevent fog, and are digested for some hours at a temperature varying from 160 deg. to 190 deg. F., according to the season of the year and the kind of emulsion. When the digestion is finished—i.e., when by transmitted light it exhibits the correct colour which ranges from red to green, fresh gelatine is added and dissolved, after which the whole is frozen ready for the shredding which precedes the washing-out of the soluble salts formed during emulsifying.

The discovery of the necessity and advantages of this removal of the potassium nitrate salts was due to the researches of King in 1873. The emulsion, after washing, is again digested, and gains greatly increased sensitiveness thereby, and after an addition of spirit is ready for the coating machine. This machine consists chiefly of a train of bands which carry the glass plate under the coating weir, clean the backs, set the emulsion, and finally deliver the coated plates ready for stacking in the drying room, from whence, after a stay of about seven hours in a constant current of warm filtered air, they are removed to the packing department. The regulation of the amount to be delivered upon the surface of each plate is effected either by pumps, variations being obtained by altering either their number or their length of stroke; by scrapers, which scrape adhering emulsion from a glass roller revolving in a trough of emulsion, the regulation being effected by the width of the scraper; or by the simplest of all methods, the adaptation of the Marriott's bottle. There is still much room for improvement in the feeding and delivering apparatus at present employed, but this is only true if regarded from the economic side of the manufactory. Judging from the finished product no further improvement is necessary; the evenness of the coating exceeding the evenness of the surface of the glass. Before proceeding to the packing department the question of dark-room illumination may well claim our attention. With plates sufficiently sensitive to give well-exposed negatives with the exposure of one-thousandth part of a second in daylight, and with panchromatic plates sensitive to all but the deepest red, the coating, examining, and packing must be conducted practically in darkness. The method adopted to obtain the maximum luminosity with the minimum risk is known as the

"slit" method; this is simply an aperture about $1\frac{1}{2}$ in. by 6 in., so arranged with walls as to stand away from the lamp screen about 2 in. It may be imagined as a reversal of a focal-plane shutter, inasmuch as instead of the slit moving over the surface of the plate, the latter moves over the slit, and the brief exposure for examination does no harm.

The packing of plates is not interesting, being, after examination, simply a matter of careful handling and method; but the cutting machinery which reduces the size of the coated plates to quarters, halves, etc., is well worthy of attention as a triumph of ingenuity and finish. This machine, which is driven by a small motor, can be readily adjusted by the simple insertion of pegs to divide any required size, cuts easily thirty dozen whole plates to quarters per hour, entering each plate one thirty-second of an inch in, and leaving with the same margin, thus avoiding all chipping and consequent dust. The testing of the coated plate is conducted preliminary to packing. The tests are always made by the chief, the manager, or an assistant especially trained for the task. The faults looked for may be divided into three classes: Those due to the emulsion, the more prevalent coating defect, and those resulting from faulty drying. Those due to causes directly connected with the emulsion are most to be feared, inasmuch as they generally result in a day's work to be washed off.

Tests as to sensitiveness, density-giving power, and gradation are made with standards of light and exposure which vary together with their method of application in each works. Naturally, absolute correctness is totally out of the question; but, as in ordinary photography, such correctness is not needed, nobody is any the worse for the deficiency.

Some day in the far future, when if only optically plane glass is coated, it may be requisite to know the exact speed of a plate and its table of determined densities; but, until then, I feel sure that the clever researches which have recently been made in dry-plate sensitometry by our members, Messrs. Mees and Sheppard, will be chiefly useful in the laboratories of dry-plate factories, where I feel sure their works, together with the epoch-making discoveries of Messrs. Hurter and Driffield, will eventually be reckoned as assets of national value to us as the leading dry-plate manufacturing country of the world. In addition to the ordinary tests, orthochromatic plates are subjected to further tests for colour sensitiveness; these are mostly conducted by exposure through coloured mediums, by the spectroscope, and by camera trials on charts of colours. If the resulting prints are to be used for advertisement purposes, over-correction appears to be generally regarded as a necessary feature that the result may have a distinctive appearance.

Before closing my remarks I would like to mention a few interesting facts. Dry-plate, as well as wet-plate, photography, may be said to be primarily the result of French ideas, solidified and brought into working form by the slower-moving English brain. The home product of dry plates is far and away superior to the Continental makes, and this to me has always been an enigma. Practically every article used in the manufacture of dry plates is imported from Germany, yet in that country of profound thought and research there is not a plate factory of any magnitude. True, there are many small works; but, travel over the world as you will, or even go no further than the Continent of Europe, and you find English-made plates are preferred and used. This fact is keenly recognised by American makers and taken advantage of, as indicated by their purchase of English factories.

The question of prices and their possible reduction is bound to arise in the near future as the possibilities of over-production already loom in the distance. A great reduction must not be looked for, as the manufacture of dry plates has yet to free itself from many uncertainties, which, combined with the increasing cost of raw materials, diminish the possibility of a lessened price-list.

Nor do I think any great new departure in dry-plate manufacture is likely to occur. Like the bicycle, the dry plate is rapidly approaching a regular style, the prevailing indication being chiefly indicative of an extended use of the fastest ordinary and colour sensitive plates, and a neglect of slower plates even for purposes where their design makes them most efficient.

S. H. WRATTER.

DR. KOENIG'S COLOUR PROCESS.

SOME time ago a brief note as to Dr. Koenig's discovery of certain leuco bases of some organic dyes, which on exposure to light became oxidised to blue, red, and yellow dyes, appeared in the pages of the *BRITISH JOURNAL*; this obviously was a process outlined in the sensational paragraph which appeared in some of the daily papers last week, and the paragraph was founded on a lecture given by Dr. Koenig, at Breslau, at a meeting somewhat analogous to our British Association. The following note from the "*Deutsche Photographen Zeitung*" gives fuller details, and proves that the process is certainly full of promise.

Whilst the leuco bases of many classes of organic dyes, such as of safranine, for instance, are so prone to oxidation that they cannot be actually isolated in a free state, there are others, such as the leucomalachite green, which are, as is well known, easy to prepare in a pure state, and are approximately stable against atmospheric influences. It has recently happened to many chemists that these stable leuco bases, when kept for some time, become very strongly coloured when exposed to light. More accurate experiments as to the light sensitiveness of the leuco bases have, however, only been instituted by Gros in Ostwald's laboratory, and especially tested the leuco compounds of fluoresceine and its substitution products. He confirmed the fact that the leuco compounds, although prepared in a tolerably rough way, are almost all more or less sensitive to light, and measured the oxygen which would be absorbed by the aqueous solutions of the leuco bases or their salts in light.

Except for this no one appears to have entered at any length on such researches, and no one appears to have thought of using the leuco bases for obtaining photographic prints. Older, and up to the present used printing processes for trichromatic colour work, are well known. They are founded entirely on the light sensitiveness of gelatine mixed with bichromate. The least disadvantage of the old methods is the impossibility of seeing the progress of printing.

An ideal printing process for trichromatic photography must obviously be such as is neither stained nor printed on colour paper, a process which only works with colourless films, which, according to their preparation, give direct yellow, blue, or red prints.

In the search for such a printing process we in the laboratory of Meister Lucius and Brünig, of Höchst-am-Maine, experimenting with the various leuco bases, very soon had to recognise that the leuco bases, exposed by themselves alone to light, were not capable of giving sufficiently vigorous and brilliant prints. We then imbedded the leuco bases in a film of acetylhydrocellulose or gelatine. Our hope of obtaining more vigorous images was not, however, borne out.

Only when we used collodion as the vehicle did there suddenly show a quite unexpected advance in light sensitiveness. Leuco bases, which, exposed for hours by themselves to light and only showed a very faint coloration, were in the presence of collodion, even after a short exposure, fairly vigorously oxidised, and gave usable prints.

We very soon saw that the collodion could not act as a mere vehicle, and, as a matter of fact, it was seen that the leuco bases were oxidised in light at the expense of the nitric acid group of the nitrocellulose. We then tried a large number

other substances, and found that all the nitric acid esters, especially those of the higher alcohols, acted in the same way as nitrocellulose. The nitrous esters, on the other hand, and the isomeric nitrous bodies of the aliphatic and aromatic series, were inactive. The nitrosoamines showed a similar but somewhat weaker action than the nitric acid esters.

It is an interesting fact that the light sensitiveness of the mixture of nitrocellulose and leuco bases can be considerably lowered by the addition of urea and antipyrine. This observation appears to point to the fact that the leuco bodies were oxidised by the nitric oxide which has split off from the collodion. The addition of turpentine or anisol, which may be regarded upon as oxygen carriers, act, not at all, or to a scarcely noticeable degree, as accelerators in the formation of the light image. When we added various organic bases to the solution of the leuco substances in collodion, with the idea of preventing the small amount of oxidation by the air which many leuco bodies suffer, we were astonished to observe that films containing choline and its homologues were increased in light sensitiveness to an extraordinary degree. An explanation of this noteworthy phenomenon I am unable to give; there is probably some catalytic action.

Nitro-cellulose is not by any means the most active of the previously mentioned compounds; it is only specially suitable for the preparation of pictures, because it at the same time forms the film which carries the image. Much more sensitive will be the mixtures of the leuco bases with the nitric acid esters of glycerine, glucose, and mannite.

If a sheet of blotting-paper is soaked in an ethereal solution of, for instance, leucomalachite green or leuco flavaniline, it becomes coloured to a marked degree with a short exposure; to the solution, however, some nitro-mannite is added, the paper becomes intensely and very quickly coloured in the light. The light sensitiveness of the mixtures of the leuco bases and nitro-cellulose may be increased to an extraordinary degree by the addition of nitro-mannite, so much so that twenty seconds of sunshine is sufficient to produce a vigorous print.

It must again draw attention to the fact that it is quite impossible to produce even approximately useful photographic pictures with the leuco bases alone or with leuco bases suspended in an indifferent film. The prints are always flat and without vigour; the oxidation of the leuco bases in the light by the oxygen of the air appears to soon reach a maximum long before the whole quantity of the leuco base is oxidised.

By the use of various leuco bases, yellow, red, green, blue, violet, and grey pictures can be produced. The fixation of the pictures presented at first very great difficulties. Many of the leuco bases can be dissolved out of the collodion film by benzole, alcohol, ether, or chloroform; such fixing solutions are, however, not practical. The next fixing agents were dilute mineral acids, in which almost all the leuco bases very easily dissolve. In spite of this fact, however, the prints could not be thus fixed, because the leuco bases showed, like the dyes, a certain affinity to nitro-cellulose, and were sometimes very tenaciously held by the same. Fixation was better effected with diluted organic acids, and finally monochloroacetic acid proved to be the best fixing agent for almost all leuco bases. Acetic, di-, and trichloroacetic acid cannot be used.

Gros had already examined the behaviour of the leuco bases towards different coloured lights, and "in groben Zügen," as he says, determined that with most of the leuco bases there appeared a maximum of the coloration when they were exposed to a complementary light. Gros obtained with all leuco bases the weakest action under red glass, the strongest under "rosa" glass. We exposed the various sensitive films under light filters, such as are used for additive trichromatic photography; it was thus shown that the exposed strips showed a maximum action under the complementary filter, and a minimum action under the filter of the same colour. Thus, blue, green, and violet were coloured very strongly under red and yellow; under

blue they were scarcely coloured at all; whilst red was strongly coloured under the green and yellow filter, slightly under the blue, and not at all under the red. Finally, yellow was very strongly coloured under blue, and scarcely at all under yellow.

The strong action of the so-called "nonactinic" red on the blue and green light sensitive films is very interesting; probably the dye as it is formed acts as a sensitiser.

Ostwald has already remarked with regard to this that the actions of lights on photographic preparations are not peculiar to the light, that much more probably the light only accelerates actions, which, even with exclusion of light, would appear of themselves after a long time. As is well known, many photographic preparations become decomposed by long keeping in the dark, and especially quickly gelatine rendered light sensitive by bichromate. With our new light sensitive films the behaviour is just the same. The action which the light exerts in a few seconds or minutes appears in the dark after hours, days, or weeks, and actually the most sensitive films are the least permanent in the dark, so that they must always be prepared a short time before use. I will, therefore, remark that even with very long keeping in the dark the films are never so deeply coloured as in a short time in the light.

The application of these observations for trichromatic photography is as follows:—A sheet of paper is coated with the blue collodion and exposed to light under the corresponding negative. When the blue image appears sufficiently vigorous it is fixed in about a 10 per cent. solution of chloroacetic acid, washed, coated with a thin and hardened gelatine film, and dried. The gelatine film has the purpose of protecting the first collodion film from solution when the second is flowed over it. The dry blue image is then coated with the red collodion and placed under its corresponding negative, so that the outlines exactly correspond with the blue image. Another exposure to light is made, and the print fixed and washed, and finally, in a similar way, the yellow picture is produced. On account of the extremely thin films and the brilliancy of the colours used, the prints appear unique; the compound colours especially are rendered in an extremely satisfactory manner.

The quantity of the leuco bases used is so small, in consequence of the enormous richness of the triphenylmethane dyes, that a picture with the three composite films is scarcely more costly than an ordinary gum or carbon print. The stability of the pictures is naturally not absolute; even if relatively stable dyes are used for the preparation of the individual pictures. The least stable is the blue, which, however, surpasses that of the so-called blue print or cyanotype.

If one tots up the difficulties which are met with in the printing processes hitherto used in trichromatic photography, this new process of the Höchst Dye Works, which is called "Pinachromie," may be designated as an extraordinary advance. Coloured positives have, as is well known, been comparatively easy to prepare; but trichromatic photography could not, however, become popular so long as it was not possible to make paper prints in a simple way. This, we believe, our printing process permits even for the inexpert amateur, and it will, we hope, conduce to the end of reviving somewhat the waning interest in photography.

It is obvious from the above that, whilst the new process is certainly a noteworthy step, it hardly comes up to the glorious vision conjured up by the journalistic exuberance of the daily papers.

E. J. WALL, F.R.P.S.

At the last meeting of the Photographic Section of the G.E.R. Mechanics' Institution, Messrs. Elliott and Sons' loan lecture on "Majorca," was read, in the unavoidable absence of the instructor, Mr. Bennett, F.R.P.S. The lecture was much appreciated, and the varied colours of the slides, which are all upon "Barnet" plates, was very favourably commented upon.

A PRESS SIDE-LINE.

By A LONDON JOURNALIST.

PROFESSIONAL photography means portraiture, and it will continue to mean so to more than ninety per cent. of those who make a living with their cameras. But while portraiture is the greatest standby to the photographer, it is by no means the only one. Many a wide-awake man changes a bare living into a comfortable one by taking up some special line. I met a man recently who told me that he was increasing his income more than fifty per cent. by picture post-cards. If I had been in his place I should have smiled at the "craze" and despised it. But he was wiser; he saw his opportunity and took it. All the wealthy people of the village—and they were numerous—were wont to be photographed in fashionable West End studios, and never visited the man whose largest camera was whole-plate. But when he offered them picture post-cards at three shillings a dozen they bought largely. The post-cards were of their own houses, their gardens, their gate-lodges, or their live stock. By offering such a number of subjects the orders were satisfactorily large. By these post-cards a great deal of erstwhile "spare" time was made to earn good wage—and something over. Probably many photographers could not make a success with post-cards; conditions vary. There is no one line which may be universally adopted by those "desiring to increase their income"; but there are many lines which prove paying ones in some places.

But I did not start this article to preach about side lines for portrait photographers; that will keep for another time. But just as the portraitists may make a smaller or greater percentage of money outside the usual groove, so does a certain percentage of the profession break away entirely from the ordinary studio work, and makes money in other lines.

It has been said that the profession is recruited from amateur ranks. I know very little about it, and so perhaps am rather dogmatic in my opinion—but I certainly do not believe it. But I do know several cases where amateurs have drifted into commercial work where the bright son of a professional worker might just as well have had the chance—if he had only seized the opportunity.

The special side-line I have in mind is connected with Press photography. I am not going to advise anyone to rush into that much-belauded and little-understood business, the supplying of topical pictures to the weekly papers at half a guinea a time. There is money in it for a few, and the field is well filled. But several papers know that they want a man who will do special commercial work for them—and other papers that do not know it will do so when the right man explains the situation to them. I know the papers want the man, for within the last six months I have myself had two offers from editors of feminine fashion papers who would rather illustrate with photographs than with sketches. The American papers have shown them the way. I went into the matter with one editress, and she explained what she wanted. There are, say, a dozen new fabrics for autumn wear. To make a sketch of a fabric which will tell a woman what it really is would be a heavy task for an artist. He can show the design of a piece of lace, but can do little more—that is, at a price. But a photographer who knew his camera could make a negative of those fabrics which would be wonderfully like the original material. The lace, too, or embroidery, would be like the thing itself, instead of a mere plan design. These same papers are full of articles on the coiffure, fancy stitches, manicuring, how to set a table, how to arrange flowers, and half a hundred similar subjects. If a woman is interested in coiffure she will get that paper which, in a series of half a dozen photographs, shows clearly every detail of the procedure. A page showing nine photographs of girls, each crowned with a "latest creation" in hats, would attract more interest than a page of sketches. And some of the editors, who find a full hundred explanatory

photographs in some American magazines, are awake to advantage; and as they lead others will follow.

It may be that the work—at least, the exposure—will be in many places, much of it at editorial headquarters, much of it at various millinery shops. Perhaps the photographer be required to find his own models—a dozen "hat" pictures would mean a dozen different pretty faces. More probably they will be procurable among the many girl employees of a fashion magazine, or from the shop-girls at the milliner's, will not be straightforward work at first. The editress knows what she wants, and it will be the photographer's part to know how to do it. It will need to be very good technical work and yet it will often have to be put through quickly. The photographer will need to have his wits about him.

I have spoken about feminine magazines, for there are openings undoubtedly in other papers have similar openings in a smaller degree—when they find the right man. He is not easy to find; but if he turns up he will find, just at present, there is room for him.

ROYAL PHOTOGRAPHIC SOCIETY'S EXHIBITION.

THE PROFESSIONAL SECTION.

THE professional section at the present Exhibition at the New Gallery is far short of what it should be, and it is a surprise that those engaged in the business of photography should be content to let slide the opportunity which the Society offers for the exhibition of their work. As it is, the room is devoted almost entirely to a display of the products of paper and material men, who, while providing in some cases an excellent show, were contemplated when this section was first provided. The result is a very mixed affair, and some of the panels and exhibits are not in the best of taste.

Mr. William Crooke, of Edinburgh, has two large portraits—of Miss Kate Douglas Wiggin—which are similar in character to those by the same author hung in the West Room, Pictorial Section. As Mr. Crooke has already pointed out, it should not be forgotten that these pictures are not specially prepared exhibition works but such as Mr. Crooke turns out in the ordinary way of business. Both are fine pieces of work and worthy of their producer.

A small case of water-colour miniatures on ivory by Mrs. Turner, shown by Mr. T. C. Turner, of Hull and London, though photographic, points to a class of business which may well be taken up by the professional man who sees an opening for new things. Mrs. Turner has exhibited her miniatures at the Royal Academy and other shows, and a comparison of these excellent examples of straightaway painting without a photographic basis (done in the ordinary course of business), with the tinted photographs usually shown as miniatures, will be interesting to the visitor.

New exhibitors in this section are Messrs. Alfred Ellis and Walter of Baker Street, who, on a panel about 18ft. long, show a score of photographs, large and small, which, besides being interesting, account of the well-known personalities portrayed are of a high order of merit. The subjects are mostly theatrical, and the exhibit attracts a good deal of attention.

Kodak, Ltd., follow with an exhibit contained in a large oak frame filling some 21ft. of the West wall, which consists of a number of enlargements from Kodak negatives on various kinds of the common bromide papers. There are several military photographs, four by Dr. Vaughan Cornish showing the wane phenomena of Niagara, and as showing what can be done with cheap apparatus, four photographs taken with a "Brownie" camera attached to a microscope. The general arrangement of the panel is in the usual good taste displayed by the company's exhibits.

We next come to a small collection of photographs by Mr. Fellows, which reflect in an admirable manner the qualities peculiar to the bulk of his work. There is an old friend or two which he has gained commendation many times before and some new work which well maintains its author's reputation.

Immediately following this group, and in the same panel, is a display of framed prints on "Helion" paper, a printing-out paper with a matt surface giving pictures resembling very closely those on carbon and platinum papers. The prints may be toned with platinum

or gold, preferably both, and the colours obtainable cover a long range, brown, red, violet, engraving black, etc.

The Autotype Company's exhibit occupies the whole of the end wall as usual, and in general arrangement is not noticeably different from that of immediately preceding years. The effect is improved by the absence of the violent contrasts due to the display of pictures on carbon tissue of conflicting colours, and the company is to be commended for the good appearance of the wall. The exhibits consist of carbon reproductions of well-known pictures in oil and water-colour by prominent painters, together with carbon enlargements in a variety of colours from negatives by some of the foremost photographers. The collection of prints, which are tastefully framed, make a very attractive exhibit.

From these pictures we turn to the next panel, which is filled with examples of the application of "Photolinol," a new production for the results upon which absolute permanence is claimed by Photolinol, Ltd., the makers of the material. Photolinol is a bromide linen, and the pictures, which are chiefly enlargements of extensive proportions, show that the fabric can be used as a base for painting upon without preparation, and for photographic pictures to be subsequently finished in black and white, etc. Several of the pictures are shown as transparencies here and in other parts of the gallery. The exhibit includes also some pictures on printing-out linen and on opal.

Messrs. Thomas Illingworth and Co., Ltd., devote a considerable space to a display of big enlargements in various colours, which serve as examples of their carbon tissues. The sepia bromide enlargement of the Marquis of Anglesey in costume can scarcely claim to be considered from the photographic point of view so extensive and obvious is the subsequent hand-work of the artist. The other subjects are from negatives by well known photographers, and they show what effects different papers and pigments can be made to yield. The framing of the exhibits has also been executed by the firm, who make a special feature of this class of work.

Of the exhibits shown by Mesdames Garstin and Antrobus of the Cavendish Studio, there is not much to be said. Some of the prints are in good style and creditable as everyday productions, but others seem to be hardly worthy of exhibition. The exhibits are all small and the subjects are in several instances well known public men and women.

The Gem Dry Plate Co., Ltd., have on view a large frame containing enlargements on "Gem" bromide paper from negatives on "Gem" motor plates. There is nothing very special about the exhibit, which is the last in the room.

As a conclusion to this notice we would again refer to the matter touched upon at its commencement, and urge professional photographers to be more alive to their interests. The exhibition is visited by many thousands of people, of whom a large proportion are members of the great British public not particularly interested in photography except so far as its results are concerned. Surely it must be worth while to bid for their patronage on the very reasonable terms which the Society offers. We hope next year to see the profession assert itself, and, with all respect to the manufacturers, for whom the Fountain Court is provided, see that nothing but purely professional photography occupies the walls of the North Room.

THE HOVE EXHIBITION.—The prospectus and entry form of the ninth annual exhibition of the Hove Camera Club has been sent us. Five open classes are announced, and the awards take the shape of handsome bronze plaques of a novel shape and design. They will measure 7½ and 4½, and thirteen of them will be placed at the disposal of the judges, Messrs. E. R. Ashton, A. Horsley Hinton, and C. Job. The Club classes have not been neglected, and numerous awards are offered to competing members. In addition to these awards a plaque ("L'Angelus," by G. Dupré) will be awarded jointly by the Hove, Southsea, and Southampton Societies to the exhibitor at all three exhibitions, whose work shall be judged to be of the highest merit. These three flourishing societies have quite taken the lead in all exhibition matters in the South of England during the past few years, and there is every indication of their continuing to do so this season. November 16 is the latest date for entries for the Hove Exhibition, and pictures entered at the Southsea and Southampton shows will be forwarded free of charge from Hove to Southsea and from Southsea to Southampton. Full particulars and entry forms can be obtained from the Hon. Sec., A. R. Sargeant, 55, The Drive, Hove.

Exhibitions.

ASHFORD PHOTOGRAPHIC SOCIETY.

The first annual exhibition of the Ashford (Middlesex) Photographic Society was held on Thursday last week, and can be written down as an unqualified success. This to a great extent was due to the work of the indefatigable hon. secretary, Mr. G. K. Rule, who has devoted a deal of time to the Society. The other officers are:—Hon. treasurer, Miss E. G. Cook; committee, Miss White, Miss Sales, Mrs. Oakeshott, Messrs. Buckle, Bunnett Crosby, Higgins, Neaves, Hill, and the Rev. G. J. M. Kingston. The exhibits numbered about 400. The judges were Messrs. Henry Stevens, Thomas Bedding, F.R.P.S., and S. T. Bates.

Open Section.—Medal: Mr. H. Robinson's "The Hon. Sec."; highly commended, Mr. F. W. Bartlett's "The Day is Dying in the West"; highly commended, Mr. G. K. Rule's "Homewards."

Architecture.—Medal: Mr. F. W. Bartlett's "Entrance to Priory Church, Bridlington."

Landscape.—Two Medals: Mr. H. P. Higgins' "And Frae the Yellow Field"; highly commended, Mr. H. P. Higgins' "Where Flocks Increasing."

Portraiture.—Medal: Mr. H. P. Higgins' "A Night of the Road"; highly commended, Mr. H. P. Higgins' "Two English Roses."

Still Life.—Highly commended: Mr. G. K. Rule's "Lily."

Architecture.—Medal: Mr. F. W. Buckle's "Lincoln Cathedral (nave)"; highly commended Mr. G. K. Rule's "Roman Arches"; highly commended, Mr. G. K. Rule's "To the Glory of God, Norwich."

FORTHCOMING EXHIBITIONS.

October 15-29.—Coatbridge Photographic Association. Hon. Sec., Geo. W. Campbell, Ailsa Cottage, Coatbridge, N.B.

October 18, 19, 20.—Kettering Church Institute Photographic Exhibition. Hon. Secretary, E. Claypole, 112, Hawthorn Road, Kettering.

October 19-20.—Isle of Wight Photographic Society. Hon. Sec., J. Howard Burgess, 53, Pyle Street, Newport, I.W.

October 19-22.—Rotherham Photographic Society. Hon. Sec., H. C. Hemmingway, Tooker Road, Rotherham.

October 25-28.—Watford Camera Club. Hon. Sec., H. G. Trayfoot, 3, The Parade, Watford.

November 2, 3, 4, 5.—Newark Photographic Exhibition. Secretary, L. C. B. Appleby, Barnbygate House, Newark.

November 2-25.—Plymouth. Hon. Sec. Photographic Section, Chas. B. Rowe, 2, Walnut Villas, Cockington, Torquay.

November 3.—Frome M.I. Photographic Society. Hon. Secretary, B. J. Mitchell, 3, Willow Vale, Frome.

November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Sec., James Dunlop, Myrtlebank, Motherwell.

November 9.—Hackney Photographic Society. Hon. Secretary, Walter Selfe, 70, Paragon Road, Hackney, London, N.E.

November 15-19.—Sunderland Camera Club. Hon. Sec., Selby Ord, 52, Frederick Street, Sunderland.

November 17-18.—Braintree and Bocking Camera Club. Hon. Sec., W. H. Tilston, 81, High Street, Braintree, Essex.

November 17-19.—Darwen Photographic Association. Hon. Sec., J. G. Thomas.

November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.

November 22-23.—Ipswich Camera Club. Hon. Secretary, R. H. Sutton, 37, Henley Road, Ipswich.

November 23-25.—Hove Camera Club. Hon. Secretary, A. R. Sargeant, 55, The Drive, Hove.

November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., G. W. Simmers, Aberdeen House, Ramsgate.

November 25-26.—Ilford and District Photographic Society. Hon. Sec., W. N. Beal, 155, Thorold Road, Ilford.

November 26-December 3.—Glasgow Eastern Amateur Photographic Association. Secretaries, John Brough, 68, Dalmarnock Street, Park Head, Glasgow; and Geo. R. Johnstone, 591, Alexandra Parade, Dennistoun, Glasgow.

December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.

December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104, West 101st Street, New York.

December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.

December 12-17.—Sefton Park Photographic Society, Liverpool. Hon. Secretary, H. E. Cubley, 3, Langdale Road, Sefton Park, Liverpool.

December 13-20.—Southampton Camera Club. Hon. Secretary, S. G. Kimber, Oakdene, Highfield, Southampton.
 December 23-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 133, Glasgow Road, Wishaw.
 January 12-14, 1905. Boston Camera Club. Hon. Sec., H. M. Hames, 65, West Street, Boston.
 January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.
 January 20-21, 1905.—South Essex Camera Club. Hon. Secretary, T. Michell, 180, Browning Road, Manor Road, E.
 January 28-February 12, 1905.—Photographic Society of Marseilles. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.
 February 6-11, 1905.—Blairgowrie and District Photographic Association. Hon. Secretary, Wm. D. M. Falconer, James Street Cottage, Blairgowrie.
 February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.
 March 4-11, 1905.—South London Photographic Society. Hon. Sec., H. Creighton Beckett, 44, Edith Road, Peckham, S.E.
 June, 1905.—Northern Photographic Exhibition. Secretary, F. G. Issot, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

October 15.—Belgian Association Lantern Slide Stereogram Competition. Secretary, M. Vanderkindere, 97, Avenue Brugmann, Brussels.
 October 31.—Coxin. 68 prizes for users of Coxin. Judging twelve pictures. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.
 November 1.—The "Graphic." £50 in cash prizes. Manager, Photo Competition, the "Graphic," Tallis Street, Whitefriars, London, E.C.
 December 31.—Barnet. Nineteen classes. Prizes valued at £500 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.
 March 15, 1905.—Ilford. £750 in cash prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

THE SCOTTISH PHOTOGRAPHIC FEDERATION, SEASON 1904-1905.

The following is the list of judges for exhibitions and competitions, lecturers, demonstrators, lectures for circulation, and lantern slides for circulation.

JUDGES.

The following gentlemen have kindly agreed to act as judges to federated societies for their exhibitions and competitions. Arrangements must be made with the judges direct, as circumstances might prevent them officiating on the occasion required. All expenses must be paid by the society requesting their services:—

For Prints.—Godfrey Bingley, Esq., Thorniehurst, Shaw Lane, Headingly, Leeds; Arch. Campbell, Esq., Stewart Terrace, Barnhill, Broughty Ferry; Ezra Clough, Esq., Faircliff Road, Bradford; Arch. Cochrane, Esq., Barrhead; W. Crooke, Esq., 103, Princes Street, Edinburgh; J. W. Eadie, Esq., Lenidale, Airdrie; A. Keighley, Esq., Steeton High Hall, Keighley, Yorks.; Frank P. Moffat, Esq., 125, Princes Street, Edinburgh; James Patrick, Esq., 11, Bruntsfield Place, Edinburgh; and J. Douglas Ritchie, Esq., 5, Gilmour Street, Paisley.

For Lantern Slides.—Vaness C. Baird, Esq., Broughty Ferry; Godfrey Bingley, Esq., Thorniehurst, Shaw Lane, Headingly, Leeds; Arch. Campbell, Esq., Stewart Terrace, Barnhill, Broughty Ferry; J. W. Eadie, Esq., Lenidale, Airdrie; Wm. Ellison, Esq., 2, Balhousie Street, Perth; Frank P. Moffat, Esq., 125, Princes Street, Edinburgh; James Patrick, Esq., 11, Bruntsfield Place, Edinburgh; J. Douglas Ritchie, Esq., 5, Gilmour Street, Paisley; T. W. Robertson, Esq., 5, Whitehill Gardens, Dennistoun, Glasgow.

LECTURERS.

Alex. Adam, Douglas Terrace, Stirling: "A Trip to Italy," illustrated by slides. Arch. Campbell, Stewart Terrace, Barnhill, Broughty Ferry: "The Reproduction of a Photograph," being a description of the various methods of newspaper and book illustration, illustrated by examples. Henry Coates, Pitcullen House, Perth: "Snapshots in the Rocky Mountains," illustrated by slides: "A Yachting Cruise Among the Northern Isles," illustrated by slides. M. B. Craig, Kirk Brae, Wishaw: "Coal Mining in Lanarkshire," illustrated by over 100 slides. W. S. Crocket, 72,

Main Street, Tollcross, Glasgow: "Hand-Camera Photography," illustrated by about 24 slides. Rev. John Crouch, Bridge of Weir: "Through North and North-Eastern France with a Camera"; "The Engadine and the Italian Lakes" (lantern slides for above two lectures by T. H. Taylor, L.D.S. J. W. Eadie, Lenidale, Airdrie: "Mounts and Mounting," illustrated by prints and samples; "Composition," illustrated by diagrams; "Pictorial Record (official of the Glasgow Exhibition)," illustrated by 200 slides; "Behind the Scenes at the Camera at the Wild West," illustrated by 120 slides. W. D. M. Falconer, James Street, Blairgowrie: "Photographic Optics for Beginners," illustrated by diagrams, blackboard and coloured chalk required. Peter Henderson, M.A., B.Sc., 5, Wortley Place, Dundee: "Orthochromatic Photography," lantern required. A. W. Hill, Commercial Bank of Scotland, Shotts: "Gum-Bichromate Printing," illustrated by specimens from Miss Warburg, Messrs. J. Page Croft, James Gale, J. M. C. Grove, and other leading exponents of this process. W. B. Hossack, Deveron Bank, Airdrie: "Stereo-Photography," illustrated by specimens, prints, and apparatus; "A Trip to Holland," illustrated by 150 slides. G. Jack, Wellington Street, Airdrie: "In and Around Glasgow Cathedral," illustrated by 75 slides. T. A. Macfarlane, Jacksonville, Airdrie: "A Trip to Egypt," illustrated by 75 slides. John B. MacLachlan, Blairgowrie: "From Castle to Palace" (Old Edinburgh), illustrated by 50 slides. "Photography with a Purpose"—an advocacy of specialisation; "Union is Strength"—a plea for combination. J. Wilson Paterson, Victoria Place, Airdrie: "A Tour through Norway," illustrated by 120 slides; "Switzerland and the Rhine Valley," illustrated by 150 slides. S. Stewart, F.I.C., 2, Salisbury Street, Kirkcaldy: "A Week in Holland with the Hand-Camera," illustrated by 100 slides. D. Storrar, 223, High Street, Kirkcaldy: "Art in Relation to Photography," illustrated by slides. A. A. Symon, M.A., B.Sc., May Terrace, Wishaw: "Herring Fishing on the Moray Firth," illustrated by 80 slides. J. M. Thomson, F.S.M.C., D.B.O.A., 47, High Street, Dundee: "Elementary Photographic Optics," lantern required. E. D. Wilmot, University Union, Edinburgh: "Fifty Miles Round Edinburgh," illustrated by 75 to 100 slides.

DEMONSTRATORS.

Vaness C. Baird, Broughty Ferry: "Carbon"; 1/1 dishes, hot and cold water required. George L. A. Blair, 49, High Street, Paisley: "Gum-Bichromate Printing," "Carbon," and "Platinotype." J. W. Eadie, Lenidale, Airdrie: "Platinotype" and "Carbon." A. W. Hill, Commercial Bank of Scotland, Shotts: "Gum-Bichromate Printing." Thomas Lupton, Abercromby Place, Stirling: "Lantern Slide Making." G. D. Macdougald, F.I.C., Shore Terrace, Dundee: "Gum-Bichromate Printing." J. Wilson Paterson, Victoria Place, Airdrie: "Lantern Slide Making."

LECTURES FOR CIRCULATION.

Vaness C. Baird, Broughty Ferry: "Short Notes on a Tour in Normandy," illustrated by 60 slides. A. A. Chisholm, Lochmaddy: "The Outer Hebrides" (lecturette), illustrated by 30 to 40 slides. W. D. M. Falconer, James Street, Blairgowrie: "Photographic Optics for Beginners," illustrated by diagrams. A. W. Hill, Commercial Bank of Scotland, Shotts: "Gum-Bichromate Printing," illustrated by specimens by leading workers. Alexander Hinshelwood, Coltness Farm, Wishaw: "A Tour in the Engadine, Eastern Switzerland"; "A Tour Through Part of France, Italy, Switzerland, and Germany"; "A Tour in Grand Canary"; "A Tour in Scotland"; "A Tour in Geneva, Chamounix, and Zermatt"; each lecture illustrated by about 50 slides.

LANTERN SLIDES FOR CIRCULATION.

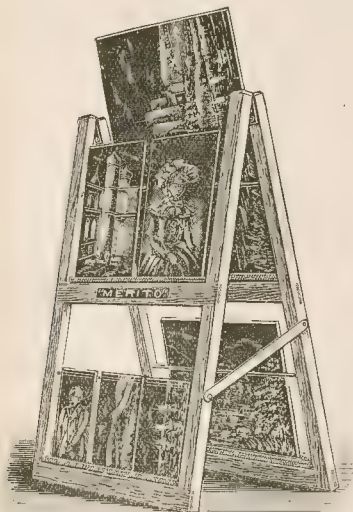
Alexander Adams, Douglas Terrace, Stirling: "A Trip on the French Riviera" and "A Tour Through Norway." Vaness C. Baird, Broughty Ferry: "Norway," 80 slides. Hans Gaertner, Dundee (on application to Vaness C. Baird, Broughty Ferry): "Walks Abroad," about 70 slides. Thomas Lupton, Abercromby Place, Stirling: "A Tour Through 'The Raiders' Country" and "A Trip to St. Kilda." W. C. Shaw, 18, Forth Street, Stirling: "Robert Burns."

Mr. R. J. Moss, of 98, Snow Hill, Birmingham, the well-known maker of acetylene generators, informs us that he has appointed Mr. E. G. Wood, of 2, Queen Street, Cheapside, to be his London agent.

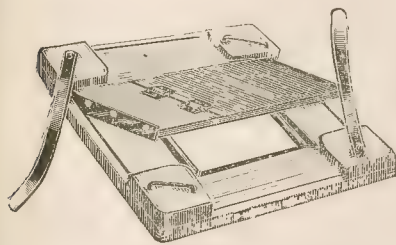
New Apparatus, &c.

The "Merito" Negative Drying Rack and the "Merito" Printing Frame. Sold by W. L. Parkinson, Ltd., 62, Dale Street, Liverpool.

The "Merito" Negative Drying Rack can claim novelty, simplicity, and effectiveness as its chief merits, and its usefulness is at once apparent. There are few photographers, whether professional or amateur, who have not experienced difficulty in trying to dry plates of flat films in the ordinary rack for holding negatives, owing to the principle being wrong for lack of air space, and



particularly the bottom portion, a long time to dry. The "Merito" rack overcomes this difficulty in a simple and efficient manner, the plates draining with the whole of the film surface exposed to the air to play all over. A perforated V groove carries the water away from the bottom edge of the negatives, and as no water can lodge, the bottom portion dries almost as soon as any part of the negative, saving a considerable amount of time. This feature will appeal to all photographers. The rack is arranged to carry twelve $\frac{1}{4}$ -plates, or eight $\frac{1}{2}$ -plates or any size plates up to 4 by 10. It can be folded flat for storing away when not in use.



The "Merito" Printing Frame possesses many advantages for contact photography, amongst which its simplicity is prominent, there being nothing to arrange or set. The negative is placed in the recessed opening provided in the centre of the frame, and the print is placed in any position desired, which may be lengthwise, crosswise, any way or angle considered best to print. A brass wire is fixed on the edge of the frame back, projecting sufficiently

on the underside to fit any of the four corresponding grooves which go round the outer edge of the frame, thus preventing the back, and consequently the card or print, from moving when being examined. Portions of the negative may be printed, and to photographers who know the value of this, full advantage can be taken in an effective manner, with this frame. In addition, should the lines on the negative be out of perpendicular, sufficient space is available on the frame bed to adjust the print.

Griffin "Bromide Paper." Made by Messrs. J. J. Griffin and Sons, Ltd., 20-26, Sardinia Street, Lincoln's Inn Fields, London, W.C.

This new bromide paper, which will be known in future as "A-1 grade snow-white," is the latest product of this firm, and prints on it possess great richness in the blacks and purity in the high lights. For enlarging it is specially suitable, having a rapid emulsion, thus making it possible to secure fully exposed enlargements by reasonably short exposures. There is no tendency to fog or greyness. The exposure necessary to secure a fully exposed contact print will be found surprisingly short, and development is very easy. To develop the image, first soak the paper in cold water in a clean porcelain dish. Pour the water off after it has been immersed 15 seconds, and apply evenly either of the following developers:—Amidol: Amidol 70 gr., sodium sulphite, cryst. 650 gr., potassium bromide 15 gr., water 20 fl. oz.—or—Metol-Quinol: Metol 8 gr., hydroquinone 30 gr., sodium sulphite, cryst. 240 gr., sodium carbonate, cryst. 360 gr., bromide of potassium 4 gr., water 25 oz. If the whites of the print are greyish, or the shadows lack richness, increase the amount of bromide of potassium. After development, rinse print in water and fix in soda hyposulphite 1 oz., water 10 oz., for ten minutes. Then wash for half-an-hour in running water.

Messrs. Griffin wish to draw attention to the fact that they are putting up this paper in the larger sizes in packets of four pieces only. They believe this will prove of great convenience to those making only occasional enlargements. "A-1 grade" is very suitable for toning with the sulphide bath, very fine sepias being obtained. The following toning baths may be used for producing sepia and blue prints, but they are not necessarily permanent:—Toning bath for sepia prints: Potassium citrate, 10 per cent. solution, 1 oz.; copper sulphate, 10 per cent. solution, 70 minims; potassium ferri-cyanide, 10 per cent. solution, 60 minims. Toning bath for blue prints: Ammonia citrate of iron, 10 per cent. solution, 2 drms.; potassium ferri-cyanide, 10 per cent. solution, 2 drms.; water, 40 drms.

Zigo. Made by Thomas Illingworth and Co., Ltd., Willesden Junction, London, N.W.

Zigo is a new self-toning paper recently introduced by the firm of Illingworth. They claim for this paper that it has a distinct advantage over any other self-toning paper, inasmuch as it gives tones ranging from red to purple without any chemicals whatever other than hypo. Zigo is, of course, a P.O.P., and is supplied with either matt or glossy surface. The tones obtained by simply placing the print in a solution of hypo are very satisfactory. The points to remember when using this paper are: The prints must be printed a little darker than the finished print is required, as they reduce somewhat in fixing. They look a rather redder tone when wet than when dry; allowance, therefore, must be made for this when taking out of the hypo solution. Zigo matt prints are generally preferred in the red tone. They take a little longer to tone than the glossy, and should be printed a little lighter and left in the hypo solution a little longer than the times given for glossy prints, or the hypo solution may be strengthened. Zigo postcards curl a little after drying, and these can be easily flattened by drawing the card sharply under a piece of wood having a smooth, sharp edge. To tone:—Remove the print from the printing frame, and place direct into the following bath. Hyposulphite of soda (hypo), 3 oz. (3 tablespoonsful); water, 20 oz. (1 pint). It is advisable to mix the hypo in a little warm water, and then make up to the pint with cold water. For red tones allow print to remain six minutes; for brown tones, ten minutes; for purple tones, fifteen minutes. If a deeper tone is desired add more hypo. When the desired colour is obtained, place the print in running water, or constantly change the water for half an hour, and the operations are then complete.

Patent News.

The following applications for patents were made between September 19 and October 1, 1904:—

Storing Negatives.—No. 20,114.—“An improved system for storing photographic negatives.” (Houghtons, Ltd., and Alfred Sydney Spratt.)

Paper.—No. 20,157. “Improvements relating to paper and other surfaces for photographic printing.” (Jean Baptiste Germeuil Bonnaud.)

Cameras.—No. 20,269. “Improvements in or relating to photographic cameras.” (Edward Sanger Shepherd.)

Shutters.—No. 29,237. “Improvements in shutters for photographic cameras.” (The Thornton-Pickard Manufacturing Company, Ltd.)

Pneumatic Balls.—No. 20,330. “Improvements in pneumatic balls for photographic shutters and apparatus for compressing same.” (The Thornton-Pickard Manufacturing Company, Ltd.)

Cameras.—No. 20,384. “Improvements in photographic cameras.” (George Washington.)

Drying Line.—No. 20,414. “A portable drying line for film negatives and photographic prints.” (William Johnston.)

Cinematographs.—No. 20,429. “Improvements in mechanism employed in the production of cinematograph and mutoscopic pictures and dark slide for carrying sensitive photographic plates for taking impressions.” (Henry William Hamblin Palmer.)

Cinematographs.—No. 20,430. “Improvements in mechanism employed in the production of a series of photographic cinematograph pictures animated, also mutoscopic and stereoscopic to be actuated by coin-freed mechanism and circular dark slide for holding sensitive plate or disc.” (Henry William Hamblin Palmer.)

Printing Apparatus.—No. 20,507. “Photographic printing apparatus.” (Herman George Schumann.)

Dark Slides.—No. 20,556. “Improvements in photographic dark slides or plate holders.” (Arthur Lewis Adams.)

Cameras.—No. 20,634. “Improvements in photographic cameras.” (Alfred William Bevis.)

Temporary Support.—No. 20,726. “A temporary support for sensitive photographic emulsions.” (Henry James Burton.)

Cameras.—No. 20,729. “Improvements in photographic cameras.” (The Thornton-Pickard Manufacturing Company, Ltd.)

Apparatus.—No. 20,769. “Improvements relating to photographic apparatus.” (Benjamin Joseph Edwards.)

Plate Carriers.—No. 20,827. “Improvements in carriers for sensitised plates used in colour photography.” (Benjamin Jumeaux.)

Developing Dishes.—No. 20,933. “Improvements in developing, rinsing, and fixing dishes and developing and fixing tanks for photographic purposes.” (James Everett.)

Films and Filters.—No. 20,954. “Improvements in or relating to the arrangement of films and filters for three-colour photography.” (Hans Schmidt.)

Computing Exposures.—No. 21,080. “An instrument for computing photographic exposures.” (John Walker Newall.)

Cameras.—No. 21,133. “Improvements in or relating to cameras.” (Alfred Herbst.)

MRS. ISABELLA L. BISHOP, better known as Miss Isabella Bird, the famous traveller and authoress, died in Edinburgh on Friday, within a few days of completing her seventy-second year. Her first book, “The Englishwoman in America,” was published so long ago as 1856, and so recently as 1900 she published “The Yangtze Valley and Beyond.” Mrs. Bishop was an ardent supporter of philanthropic work at home and abroad, and had built five hospitals and an orphanage in the East. She married, in 1881, Dr. John Bishop, who died in 1886. In 1901 she rode a thousand miles in Morocco, including a journey to the Atlas Mountains. She was a Fellow of the Royal Geographical Society (the first lady Fellow elected to that body), a member of the Royal Photographic Society, and an honorary member of the Oriental Society of Pekin.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

October.	Name of Society.	Subject.
15.....	Royal Photographic Society ...	Morocco. Mr. John H. Avery.
15.....	Watford Photographic Soc. ety	Affiliation Competition Lantern Sl.
17.....	Royal Photographic Society ...	Camera Pictures from Balloons
17.....	South London Photo. Society...	Mr. T. G. Hibbert.
17.....	Bowes Pk. and Dis. Ph. Soc. ...	Amateur Photographer 1901
17.....	Camera Club.....	Slides.
17.....	Brentford Photo. Society	Competition, “Annual Holiday
18.....	Hackney Photo. Society.....	tures.”
18.....	Glasgow Southern Photo. Asso.	Lantern Slide Trial Evening.
18.....	Birmingham Photo. Society ...	Discussion on Record Work. M.
18.....	Blairgowrie and Dis. Ph. Asso.	Turner, P. R. Hist. Soc.
18.....	Sheffield Photo. Society.....	Excursion Prints Judged and Critic
19.....	Everton Camera Club	Lantern Night.
19.....	Boro.' Poly. Photo. Society	Pyro-Ammonia. Demonstrated.
19.....	Architectural Assoc. Cam. Club.	P. T. Deakin.
19.....	G.E.R. Mechanics' Institution	Time Development. Mr. J. D. Pett
19.....	Redhill and Dist. Camera Club	Lantern Slide Making. Demonstr
19.....	Cricklewood Photo. Society	Mr. T. G. Hibbert.
20.....	Hull Photographic Society	Crossed Swords Pigment Paper
20.....	Royal Photographic Society	monstrated. The Secretary.
20.....	Southport Photo. Society	Control in Bromide Printing. M
20.....	London and Prov. Photo. Asso.	Stery.
20.....	Camera Club.....	Canterbury Cathedral. Mr. G
20.....	Hull Photographic Society	Smith.
21.....	Boro.' Poly. Photo. Society	“Focus” Lecturettes.
21.....	Royal Photographic Society	Carbon Printing. Demonstrated.
21.....	Hull Photographic Society	T. P. Padwick.
21.....	Boro.' Poly. Photo. Society	Beginners' Night.
21.....	Royal Photographic Society	Carbon Process. Demonstrated.
21.....	Hull Photographic Society	J. T. Dyson.
21.....	Boro.' Poly. Photo. Society	Northumbrian Rambles. Mr. Ge
21.....	Royal Photographic Society	Lanley, F.R.P.S.
21.....	Hull Photographic Society	Lantern Night.
21.....	Boro.' Poly. Photo. Society	The Testing of Orthochromatic Ph
21.....	Royal Photographic Society	Mr. E. J. Wall, F.R.P.S.
21.....	Hull Photographic Society	Printing by the Gum-Bichrom
21.....	Boro.' Poly. Photo. Society	Process. Demonstrated. Mr. J. V
21.....	Royal Photographic Society	Mummeys.
21.....	Hull Photographic Society	The Carbon Process. Demonstr
21.....	Boro.' Poly. Photo. Society	Mr. J. T. Dyson.
21.....	Royal Photographic Society	Instruction Evening. Developmen
21.....	Hull Photographic Society	Unfrequented Cities of South
21.....	Boro.' Poly. Photo. Society	Italy, &c. Mr. J. Cooper Ashton
21.....	Royal Photographic Society	Visit to Salon and R.P.S. Exhibiti

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION— LIVERPOOL BRANCH.

THE first monthly meeting of the season was held at the Alexandra Hotel, Dale Street, on September 28th. Mr. Mowll occupied the chair. The question of inviting the local photographers to a meeting with the object of discussing prices, was brought forward, and after some argument it was unanimously decided that such a meeting be held on November 4th. It was hoped that many members of the profession would attend, and that the opinions expressed might make possible some measures tending to reduce the extreme price cutting in the city and district. The chairman suggested that at the same time the idea of forming a professional photographers' club might be laid before the photographers of the district and opinion invited. Such an institution would certainly be useful to members of the profession, and could be promoted easily and with a moderate outlay, if photographers would give it anything like united support. One saw the same faces, time after time, at these meetings, and it was hard to believe that of all the photographers in Liverpool they were alone anxious to attempt something for the benefit of the profession, to help each other. The formation of a club would bring them together, and most might learn something to their advantage from the experiences of others. The hon. secretary was instructed to send a copy of the following circular to each professional photographer in the district: “The Liverpool branch of the Professional Photographers' Association beg to invite you to a discussion relative to professional photographers' prices in the district, and with regard to forming a professional photographers' club, on November 4th, 1904, at the Alexandra Hotel, Dale Street; chair to be taken at 8 p.m.

CROYDON CAMERA CLUB.

OCTOBER 5.—The first meeting of the winter session was held in the club's new premises, No. 128a, George Street, which are in every way an improvement on the rooms vacated. More commodious, tastefully decorated, better ventilated, and with a capital enlarging and dark rooms annexed, it was small wonder that a general and unanimous feeling of satisfaction at the change prevailed. This was voiced

by the President, Mr. S. H. Wratten, who, in welcoming the members to their new abode, expressed his thanks to the small band of energetic and willing workers who had so successfully carried the matter through. A cheery note was also sounded by the Hon. Sec., Mr. H. M. Bennett. A large number of new members had joined, and he thought the club in the healthiest possible condition. It was also well represented at the Royal Photographic Society's Exhibition and the Salon, and Mr. C. Austin was to be congratulated on having obtained a medal at the former. Other speakers followed in the same appreciative strain.

The President then read a short but most interesting paper on the manufacture of dry plates, the full text of which will be found in another column. Samples of the gelatine employed, dried emulsion, and coated but undried plates were passed round and examined with interest. In respect of the latter Mr. Wratten showed how the momentary application of a warm finger to the glass side of a plate had resulted in a permanent marking on the sensitive surface. A warm-handed assistant, he said, was not of much use in a dry plate manufactory. In answer to questions, he stated he believed gelatine improved by keeping, and he invariably stored it for a considerable time before use. Makers, however, had different ideas on storing and blending gelatine, but in any case it was of the utmost importance that it should be perfectly pure. The excess of bromide in an emulsion was removed by washing, but an after addition of the restrainer was desirable. A very fast plate would not be successfully made without it.

In the short discussion which followed Mr. C. E. Kenneth Mees said, when testing commercial plates he could generally find if free bromide had been added. It had a somewhat remarkable effect upon "speed." In one particular case on starting development the speed indicated 150 Watkins. On pushing development to infinity, the speed was found to reach 1,000 Watkins. Messrs. Wratten and Wainwright's plates did not exhibit such eccentricities. After a few appreciative and retrospective remarks from Mr. Packham, a most hearty vote of thanks was accorded the President.

BOWES PARK AND DISTRICT PHOTOGRAPHIC SOCIETY.

OCTOBER 8th.—Mr. A. H. Lisett delivered a lecture on "Home Portraiture, Indoors." The lecture was illustrated by over fifty lantern slides, to indicate the work which could be done in an ordinary room. The value in the use of screens and background, combined with modified lighting from the window, was very clearly shown, slides being exhibited giving diagrams of position of camera screens, sitter, and background, also the window, the light from which had been considerably restricted, in order to obtain different effects. Also results were shown of photographs taken of a subject sitting in a window, through which the full glare of sunshine was falling. These slides were most remarkable, no trace of halation being visible. Mr. Lisett recommended the use of as long a focus lens, as the room used would permit, also that before taking up the work a study should be made of paintings of the leading artists, especially those of the Dutch artists. It would be found, Mr. Lisett said, that simplicity in pose and surroundings would give the most artistic and therefore pleasing results, and this, he contends, should be the aim of all who would endeavour to do the most successful work. Mr. Lisett stated he had found the Watkins' method of time development most useful, and he now invariably used it. By this means he was able to get the results he desired with greater certainty, and he therefore recommended it.

We are informed that the Gateshead Camera Club has been reorganised, and arrangements for the coming winter season are now complete. The club rooms, at 87, High Street, Gateshead, have been newly decorated and furnished for club purposes. The dark room is fitted with sink, benches, a water supply, and other necessities. A first-class half-plate enlarging lantern has been purchased, and is now fixed, ready for the use of members. Arrangements are being completed for elementary photographic classes, to be conducted by members of the club, on Monday evenings, commencing on the 17th inst. The syllabus followed will be that of the City and Guilds of London Institute. Particulars may be obtained from the club secretaries. A few non-members will be admitted to these classes. Lectures of an advanced and miscellaneous character are being arranged for the Thursday evenings.

News and Notes.

THE Photographic Club has removed its headquarters and meeting place to Huggett's Red Cross Hotel, 19, Paternoster Square, E.C.

THE Thornton-Pickard Manufacturing Company's competition is now closed, and we shall shortly publish the results of the judging.

THE final date for receiving entries to the Watford Exhibition has been extended twelve days, and is therefore October 17. The date for receiving the exhibits is, as before, October 19.

THE Wimbledon Camera Club opened their winter session and new headquarters at Rembrandt Studios, Hill Road, Wimbledon, on September 30, with a practical demonstration on "Platinotype Printing for Beginners," by Mr. E. T. Holding.

WE regret to have to record the death of Mr. R. K. R. Flamank, of the firm of R. Flamank and Son, Sutton Street, Aston, Birmingham. Mrs. Flamank will continue to carry on this well-known business, which will, as hitherto, be conducted on prompt and businesslike lines.

THE prospectus of the Hartlepool Fourth Annual Exhibition has been sent us. It is noteworthy that the exhibition is divided into two sections: (1) Photographic, and (2) Art. The last day for entries is November 9, and full particulars may be obtained from the Hon. Secretary (Mr. Geo. Scott), 30, Cobden Street, W. Hartlepool.

JARROW Camera Club.—The members of this flourishing society opened the winter session on Tuesday evening last with a smoking concert in the club room, Walter Street, Jarrow. There was a large attendance, presided over by Mr. E. W. Penman (president). The Secretary (Mr. W. Hanning) announced during an interval that the lecture season would begin on Tuesday next, when Mr. Reick would speak upon plate development.

A PHOTOGRAPHIC Society for Aberystwyth.—At a meeting held at the Congregational Schoolroom, Aberystwyth, presided over by Professor D. M. Lewis, it was decided to form a photographic society for the town and district. The following officers were appointed:—President, Professor Lewis; vice-presidents, Messrs. G. W. Cosens, E. H. Short, and Robert Ellis; secretary, Mr. F. A. Reid; and treasurer, Mr. Miall Jones.

BRENTFORD Photographic Society.—At the general meeting, held on October 4th, at the Baths, Brentford, the officers were re-elected with slight change. A record section was formed, under the directorship of Mr. Turner, F.R.Hist.Soc., with Mr. R. H. F. Hitchens as hon. secretary. This will be the last meeting of the society at the Baths. All future meetings will be held in the Free Library Lecture Hall, situated within three minutes' walk of the railway station (L. and S.W. Railway).

ADDRESS Wanted.—Mr. H. M. Fell writes from 57, 59, and 61, Clerkenwell Road, London, E.C.: "In your issue of September 20, on page 860, under the title of 'Spotty Prints,' Mr. E. Woodcock writes for some information with regard to the cause of spots on C.C. Paper. If you will kindly send me the address of this gentleman I believe that I can assist him in getting over this trouble." Will Mr. Woodcock communicate direct with Mr. Fell? We have not kept his address.

W. WARREN JEPSON, of 3, Cookridge Street, Leeds, Photo-Enlarger, Retoucher, etc., writes: "I am pleased to say that owing to a continued increase in the amount of business I have now added to my facilities for the execution of high-class work, and also for the quick dispatch of orders, by the fitting up of new and commodious premises, and that on and after the 17th inst. my address will be The Photographic Works, Hanover Street, Leeds. In future the style of the firm will be W. Warren Jepson and Co."

"THERE'S a fine thing going cheap which exhibition secretaries should carefully consider," says a writer in the "Yorkshire Weekly Post." "The Bradford Exhibition will shortly close, and the wall covering of the photographic section will be for sale, and should be secured by someone. It is olive green dull canvas and a grey frieze on which the pictures appear to great advantage. It really is a great chance, and

full particulars can be obtained from Mr. Alex. Keighley, Steeton, High Hall, Keighley.

SCOTTISH Natural History Society.—The fifth ordinary general meeting of the Scottish Natural History Society was held last Thursday night in the Society's Rooms, 5, Queen Street. A lecture was delivered by Mr. J. B. Mears, entitled "Photography and Nature," illustrated by a series of lantern slides from photographs taken by Mr. A. L. van Someren. The lecturer, after explaining the methods of work in different localities, showed numerous interesting slides, including sets of slides illustrating the life history of a bird, and the protective colouring of eggs and birds.

ILFORD Photographic Society.—On Monday last, at Cranbrook College, the annual general meeting of this Society was held. The annual report and the financial statement were satisfactory. Mr. Haslam was elected president. The vice-presidents were as follows:—Messrs. G. W. Barnes, Brand, Whitelaw, Mann, Galledge, Frost, W. N. Beale and the Rev. J. W. Eisdell. Mr. H. Cole was elected secretary and treasurer, with Mr. Perritt as assistant. Mr. Hornby was elected hon. lanternist, and the committee was appointed as follows:—Messrs. Aldons, Hall, Radford, Rotherham, Williams, Eames, Heyman, and Hill.

A PHOTOGRAPHER was preparing to take a view at the top of Duncan Street, Manchester Road, Bradford, on Monday last, when a man named Patrick Fogarty went up to him and dashed the camera to the ground. He was running away, when P.C. Blackburn caught him, and a struggle ensued, in the course of which Fogarty kicked the constable on the legs and body. For this assault he was committed for four months, with hard labour, at the Bradford City Police-court, and an additional month's imprisonment was imposed for breaking the camera. He had been twenty-one times previously convicted, six being for assaulting the police.

ENSIGN Film Competition.—Houghtons, Limited, ask us to draw attention to the fact that the current month (October) closes for the present this competition. The awards in the September competition are as follows:—(1) £10, Miss Dora Messow, Brandon, Holly Walk, Leamington; (2) £5, Sergeant T. J. Moore, 17th Lancers, Pier Hill Barracks, Edinburgh; (3) £1, Mr. A. Best, 60, Whippingham Road, Brighton; (4) £1, Mr. R. Lawrence, Craigroyston, Oban; (5) £1, Mr. F. A. Garratt, 6, Wolverton Avenue, Kingston Hill, Surrey; (6) £1, Mr. W. Lapping, Gilford, co. Down, Ireland; (7) £1, Miss G. Wilmot, Mickleton, Chipping Camden, Glos.

ROTHERHAM Photographic Society.—At the fifteenth annual meeting, on Tuesday last, officers were chosen as under:—President, Mr. E. Isle Hubbard; vice-presidents, Messrs. J. Leadbeater, W. Firth, and J. W. Stamp; hon. treasurer, Mr. F. Oldham; hon. secretary, Mr. H. C. Hemingway; assistant, Mr. C. E. Davis; auditor, Mr. Davison; curator, Mr. F. Sargeant; members of Council, Messrs. W. Mason, J. C. Cox, F. Thomlinson, and F. Sargeant. The report of the year's work was exceedingly satisfactory, and there was an increased balance in hand. It was announced that Lady Holland would open the annual exhibition. Mr. J. Leadbeater gave an address on "The Photography of Lightning."

R.P.S. "RED BOOK" Night.—We would again draw the attention of members of affiliated societies to the special meeting arranged for them to-night (Oct. 14) at the New Gallery, Regent Street, London, W. The Committee of the Royal Photographic Society believe that members will welcome this opportunity of fraternising and of viewing the forty-ninth Annual Exhibition. As already announced, there will be no charge for admission, the Council of the R.P.S. having promised free admission to every member producing his "Red Book" or the special red ticket issued by the Executive Committee for the current year. The reception of visitors by the Executive Committee will commence at seven o'clock. At eight o'clock there will be an address by the Chairman, followed by an exhibition of the competition slides and slides in natural colours by various processes.

RICHMOND Camera Club.—The autumn session of this club opened on Thursday evening last week, when the members were informed, to their great regret that the hon. secretary, Mr. E. G. Richardson, had been obliged, after many years of valuable work for the club, to sever his connection with it in consequence of his removal from Richmond. Mr. J. A. Abbott, of St. Leonard's House, East Sheen, who has been acting as hon. secretary pro. tem., was appointed to the office. After

transacting the business incident upon the opening of the new session some slides brought by members of the club were passed through the lantern. These consisted of various landscapes by Mr. Bretherton, views of Ludlow, the Wye district, etc., by Mr. Cheese, some do photographs by Dr. Rodman, followed by some of his radiographs of shells and views taken during a motor car trip in Northamptonshire.

EDINBURGH Society's Exhibition.—The annual exhibition of the Edinburgh Photographic Society is to be held later this session, and will open on February 25, 1905, which is about three months later than last year. There will be two sections, as before, one for members work and one open to all. In both classes medals will be awarded at the discretion of the judges. The Society have also arranged a syllabus for the general meetings and the practical evenings, which will carry them on until May. The opening meeting of the session was held last week in the rooms, 38, Castle Street, when Mr. J. Tudor Cundall, B.Sc., the new president, delivered his inaugural address. He discussed photography in three aspects, that of simple representation, a vehicle for pictorial representation, and as an aid to scientific research.

THE Art of the Showman.—"The camera cannot lie" is a saying nearly as old as photography itself, remarks a writer in the current number of "The Easy Chair," but, if this is correct, its animated brother is certainly not its equal as regards veracity, as the following will prove. A certain showman had booked a hall for the exhibition of animated pictures in a small town in Ireland, and, going over to complete preliminary arrangements, he discovered, some what to his chagrin, that a strong pro-Boer feeling existed among the inhabitants. Now, he had announced upon his bills that all the latest pictures from the theatre of war (the South African War was in progress) would be shown, and great excitement prevailed in anticipation of the event. Of course, such pictures as he had were entirely in opposition to the opinions of his patrons, but the wily showman was equal to the occasion. He quickly arranged several faked scenes depicting unfortunate Boer prisoners being maltreated by brutal English soldiers, and other pictures of a similar character, and so realistic were they that a certain Irish newspaper, whose name it would be unfair to divulge, actually printed an article demanding that a Government inquiry should immediately be held to discover and punish the perpetrators of these foul outrages!

SATURN'S Smallest Sister.—In 1899 it was announced that Professor W. H. Pickering had made a discovery (the first of the kind by the aid of photography) which, if confirmed by subsequent observation, would add a ninth satellite to the known cortege of the planet Saturn. It is interesting to note, therefore, that Professor Barnard has recently caught a further glimpse of the tiny moon, on whose real existence some doubt had begun to be cast. To this new world Professor Pickering has given the name of Phœbe, a sister of Saturn or the shining one. This title is something of a misnomer either way; it is regarded; the "sister" is a little creature with a diameter of probably no more than 200 miles, while that of her giant "brother" is 69,780 (polar), or 76,470 (equatorial). As for "shining," Phœbe is the faintest body in the Solar system, have an estimated magnitude of less than 16, which may be better understood when it is remembered that from Sirius to naked eye invisibility is but six magnitudes, Phœbe thus being, of course, ten such stages fainter. Even from Saturn, the newly-found satellite would be beyond naked eye range! Let it not be thought, however, that this latest planetary discovery is unimportant. Faint as she is, Phœbe is the largest body found in the Solar system since October 24, 1851, when Lassell discovered Ariel and Umbriel, the two inner moons of Uranus.

ATTACHING Banking Accounts.—An interesting point affecting banking accounts was heard in the City of London Court the other day. Bassano's Studios, Ltd., Old Bond Street, have recovered judgment for three guineas and £1 4s. costs against Mr. W. T. Masterman, Horsemonden, Kent, for photographs supplied. Then Captain W. S. Masterman, of Tunbridge Wells, wrote to the plaintiffs, and sent cheque on the Tunbridge Wells branch of Lloyds Bank for three guineas, saying that he knew nothing of the legal proceedings. The plaintiffs now sought to garnishee the banking account for £1 4s., the unpaid costs; and they said that Mr. W. T. Masterman and Captain W. S. Masterman were one and the same. The solicitor for Lloyds Bank said that this statement was not true. Captain W. S. Masterman and a Mr. Miller owned the account at the bank. They could

not allow the account of a man who had never had anything to do with the plaintiffs to be attached. The plaintiffs' solicitor said that they were entitled to attach the account and inquire into the amount standing to the credit of the man who owned the money, otherwise creditors would be set at defiance. It was a most lamentable state of affairs. Judge Rentoul, K.C., agreed, and said that the request seemed to be reasonable, but there was no legal machinery enabling it to be carried out. Judgment must be given for the bank on the garnishee summons, but the plaintiffs could have a receiver appointed.

The Salon from an Art Standpoint.—Commenting on the twelfth annual exhibition of the Photographic Salon, the writer of *Art Notes* in the "Illustrated London News" says the colour of the prints themselves, their mounts, and the charming simplicities of the wall all tend to give the gallery an atmosphere of good taste, but, to be frank, hardly more; and hardly more is expressed by the photographs themselves. Vehement as are the photographers of to-day in declaring that their occupation is an art pure and simple, it is hard to follow the argument that is designed to prove it to be so. Scope for good judgment and scope for a refined taste are ample in work with the camera, but these qualities are only attendant on the great talent, so to speak, of the camera itself. It is the instrument's point of view which is pervading every photograph, and this individuality is fully as strong as that of any photographer. Here then is the difficulty. The main effort of the more advanced photographer of the day, as exhibited in the two London exhibitions, is to stamp out the mere mechanical work of his instrument. By changing tones here and there, heightening this and lowering that, he gains a result which has obviously something to do with the human hand, but which is necessarily without the impulse and completeness of entirely original work. Nor is this result a complete photograph, for the truth as expressed by the camera only shows itself in the spaces untouched by the photographer.

Kodak Pictures of Macedonia.—Kodak, Limited, have arranged at 115, Oxford Street, a little exhibition of enlargements from photographs taken by Professor P. N. Milnkoff, a Russian historian, during a recent journey in Macedonia. The original negatives were all taken with a No. 1a Folding Pocket Kodak. Due allowance being made for the woolliness which is inseparable from an enlargement, the seventy-nine pictures in this exhibition give a very fair idea of the scenery and national costumes of the lower half of the Balkan Peninsula. The photographs of the "Iron Gate" on the River Virdar, between Salonika and Uskub (No. 12), and of the lake of Okhrida (No. 19), show that, if a satisfactory solution of the Near Eastern problem can be found, the Macedonian vilayets—and the same is true of a large part of Bulgaria—have many charms to attract the tourist. Nos. 13, 60, and 67 illustrate the methods of threshing commonly employed by the Macedonian peasants. The corn is strewn upon an earthen threshing floor and crushed by a roller drawn by the pretty little white oxen to whose share falls a large part of the farm work of the Balkans, or trodden out by the hardy little ponies which trot round the floor roped to a stake in the centre. A number of groups of peasants display the picturesque costumes which have not yet been displaced by slop clothes from Central Europe, and No. 60 gives a most humorous portrait of a khamal or porter in Bitolia. The whole exhibition can be seen in a quarter of an hour.

The Members' Year Book for 1904-5, just issued by the Southampton Camera Club, is again this year an excellently bound little directory of photographic dealers and manufacturers. The programme of fixtures for the ensuing winter is also included, and in addition to this a real photograph by the energetic Hon. Sec. serves both as a frontispiece and as an advertisement for a well-known gaslight paper. We are particularly pleased to see that Mr. Kimber is making a step in the right direction in the compilation of the season's programme by securing the services of such well-known lecturers as Messrs. F. Martin Duncan, O. G. Pike, Charles B. Howdill, H. C. Shelley, A. J. Kay, C. H. Hewitt, E. W. Harvey Piper, and F. Ormiston Smith. These names, among many others amply point not only to a successful and instructive series of evening meetings for the members of the Southampton Society, but also discloses the fact that an equally successful year has been passed. We commend the example of this association to many others throughout the country, and feel sure that the introduction of a first-class programme of lectures and demonstrations by experts at first hand will repay a hundredfold in increased

membership and vitality any expenses attached to the venture. The Year Book also includes among other interesting items several blank pages for notes, rules of the Society, places to photograph, and list of members, etc. A black lead pencil is attached to the volume, without which we feel sure no member of the Club would think of venturing forth on a photographic expedition.

PHOTOGRAPHIC Survey of Sussex.—The photographic survey of Sussex is making progress, and some photographs of great interest have been received, notably those from Mr. Gerald Loder, M.P., Canon Cooper, of Cuckfield, Mr. W. H. Hills, and Mr. Alfred Roods. It will be remembered that the photographic survey of the county was only decided upon at the last annual meeting of the Sussex Archaeological Society, when a Committee was appointed to carry out what will probably prove to be a very important undertaking. The Committee desire that all who are able will endeavour to contribute to the collection of photographic records now in progress, and it is hoped that a large number of amateur photographers and others will take this announcement as a direct appeal to them to assist the Committee. The subjects for recording photographically are those that have any county interest—not only old buildings, as now existing, but photographs of them taken from old prints, paintings, drawings, etc., also photographs of old documents, books, maps, etc., historic trees, landmarks, etc., while especially to be desired are photographs illustrating old customs, some of which are dying out, e.g., mummers, Jack-in-the-green, the doll, May-day, maying, the game of stool-ball, etc., whether taken from the life or from old drawings. The Secretary would be glad to know beforehand of such occurrences with a view to their being photographed. The Committee of the Photographic Survey also desire to obtain as members those who are willing to undertake work in a small section of the county. Donations would be very acceptable to meet the unavoidable expenses. The Hon. Secretary and Treasurer of the Survey is Mr. J. C. Stenning, Steel Cross House, near Tunbridge Wells, who would be glad to give any further information, and to him all photographs, etc., should be forwarded.

BIRMINGHAM Photographic Society.—The following are extracts from the annual report:—The membership roll now stands at 177 (inclusive of 27 new members) as compared with 191 last year. More new members are needed, and your Council earnestly request the hearty co-operation of all members in obtaining a larger number of new members during the coming year. Increased membership means increased spending power, and therefore increased facilities for all members. The two new cameras, size 12 by 10 and 15 by 12, purchased and available for members' use, have been much appreciated, having been loaned to members on twenty-seven occasions, exclusive of periods when in use on society excursions. Success has again attended our members at the exhibition of the Royal Photographic Society, two medals having been awarded, one each to Mrs. G. A. Barton and Mr. W. A. Clark. After twenty years' membership of the present Society and thirty years' membership with the older one, Mr. W. B. Osborn has been elected an honorary member. Your Council feel assured the members cordially thank Mr. Osborn for his long services, and wish him continued years of prosperity and good health. The best thanks of the Society are due to Mr. A. J. Leeson, who has so ably filled the office of President during the past year. All who attended the conversazione and garden party so generously given by our President will unite in expressing their thanks for the kindly and courteous treatment extended to them. Mr. H. Vought-Cornish having resigned the post of Honorary Secretary to the Society, your Council desire to place on record their high appreciation of the valued services rendered by him in that position since April, 1900. Much of the recent success of the Society is due to his untiring efforts, and the members will join the Council in wishing Mr. Cornish many years of continued membership, if in a less exacting position. **Warwickshire Survey.**—The curator reports having now in hand 106 prints (from five new contributors). These were collected previously, and shown at the B.P.S. Exhibition in February last, and, although a fair average, the number is not nearly so great as last year, when several members contributed largely in local subjects. In March last, prints to the number of 468, on 407 mounts, were handed in to the City Library for safe keeping—a selection of the more interesting having been previously exhibited in the City Art Gallery by the kindness of Mr. Whitworth Wallis. The curator will be pleased to receive contributions of prints of any of the following for the survey:—Old Broad Street Corner, old Congreve Street, old Queen's College.

Correspondence.

* * Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given

* * We do not undertake responsibility for the opinions expressed by our correspondents.

THE PROFESSIONAL PHOTOGRAPHIC ASSOCIATION AND THE PROPOSED BENEVOLENT FUND.

To the Editors.

Gentlemen,—I fear, from your note appended to Mr. Watson's letter (p. 878) that you may think me guilty of claiming some originality for the suggestion that the P.P.A. should start a Benevolent Fund. Far from doing so, I took it for granted that every one knew this to be one of the ultimate objects of the Association, laid down in the inaugural address by Mr. Thomas Bedding. Further, I believe it is generally known that the Association, and especially Mr. Lang Sims, has devoted much thought and time to solving some of the undoubted difficulties in the way of managing a fund that shall work satisfactorily. My own effort was merely to re-awaken the interest; and if there was any new suggestion from me, it was in the idea (which I here and now slightly amplify) of a joint committee. I know (from painful experience) the troubles of the old "Benevolent," and something of the difficulties of the P.P.A., and those which faced the Royal, when it was asked to take over the work, and suggest that many of these difficulties could be overcome if the Councils of the P.P.A. and the Royal would each undertake to nominate six persons each year to serve as members of a "benevolent" committee, which should be strengthened by (say) six other members elected annually by subscribers to the funds. In this way we should get some assurance of a permanent committee which would command the respect of every section of photographers.

Since re-raising the subject I have had most encouraging letters from important firms of manufacturers and dealers, and from gentlemen of the highest standing in connection with photography, promising generous support if they can be assured that those for whom the benefits are mainly intended (the professionals) take a real interest in the matter and are prepared to do their part. Of this I think there can be little doubt, if the few professionals who have written me upon the subject are at all fairly representative of the opinions of the craft.

The P.P.A. has shown its practical interest by arranging to devote almost the whole of its meeting on October 21 to the discussion of this subject. At the invitation of the Secretary I hope to lay before the members some interesting particulars of the work (and difficulties) of the old "Benevolent," and if only a hundred professionals will follow the lead of Mr. Frank Watson by writing to you or to the P.P.A. to promise even a small amount of regular support a new "Benevolent" will be undoubtedly started, and on sound lines.

It is truly heartrending to know some of the cases of genuine distress, and at the same time to know that considerable funds are available if only an organisation can be formed to collect and properly administer them. The support of the professional is the one thing needful, and I cannot believe that his attitude will long continue to be that which was put into words by one of the craft: "Let the beggars go to the workhouse." There are some disgraces to the profession for whom even the workhouse seems too good; but—there are some honest, anxious strugglers who should never be allowed to drift to that haven.

Whether the problem shall be hopefully, helpfully tackled this winter, or shelved for at least some years will probably depend upon the action of your readers between this date and that of the next meeting of the P.P.A. Is it too much to ask them to write a note and promise a small subscription?—Yours faithfully,

H. SNOWDEN WARD.

Hadlow, Kent, October 7, 1904.

[Our comments on Mr. Watson's letter were designed not for the purpose of disputing the originality of Mr. Ward's suggestion, but to remind the former gentleman and professional photographers generally that the machinery for the administration of a Benevolent Fund—if such can be formed—had been in existence for over

three years. While on the subject we may say that we find ourselves unable to endorse the idea that the co-operation of the Royal Photographic Society should be sought in the matter. The R.P.S. has already on hand more work than it can get through with efficiency and expedition; and, besides, does not, in our opinion, exist for the purpose of promoting benevolence. Moreover, joint committees selected from bodies having no real community of interest rarely work well together. At the risk of being charged with undue reiteration, we must again urge—as we have urged before—that the initial action in the establishment of a Benevolent Fund should come from professional photographers themselves through the representative body, the P.P.A. Finally we ask, as we asked September 2: "Who will come forward to help?"—Ems. B.J.P.]

To the Editors.

Gentlemen,—Not long ago it was the practice of some of our monthly magazines to give us such information as: So many pieces of lump sugar placed end to end would reach Australia; or, so many boxes of lucifer matches put one on the other would reach the moon. This seemed very wonderful, but was really a very simple calculation, easy to make, and not difficult to verify, on paper.

In some such arithmetical frame of mind Mr. Frank Watson, Brighton, in your last number, has calculated that if the members of the Professional Photographers' Association, 500 strong, subscribed 5s. each, it would produce £125 per annum; and further, if the same number paid 6d. per week it would realise £650 per annum. So far so good. Mr. Watson is presumably a member of the Association, but probably he has not had much experience in collecting annual subscriptions, and I am afraid he knows little of the circumstances or inclinations of the average professional photographer.

There is an old story about a little girl who while at school had this question put to her: "If I lent your father £100 at Christmas, and he were to repay me at the rate of £25 every three months, how much would he owe me in July?" The pupil answered promptly: "£100." "No, no," said the teacher, "you evidently do not understand my question." "Oh, yes, I do, miss; but you don't know my father."—Yours truly,

London, October 10, 1904.

To the Editors.

Gentlemen,—Referring to Mr. Watson's letter in the "B.J.P." of last week, I should like to make a practical suggestion which would, I think, materially help the members in discussing the Benevolent scheme at their meeting on the 21st inst.

Let those members willing to subscribe 5s. a year, and 6d. per week (as proposed by Mr. Watson) or any other sum, to a Benevolent Fund, kindly communicate the fact to the Hon. Sec., P.P.A., 21 Baker Street, London, W., before the date of the above meeting.

Thanking you in anticipation I remain, dear sirs, yours truly,

F. A. BRIDGE.

Dalston, October 8, 1904.

SHANGHAI AMATEUR PHOTOGRAPHIC SOCIETY.

To the Editors.

Gentlemen,—Arrangements are now being made for the annual Photographic Exhibition in connection with the above society, to be held about the end of this or beginning of next year. It is proposed to devote one section to the interests of photographic manufacture and dealers, and makers are invited to send samples, specimens of work done with their product, catalogues, and anything likely to be of interest, and at the same time advertise their goods.

The exhibition will be held in one of the largest buildings here, and one particularly suited to the purpose. Ample room will be available for the proper display of all exhibits. We hope to be able to pass all exhibits received in this section to exhibitions held by other societies in China and Japan, but this is only in the case of those following our date. We may mention that the exhibitions of this society have become one of the most popular events of the year here, and are visited by large numbers, people not only resident, but tourists and others passing through, of which there are always a large number. While making no charge of any kind for space, we cannot bear more than local expenses. We think that the small cost to makers of sending out here will be a good investment as an advertisement.

ment of their goods. Exhibits should be addressed to the under-
signed, and reach here as early in December as possible.—Yours
J. HERVEY LONGHURST, Hon. Secretary.
Shanghai, September 1, 1904.

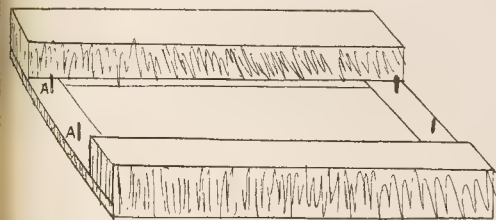
PRINTING TINTED BORDERS ROUND P.O.P. OR BROMIDE PRINTS.

To the Editors.

Gentlemen,—I tried some months ago a method described in one
of the photographic magazines of printing borders, and do not find
it so easy and accurate as my own method, which I venture to
submit that you may test it if you think it likely to be of any use
to others.

It is necessary to use a printing frame with open ends, i.e., flush
with the rebate on which the glass rests.

The foundation of the method is the guide card for cutting the
masks, and I make it as follows: Cut a piece of good stout white
mounting card to fit the printing frame easily but closely, with a
piece extending to the edge of the frame at one end to take the
guide pins A.A. (see diagram); place the card in the frame drive
two stout pins through the projecting end well into the end bar of
the frame, and cut off sufficient to leave about half an inch project-
ing. Before removing the card from the frame make a line round it
with the front close to the frame, draw central lines horizontally and
vertically from which to lay off lines marking the sizes of masks
you intend to use, and at the corner of each puncture the card
with a pin. We are now ready for cutting the masks. Take as
many pieces of stout paper as you will require for the style of
order you wish to print, place them one upon another with the
guide card on top, and cut them accurately to size of card, taking



care they do not shift from their position; pierce them through
each corner hole in the guide card at the size selected and through
the guide pin-holes. The holes pierced in the pieces of paper will
mark where lines are to be drawn for cutting the masks. You will
now find that you have masks which can be removed and replaced
exactly in their original position.

To enable the printing paper to be taken out and replaced in
register, cut a strip of card of the width of the other end bar of
the frame, place it in position, drive two pins through it into the
end bar and cut off to the same length as the guide pins A.A. Now
place the printing paper on the clear glass in the frame, spread
some Higgins' mountant on a strip of paper, press it down on the
printing paper and strip of card to hold the two together. The
mountant will dry in a minute or two without any damp striking
through the paper.

Take the mask cut to the size the picture is to be printed, place
it on the guide pins, and with a little mountant attach the central
portion to the clear glass to hold it in position for protecting the
centre of the paper while the border is being printed. When you
have printed the borders place another piece of clear glass in the
frame, adjust the outer mask, then the negative, and finally the
printing paper with guide card attached by means of the pins at
the other end of the frame.

I can cut a guide card and masks in much less time than it takes
to describe the method.—Yours faithfully,
October 6, 1904. M. G.

NOTHING LIKE BUTTONS.

To the Editors.

Gentlemen,—Your correspondent's reference to sweating and
decreasing salaries, under the heading "Nothing Like Buttons,"
must have made many assistants smile who have had the honour of

working there (Liverpool) during the last twenty years, and they
could be counted by hundreds. Truly, when the Devil is ill the
Devil a saint will be. Higher prices are being obtained to-day in
this city for cabinet photos than was the case fifteen years ago.
With regard to profit, when you see the mushroom men who do three
retouched cabinets for 2s. 6d. and twelve promenades for 10s. 6d.
smoking big cigars and driving their motor-car one is inclined to
think that there is some profit in photography yet.—Yours truly,
Liverpool, Oct. 10, 1904. ARGUS.

[We are glad to hear that photography in Liverpool is so prosperous
as our correspondent makes out, but we think he might have stated
his case without the introduction of veiled personality.—Eps. B.J.P.]

SOME PECULIARITIES OF DYES WHICH PRODUCE TOTAL SPECTRUM SENSITIVENESS.

To the Editors.

Gentlemen,—Mr. Thorne Baker's article under the above title
is open to a good deal of criticism.

In the first place new patent blue was first tested as a sensitiser
by Valenta (P. Corr., 1897, pp. 129, 185). The same author also
states (P. Corr., 1900, p. 99) that woolblack 4 B gives a broad band
of sensitising action from A to D, and with long exposure a second
indistinct band from D $\frac{1}{2}$ E to beyond E, therefore this rather
knocks the bottom out of Mr. Baker's theory, as the yellowish
green is included in the region from D $\frac{1}{2}$ E to E.

I have already drawn attention to the fact that this dye was
practically used by Dr. Eder's Institute in three-colour work.

With regard to Titan-scarlet, one can only assume that he refers
to Titan-scarlet S, which was also tested first by Valenta (P. Corr.,
1901, pp. 231, 490), there being four varieties of this dye. Mr.
Baker makes this an exception to his theory. As the absorption
of this dye is in strong solution from C $\frac{1}{2}$ D to H, and as it sensitises
for the same region, the exception hardly holds.

I am not quite clear as to the exact meaning of the first sen-
tence in his article at the top of the first column on p. 868, but if
he means that a fluorescent dye does not exert a screening action
he is quite wrong, as one has only to add enough of any of the
fluorescent eosine group to obtain a strong screening effect.

Mr. Baker also states that new patent blue forms "a 'screen'
through which all rays but yellow-green pass, hence these are the
rays to which the plate is least sensitive." I presume he used this
dye, like the other two, in a solution of 1:100,000. Unfortunately
for him Dr. Eder ("Spectralanalytische Studien über Photo-
graphischen Dreifarbendruck," 1902, pp. 20, 21, and 22) gives the
absorption of this dye for the spectrum, and determines it for every
four wave lengths, and when used in a cell of the same internal
thickness as Mr. Baker's, but with a strength of solution of
4:100,000, that is, four times as strong, he shows that the total
absorption extends from λ 635 to λ 596, or from nearly C to D, the
whole of the yellow and yellow-green being transmitted, though
weakened; but the very region where there is total absorption is
the region where the strongest sensitising action of the dye exists.

Again, in 1884 Dr. Eder pointed out that the maximum of sensi-
tising action of an eosine-dyed film differed only by 16–20 μ from
the maximum absorption of a sheet of gelatine stained with
eosine.

Further, it would be interesting if Mr. Baker would explain on
the ground of his hypothesis the action of orthochrom T, which
shows two absorption bands with maxima at about λ 560– λ 573
and λ 520– λ 525, yet this gives three maxima at λ 589, 527, and
480 with a short exposure, but with a little longer exposure a closed
band from C to "little h." Would it be possible to explain the
action of nitrosodimethylaniline which in a strength of 1:7,500 shows
a strong absorption from F to K, but sensitises from D $\frac{1}{2}$ E to
about N?

Surely what applies to the less refrangible rays should be applic-
able, if a law, to the more refrangible; but if both ends of the spec-
trum are considered, Mr. Baker's law is the exception and the excep-
tion the law.—Yours faithfully,
Foot's Cray, October 8, 1904. E. J. WALL, F.R.P.S.

HALF HOLIDAYS FOR ASSISTANTS.

To the Editors.

Gentlemen,—I should be greatly obliged if you would let me know
if the following matter is correct. I have been informed that by a

new Act, from New Year, "employees are entitled to leave work at two o'clock on one day a week." Does this apply to photographic assistants? I inquire on behalf of fellow-assistants (and self) who are employed in photographer's workroom where the hours are from 9.30 to 7.30 the entire week, thus such an alteration would be highly appreciated, if permissible, without loss of salary.—Yours most respectfully,
E. LACEY.

Filmer Road, Fulham, S.W., Oct. 10, 1904.

[We are unaware of any Act of Parliament which seeks specifically to regulate the hours of labour of photographic assistants. Will some legal reader enlighten our correspondent on the point?—Eds. B.J.P.]

THE ART OF DISCOUNTING THE HANDICAP OF THE CAMERA.

To the Editors.

Gentlemen,—A visit to the Photographic Salon must have set many longing to be able to produce such masterpieces of beauty as adorn its walls, which proclaim so convincingly that, despite a camera, a man—more especially an American—can yet be a true artist. It is, therefore, the writer's desire to satisfy those longings by imparting some instruction which shall disclose the secrets of genuine photographic art as secured by triumphing over the limitations imposed by the camera. Those who, before trying to produce a "Salonograph"—to coin, as a deserved mark of distinction, a distinctive term—have used a camera, etc., in the ordinary way will be more handicapped than the absolute tyro who has never before attempted photographic work. This is so because, in order to attain to any excellence in Salonographs, it is absolutely necessary to unlearn all that has been previously learnt of that bastard photography which has also done duty so long for the genuine article only lately brought to light by the Salon. It cannot be too frequently insisted that slavish technicalities have *nothing whatever* to do with the successful production of Salonographs, which, as art pure and simple from beginning to end, are far above any such galling restriction, and have no more in common with ordinary photography than night has with day. Consequent upon this, it follows that, in order to produce real pictures, it is of little moment what sort of camera one uses so long as it fairly fulfils the offices of what is ordinarily accepted as a camera, and is not too light-leaky. As regards a lens, the Salon artist knows better than to waste his money on lenses which are merely optical combinations made to the absurd formulæ of opticians. On the contrary, he will make a point of purchasing some lens which a mere optician, unversed in the requirements of an artist, is pleased to term "defective"; for, the more defective an optician deems a lens, the more effective will a Salonographer consider it. A lens distinguished for "flare spot," or chromatic or any other aberration, can be heartily recommended as capable of producing truly wonderful results, for the flare spot will always come in very effectively as the sun or moon. Having satisfactorily selected so much apparatus, there is now the subject to seek, which should be what ordinary people, in their ignorance, would term "ugly," or "devoid of interest," or "meaningless." If the artist lean to landscape, very successful ones may be secured by selecting one commonly (but, of course, erroneously) accepted as "beautiful," and then setting up the camera behind something—preferably tree-trunks—which will wholly obscure the scene, and photograph these latter. If figure studies are preferred, of course the great thing is to break away from conventional treatment. Whereas the ordinary soulless portraitist points his lens at the face of the subject, the Salonographer will make his portrait study of the back of the head. In all cases the golden rule to be observed is to avoid falling into the fatal mistakes made by the absurdly-termed Old "Masters." The Salonographer has nothing to learn from their works, and anything termed "good imposition" or "art rules" should be as much shunned as one shuns the pages of the *BRITISH JOURNAL OF PHOTOGRAPHY* itself. As regards the question of plates, since these must be used, the staler they are the better will be the Salonograph. There is nothing like buying up all the oldest plates obtainable—in fact, they should be advertised for—and it need not be remarked, since make and speed are of no concern to art photographers, that it is a matter of no moment what may be their description. "Stale" plates, as they are amusingly called, are just ripe for Salonographs, as they develop

a variety of pleasing spots and striking markings, which inevitably enhance the art value of anything taken on them. Focussing is unnecessary operation which may be wholly ignored, while in matter of exposure the artist will please himself how much he gives as it is of really no consequence how long the plate receives, though possibly too long is preferable for Salonographs of the best. Development follows exposure, but need not exercise the artist greatly, always supposing he refuses to put into practice the absurd mechanical theories compounded by the mere chemist. The plate can be developed in anything that can be had to hold it, and, being stale, is best treated with some stale developer—it is immaterial what it is composed. The Salonographer simply dashes on developer, and, when he thinks the plate ought to be developed, replaces the developer with fixing solution. It need hardly be marked, especially with water at its present price, that washings superfluities which need waste neither time nor water. When the plate is thought to be fixed it should be dried without further bother, and then will be ready for printing—the only process wholly satisfactory to the artist, since his individuality and his genius are not hampered by any tiresome mechanical restraints. Any grainer will supply some of that white paper in which he wraps his bisulphur sugar, and this is prepared for printing with a mixture of glue and soot sensitised. Next a piece is torn to size (for it goes without saying no artist would demean his art by employing scissors), and this the print is made. In the development of these beautiful grainer soot prints the great aim of the Salonographer is to remove, with a nice bristly brush, all traces of any photographic action. Obviously it is in this operation that one's art is proclaimed, and, exercising this great gift, a beautiful picture will result. Naturally, the print will be so pleased with his work that he will desire to exhibit it. This is a simple matter. Any piece of paper nearest to hand will serve as a mount, to which the print, with its charmingly irregular edges, can be affixed with any sticky substance. The print, ready for mounting, is let fall on the print, and wherever it falls it may be rubbed down, as commonplace mounting must be avoided at all costs. As regards the proportionate size of mounts to prints, a size of paper 18 in. by 10 in. will suffice for a picture 2½ in. by 3 in. The finished picture should be framed in some plain wooden box which will just hold the glass and no more. The finishing touch will include the pricing and titling. An excellent way to find a suitable title is to open some book—any book will do—haphazardly and settle on the first few words which meet the eye. As to pricing, all the trouble and art the Salonographer will have expended on his work makes his effort valuable, and he should be careful not to undervalue his productions. Ten pounds is a moderate sum for an Englishman to ask, but if the author be so fortunate as to be an American he will ask at least £15 15s. One must confess to Americans seem to make much more successful artists than Englishmen. This is evident from the selections made by the only competent photographic art tribunal in England. However, there is no saying what success might not be achieved by any Englishman who, anxious for the recognition of his toils, assumed an unmistakably American *nom de plume*. Those whose works so far have proved unacceptable to the Salon are advised to let their art in the future include this simple experiment.—I am, yours, etc.,

Oct. 10, 1904.

A COMPETENT ARTIST.

[Our correspondent is a successful exhibitor of what may be termed (in contradistinction to the productions which she—the writer—lady—criticises) straightforward technical photographs.—Eds. B.J.P.]

"THE SAME OLD STORY."

To the Editors.

Gentlemen,—Under this heading you drew attention last week a paragraph in the "Daily Express," from its Berlin correspondent on a new process of "coloured photography." The association of Dr. Koenig's name with the invention caused us some surprise, for its palpable absurdity made us nail the story to the counter as should a counterfeit coin. We are now able to publish a description of Dr. Koenig's process as it is given in the "Photographische Wochenblatt," and it will enable the photographer to form some definite idea of the invention from the practical point of view instead of the fanciful one of the "Daily Express."

Dr. Koenig, of the photographic department of the dye-works formerly known as Meister Lucius and Brüning, Höchst-on-Main, read a paper at the Meeting of Naturalists, held this year at Breslau, on his positive printing process of photography in three colours with leuco bases, which he calls "Pinachromy." It is assumed that you have three negatives, one for each of the colours blue, red, and yellow. For carrying out the positive process a suitable baryta paper is selected and coated with blue collodion, that is to say, a collodion in which a leuco basis is dissolved, which upon exposure to light gives a blue image. Paper coated thus, after drying in the dark, is exposed under the blue negative and then fixed by immersion in a bath of monochloroacetic acid for six or eight minutes. After it has been washed for ten minutes the picture is dipped in chromated gelatine and dried, the object being to separate the blue film from those above it. The picture, when dry, is coated with red collodion, repried, and printed under the red negative, which of course has been obtained with a green filter. Care must be taken that the prints are in register. The printing should be done in sunlight, if possible, and when exposed sufficiently the picture should be fixed and isolated as before. The same is done for the yellow image by coating with yellow collodion and printing under the negative obtained with the blue filter. The colour-print is then varnished.

At the conclusion of this description the Editor of the "Photographisches Wochenblatt" adds: "The account of this process given in the daily Press is very misleading to the public, especially regarding the price of the pictures made in this way. When it is said that the cost is little more than that of ordinary photographs, the public is led to believe that these pictures must be equally cheap. But this can only apply to the material. Yet the chief cost of a photograph is not that of the material, but the work expended upon it, and if a photographer has to produce three negatives and three prints of any object it is evident that the price of the finished picture must be at least three times that of an ordinary print from one negative. It must also be remembered that the process has its dark side in the fact that the three negatives cannot be combined in advance to ascertain their colour effect. Some small oversight may render the whole useless. Such statements do incalculable damage to the advancement of colour photography.—I am, yours, etc.,

PINACHROME.

October 10, 1904.
[An article on this subject by Mr. E. J. Wall appears elsewhere in the present number of the Journal.—Eds. B.J.P.]

SELLING OLD NEGATIVES.

To the Editors.

Gentlemen,—We notice that in last week's Journal that "E. S." wants to sell old negatives, and you could not tell him of a purchaser. We sell ours to Mr. Charles Bowen, 58, Grove Road, Holloway, N.—Yours truly,

H. DIXON AND SON.

112, Albany Street, London, N.W.

October 7, 1904.

THE RIGHT OF REPRODUCTION.

To the Editors.

Gentlemen,—"The Torquay Times" Photographic Competition closed on September 7. The result was declared on October 7, and the prize of £2 2s. has been awarded to a gentleman who submitted eighteen views with right of reproduction! No wonder that professional photography is in a bad plight.—Yours truly,

JOHN ROBERTS.

Torquay, October 10, 1904.

TANQUEREY IN CEYLON.

To the Editors.

Gentlemen,—By enclosed you will see that the Tanqueray portrait swindle is being introduced further afield, their operations in England being by now played out, I suppose. I wish you will write a small history about these swindlers in your next issue, and I will get all the Ceylon newspapers to take it over and so prevent the half-educated people of Ceylon from being swindled by these people.—Yours faithfully

A. W. ANDREE.

Hopetoun Studio, Colombo, September 22, 1904.

[The enclosure is one of the all too familiar circulars adapted for Indian perusal. Our advice to the people of Ceylon who are asked to patronise Mr. Tanqueray is: "Don't."—Eds. B.J.P.]

Answers to Correspondents.

* * All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.

* * Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.

* * Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.

* * For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

W. Dickinson, 4, Benson Street, Ulverston, Lancashire. Photograph of Holy Trinity Church, Ulverston. Photograph of the Operatic Theatre, Cottage Hospital, Ulverston.

D. Johnstone, 73, Wilmslow Road, Rusholme, Manchester. Two Photographs of St. Chrysostom's Church, Victoria Park, Rusholme, Manchester.

J. Taylor, 31, Carrick Street, Byker, Newcastle-on-Tyne. Photograph of Lord Charles Beresford Starting Football Match.

T. W. O'Haurahan, Parliament Street, Kilkenny. Two Photographs of Groups of Fels, Kilkenny.

J. Burton & Sons, 39, Loughborough Road, Leicester. Two Photographs of G. Van Felsold, M.A.

E. Fenske, 19, St. John's Hill, London, S.W. Photograph of Wandsworth Prison.

W. Knowles, 7, Hainworth Road, Woodhouse, Keighley. Photograph of First Electric Car at Ingrow.

C. H. Smith, 21, Avenue Road, Fordsbury, Transvaal. Photograph of the Bishop of Pretoria, Missioners, and Clergy of the Witwatersrand. Photograph of the Rev. C. J. Abraham, M.A.

H. H. Wring, 50, Railway Road Leigh, Lancashire. Two Photographs of Mr. W. E. Marsh, J.P.

OPERATOR.—Your ideas, however excellent in foundation, are so vaguely expressed that the publication of your letter would not advance the cause you have at heart.

FOGGED PLATES.—P. H. HILSON asks: "Could you tell me how I can recover a fogged plate which has been developed, fixed, and washed? Is the formula that you give in the 'Year Book' suitable for this purpose?" In reply: You might try it, but we are afraid you will not be very successful if the negative is badly fogged.

MINIATURES.—P. C. JACOB says: "I want to do some miniature tinting. Would you tell me whether I can procure the porcelain all ready sensitised, if so, kindly give address of firm?" In reply: We think that sensitive opal plates are not now made. Most miniatures on opal are now printed by the carbon process.

OPINION WANTED.—"MA CHERE" says: "I should be extremely obliged if you would kindly pass your opinion on the enclosed retouching, also what wage the same is worth." In reply: The work is tolerably good. With the present over-stocked labour market we can give no opinion as to what wages such work would command. Many ladies who do similar work would be glad of employment at 25s. a week, or less.

TONING BROMIDES.—T. CHARLES says: "The enclosed little print was sent me by a friend. I am an enthusiast as far as photography is concerned, and do a good deal of bromide printing. This print appears to me to be a bromide, toned. Could you tell me how this tone is obtained?" In reply: "Similar tones may be obtained on bromide paper by employing the hypo-alum bath—hyposulphite of soda, 9 oz.; alum, 1 oz.; water, 100 oz. Use at a temperature of from 110 deg. to 120 deg. Fahr.

INCANDESCENT LAMP.—H. FRANKTON says: "In the BRITISH JOURNAL OF PHOTOGRAPHY for March 11, 1904, you have a short article on a new incandescent lamp, the invention of Professor Drehschmidt. Could you inform me whether this lamp has been put on the market, and if so, where I could obtain full particulars about it?" In reply: So far as we are aware, the light has not been put upon the English market. There is the Kitson light, however, which is similar in principle.

COLOUR PHOTOGRAPHY.—"COLOUR PHOTO" says: "At the Royal Photo Exhibition are shown some colour photos by Davidson's process; they seem to be taken instantaneously. Can you tell me how this apparatus is constructed, and where I can buy one?" In reply: If you write to the exhibitor, he will, perhaps, be good enough to tell you where the apparatus may be obtained. His address, we see from the catalogue, is 105, Hythe Road, Brighton.

LENS QUERY.—"CARLISLE" says: "I have a lens marked as enclosed. It seems to be a triple lens, and can, I believe, be altered to several lengths focus. Can you tell me what sort of a lens it is, or give any information about it? I have seen thousands of lenses, but never one like this." In reply: This is an old lens that was introduced many years ago. The complete instrument is a portrait combination with two supplementary lenses, one to shorten and the other to lengthen the focus, when placed in the centre of the tube. This form is not, we think, made now.

STUDIO BLINDS.—BLINDS says: "We are thinking of altering the blinds in our studio, at present practically black, and replace by unbleached calico or white muslin. We notice in 'Bigeow's Album on Lighting and Posing' he recommends the latter, but could one get Rembrandt or strong-lighted effects with these? We think not; also the light will be difficult to control with such thin material, we should think. Before altering, we shall be glad of your opinion." In reply: All will depend upon the aspect of the studio, which is not stated. We should doubt, however, if strong-lighted effects could be got with muslin blinds in a strongly-lighted studio, whatever its aspect.

SPOTTY PRINTS.—T. P. M. writes: "Enclosed are two prints on — P.O.P., matt and glossy. You will see that some are covered with spots. I have tried everything to avoid this, but with no success. I may say that the spots show after the prints have been in the last washing water (for about thirty minutes) after the fixing. Do you think it is something in the water? I may also add that a few of the prints out of the same batch are quite free of this defect." In reply: From what you say we should suspect the water. Probably the spots are due to particles of iron rust in it. Try using water from another source if possible, that might settle the question.

LENS QUERY.—"PROJECTION" says: "(1) I have a cabinet portrait lens of 6 in. focus, and also a 6 in. Anastigmat lens. Will you kindly say which would be best adapted to the projection of lantern slides, used in conjunction with an ordinary 4 in. or 4½ in. condenser? (2) Also, has the portrait lens any advantage over an Anastigmat of equal focus for enlarging with or without a condenser?" In reply: (1) Much will depend upon the qualities of the lenses. The portrait lens will give the more brilliant image on the screen. (2) The only advantage the portrait lens has, is its greater rapidity, but the Anastigmat having a flat field will perhaps cover the plate better.

COLLOTYPE PRINTING.—"COLLO" (Leeds) writes: "(1) In your note on Mr. W. T. Wilkinson's lecture on plate-making, reported in your issue of Friday, September 23, he says that after experimenting he found it advisable to use a solution of dextrine. Can you give me the quantities of silicate and dextrine that Mr. Wilkinson advises? (2) What is the best, most practical, and most up-to-date book on colotype printing (both for plate-making and also machine work), and also where I shall be able to obtain it and the price?" In reply: (1) No proportions were given in the report supplied to us, so that we cannot answer this query. (2) "Practical Colotype," by A. W. Fithian; it may be had through any of the dealers; its price is, we think, half-a-crown.

BACKGROUNDS.—"E. J. P." says: "(1) I have just finished painting a background in distemper, and since it has dried, I find with rolling it up and down the work comes off in flakes. I used plenty of size in the work, and cannot understand why this should be. Would you recommend me to touch up the faulty places, and then give the whole a coat of size, or should you advise me to do the whole thing again with a proper back-

ground distemper? (2) Could you kindly give me a recipe of good background distemper, such as is usually employed by artists with this work?" In reply: (1) We strongly suspect that you have used too much size in the distemper, or that you did not size the canvas before applying it. We should advise you to do the whole thing again. (2) The backgrounds done by artists are usually in flatted oil.

STAINED PRINTS.—T. C. GODDARD says: "1. Please find enclosed a few prints which I am sending you for your opinion, please. The P.O.P. print is one out of a batch which has got stained after leaving the toning bath. The fixing was quite fresh, but had fixed a few artists' matt prints before the P.O.P. I should be glad if you would kindly let me know what you think has caused the stain, as it often occurs. The prints are thoroughly washed. 2. I also enclose some prints of negatives that I have tried to retouch, and I should be glad of your opinion of them. I may say that they are practically the first negatives I have retouched." In reply: 1. The cause of the stains is carelessness. The prints were not kept moving while they were in the fixing bath—they were allowed to stick together. 2. Very indifferent. We should advise you to get a little instruction in the work.

RESIDUES.—G. H. THAIN writes as follows: "I shall esteem it as a great favour if you will answer the following questions:—(1) Is it really worth keeping the washings from P.O.P. papers? A friend of mine, a photographer, kept his for a year throwing silver down with salt, he kept it very clean and sent it to his dealer, who forwarded it to Messrs. —, and he got a letter back saying there was nothing in it, and he got nothing for it. (2) What is the cheapest chemical for throwing down silver from hypo which has fixed plates, and how does it work? (3) Would it do to throw down silver from P.O.P.? (4) Is it really worth keeping hypo that has fixed plates?" In reply: (1) Unless you use a good quantity of paper the washings are scarcely worth saving at the present price of silver. (2) Sulphide of potassium (liver of sulphur); make a solution of it and add to the hypo solution, and the silver will be precipitated as a sulphide. (3) Yes. (4) Yes, if a large quantity of plates are used.

New Book.

"Photographische Bibliothek."—"Stereoscopie für Amateur-Photographien," second edition, by C. E. Bergling; "Das Photographieren mit Filmen," by Dr. E. Holm; "Anleitung zur Stereoscopie," by Dr. W. Scheffer. Verlag von Gustav Schmidt, Berlin.

We have received these three volumes of the "Photographische Bibliothek," published by Gustav Schmidt, of Berlin. The first and last deal with the theory and practice of stereoscopic photography. The volume by Dr. E. Holm relates to photography with films. We can confidently recommend them to our readers.

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EX CATHEDRA.

Meeting of the Affiliated Societies. The "Red Book" meeting of members of the societies affiliated to the Royal Photographic Society, at the New Gallery, Regent Street, on Friday last, October 14, can be marked down as a red-letter event in the annals of the organisation. Not only was the function—mainly the outcome of an endeavour on the part of the Executive Committee to foster friendly relations between the affiliated societies—highly successful in every way, but the astonishing number of delegates present during the evening, when the general public were not admitted; the enthusiasm with which they greeted the remarks of the chairman, Mr. C. H. Oakden, who briefly recounted the history of the "gathering of the clans," and the benefits and ambitions, immediate and prospective, of the affiliation; the friendly rivalry apparent during the exhibition of the competition slides sent in by societies in all parts of the kingdom, nearly all of whom had representatives present; and the fraternising that followed, point conclusively, not only to the keen interest taken in the present welfare of the parent society and its Annual Exhibition, but also to the healthy state of British photographic societies generally, the most important of which now owe allegiance to the R.P.S., and are able to tender their members the advantages offered by the affiliation. We hope the note of progress sounded so definitely on Friday night will find a robust echo during the ensuing winter. Signs of renewed activity amongst the societies near and far are not wanting, if we may judge from the programmes and lists of fixtures that reach us daily, and we see no reason why this meeting, having proved such a signal success, should not be the precursor of many similar gatherings that may *inter alia* help in a measure to solve the problem of providing, according to his own estimation, an adequate guinea's worth for the "country member" of the Royal Photographic Society.

* * *

More Rays.

It might be thought that discovery in the direction of obscure rays would be resting awhile; but still another set of rays is claimed to have been discovered by M. di Brazza, a student of Liège. Their results have been rendered visible to the outsider by the employment of orthochromatic plates. Professor Charpentier, of Nancy, had surmised that the brain is the seat of the emission of the N-rays, and M. di Brazza thinks he has proved it, and that his rays called I-rays differ from N-rays by being able to pass through moist substances. When an experimenter concentrates his will the I-rays from his brain cause changes of luminosity in a phosphorescent tablet. When his attention is not concentrated the light does not flicker. The rays are not emitted equally from every part of the head. They are nil at the forehead

B

* * The frontispiece of the ALMANAC will consist of a portrait study specially taken by Mr. Furley Lewis (medallist of the Royal Photographic Society's Exhibition, 1903).

and upper part of Brocas centre, increase at the temples and eyes, and reach the maximum behind the ears. A question of profound importance is hereby raised. If it be possible to produce a visible physical effect on objects external to an experimenter or operator, what ground is left to stand on by those who object to the idea that one person's mind is capable of influencing that of another without the ordinary senses of touch, hearing, seeing, etc., being brought into play? If M. di Brazza can bring his orthochromatic plate results into the court of science, and win a verdict in favour of I-rays, a most momentous epoch will have been initiated.

* * *

Hydroquinone Hydroquinone, which is manufactured in Living Plants, by the synthetic method of treating aniline with sulphuric acid and potassium bichromate, has been discovered by two French chemists to be a constituent of living plants. MM. G. Riviere and G. Bailhache point out that the ignition of certain vegetable matters or the distillation of certain extracts such as those of ivy or common ash, gives rise to hydroquinone, but they have found that the buds of the pear tree yield the substance in considerable quantities, without the aid of processes which may give rise to the formation of hydroquinone from simpler compounds. They extract the buds with 9 per cent. alcohol in the cold for several days. This extract, which is strongly green, they evaporate to a syrupy consistency and dilute with boiling water and filter. Part of the chlorophyll and the whole of the resinous matters are thus removed. The fluid extract which remains is shaken with ether at intervals during forty-eight hours; on evaporation, impure, coloured crystals of hydroquinone are left. They are purified by treatment with a little recently precipitated lead oxide, the lead removed with sulphuretted hydrogen and the filtrate evaporated and crystallised. The hydroquinone thus obtained can be still further purified by sublimation. Each kilo of buds yields three to five grams of hydroquinone, so that the process does not threaten to compete with the present methods of manufacture. The hydroquinone is most abundant in the pear buds during the period of most active vegetation, decreasing as summer advances.

* * *

Clouds. It often happens that the landscape photographer is confronted by such weather conditions that, while ordinary work is hopeless, he gets many opportunities of securing fine cloud effects. And, as we all know, negatives of clouds are extremely useful for combination printing—so useful, indeed, that such negatives in great variety can be purchased of the dealers. It is, of course, far better to be dependent upon individual effort in this matter, for it might so happen that two pictures with the same firmament over each might come into unpleasant competition. Although nearly every photographer who has had opportunity of doing much outdoor work will have accumulated a store of such negatives, we venture to suggest that not one in a hundred will have made any attempt to classify them. Apart from the needs of ordinary business, the photographer would find great interest in doing so. In the old text-books we find that clouds are classified into the four divisions suggested a century ago by Luke Howard, and most persons can recognise at a glance the particular division to which a cloud picture belongs—whether it be *Cirrus*, *Cumulus*, *Nimbus*, or *Stratus*. Such a simple form of classification, however, has not been found to entirely meet the requirements of modern meteorological science, especially since so much attention has been devoted to weather forecasting, for the prophet still relies in some measure, as of old, on

the aspect of cloudland for his prognostications. Howard's classification held good until 1891, when, at the International Conference held at Munich, a new one was proposed. This had already been foreshadowed in the cloud atlas of Hildebrandsson. Three years later another conference was held, and a very large assortment of cloud photographs from all regions of the earth were carefully considered, and two years afterwards another edition of the cloud atlas recorded the decision arrived at. The photographer, therefore, who would wish to give a scientific value to his cloud negatives, should obtain prints from them and compare them with the typical pictures in the atlas, and he will find little difficulty in giving to each a correct title. He will quickly note that there are recognised in this atlas a number of compound forms of cloud with such titles as *Cirro-Cumulus*, *Strato-Cumulus*, *Alto-Stratus*, and the like, and that more than one example is given of each kind. It is when we come to consider clouds of the *Nimbus* kind that difficulty is likely to arise, for the *Nimbus* is essentially a rain-bearing cloud, and many other clouds parody it without being of wetting nature. It is therefore as well, in taking photographs of clouds, if we want them for anything besides a pictorial use, to make a note with regard to the weather which prevails at the time. Some of the high clouds, the *Cirrus* type, are so gossamer-like that they are exceedingly difficult to secure without a colour screen. Even in this excellent atlas some of these clouds are represented by drawings, not photographs.

* * *

Telephones and Speaking Tubes.

In a well-arranged studio, where some considerable amount of business is done, arrangements for message sending in various departments are a necessity. The mind travels unconsciously to the telephone when planning such conveniences, so universal is its employment; but there is really no necessity for deeming this the only possible means. In the pre-telephone days "speaking-tubes" were in vogue, the earliest type being simply pipes of gutta-percha. But as even then the substance was costly, in many places of business tubes of tin supplied its place efficiently, till eventually ordinary composition gas-pipe was found as efficient, besides being cheap, convenient, and easily fitted. Some ingenious photographers have adopted in their printing department a reminiscence of school days, when a means of communication from dormitory to dormitory was arranged by knocking the bottom out of a jam jar, putting a string with knotted end through the stretched bladder at the top, doing this with a second jar, and pulling the string taut. A conversation between distant dormitories could be easily carried on by speaking into one jar and listening at the other. Indeed, a company was formed for working a system on similar lines on a large scale, and we know of one large mansion where, at any rate a few years ago only, such an arrangement was in working order. The string was replaced by wire, and the bladder membranes by thin metal diaphragms. We were informed that the apparatus, which, of course, was cheap, was very serviceable, except during stormy weather, most of the wire being carried outside, corners being turned by carrying the taut wire over a species of small wheel, with a grooved, large-toothed edge. According to the "Birmingham Daily Post," however, a new telephonic apparatus has been devised which, we should imagine, will supersede all existing arrangements, and convert telephones and speaking-tubes into museum specimens of antiquity. This is neither more nor less than a "wireless telephone." According to the accounts published, there would be no necessity to raise the voice for long distances, and the

existing instruments would be discarded. Also, a recording photograph can be attached, capable of ready, or even automatic, switching on and off as required. No need for setting up tall poles and apparatus at a great height, and messages can be sent from one house to another without being interrupted by the transmission or reception of any other messages from any other quarter. There are, so far, no actual details published, as the new instrument is not yet patented. We can only wait and wonder what the photographic workrooms of the future will be like!

* * *

Photography in Court.

No one can truly say that photographers as a class are more neglectful of their duties as good citizens than are the members of other professions. But there is one irksome task which, in common with the rest of his Majesty's lieges, they do their best to get excused from. They do not like serving on juries. It is a duty which calls them away from their business for an indefinite time, and often plays havoc with their interests. Moreover, they know well that, for some inscrutable reason, men of leisure are not summoned to serve for years at a stretch, while busy men are called upon at frequent intervals. The fees paid to jurymen, when any are forthcoming, are quite insignificant, and the sole reward is the satisfaction of having fulfilled an unpleasant duty—if satisfaction can be felt in connection with a compulsory performance. But we venture to suggest that if the authorities would permit photographers to take their cameras into court, with full permission to take pictures of judge, leading counsel, and prisoners, they would find that there would not only be a willingness, with a great desire to fill the office of jurymen. And why should a thing which is allowed in Italy be denied to the English? Here is an extract from the "Daily Telegraph" report of the Bonmartini murder trial at Turin:—"When the accused arrived at the court this morning a huge crowd had assembled. Before the opening of the sitting, one of the jurymen focussed a camera on the dock in order to photograph the prisoners when they entered the court." This is all we are told of the photographic arrangements, but we can easily imagine that the jurymen would have an assistant at hand to carry off the plates as fast as they were exposed, so that prints of the prisoners could be on sale outside before the close of the day's proceedings. Of course, such pictures would sell like hot cakes, and the jurymen would be well rewarded for his enterprise. But would this be allowed in one of our London courts of law? We fancy not. The only case we can call to mind in which such a thing was attempted was in the Pigott episode which formed the sensational feature of that famous trial which cost the "Times" so many thousands of pounds. A photograph of Pigott was taken in court *sub rosa*, not by a jurymen, but by one of the court officials, who afterwards showed us the picture. We doubtless had a few friends near him who covered their movements, but the picture was taken, and an unmistakable likeness it was. There is no harm in alluding to the circumstance now, for the photographer has long gone over to the majority. We consider that famous trial, in common with other events of public interest, should be recorded by photography, and although there might be objections to jurymen having their attention diverted from their serious duties by doing the work, an official photographer could be appointed, with authority to use a flash light at the critical moment.

PREPARATION FOR WINTER WORK.

THE Christmas rush will soon be with us, and all professionals should, if they have not already done so, look round and prepare for the work before it comes upon them. It is unfortunate for the worker in the dark and smoky towns that his busiest season comes at what is photographically the worst time of the year. Not only is the operating more difficult, but printing on anything but the gaslight, i.e., bromide papers, takes an annoyingly long time. Nowadays, of course, nearly all town studios have artificial light of some sort for operating, and it is the instruments for producing this that should be looked to, more especially as they are frequently dispensed with during the summer months. Incandescent or any gas systems should have the burners well cleaned and if necessary professionally attended to, the mantles renewed, and the reflectors cleaned. Arc lamps may want the carbons renewing and the feeding arrangement, if automatic, should be regulated. Very much the same remarks apply to magnesium lamps, which should be likewise well overhauled. When translucent diffusing screens are used they will usually pass more light if fresh material is procured, all white stuff, whether fabric or paper, having a tendency to yellow in daylight. The reflecting screen used on the shadow side may also do to be rewhited. Very few places will have their studio lights tissued at this time of the year, but those that do should renew same. Also and most important in smoky cities where the light is least, the skylight should be frequently well cleaned inside and out. The difference in the value of light through a coating of dirt makes it marvellous.

All this is doubtless elementary, but photographers as a class are so apt to let things slide until business becomes pressing that a note now and a reminder may be of service. The printing department will not require much attention. Platinotype and carbon must be well protected from damp, as also unvarnished negatives. Mounted prints should be thoroughly dried before packing. The business portion of the establishment requires attention. It is high time specimens of photographic Christmas cards were got out, and if you have not, the matter should be attended to or the orders for foreign cards, for which photos are most in demand will be lost. In selecting cards pay same attention as to suitability for prints as you would with ordinary mounts. Those with the good old-fashioned mottoes sell best. Midget size seems to be most popular, and if good-sized cards with tasty appearance are chosen, and these are not necessarily expensive, a good price can be charged. Just now you may be thinking of getting new reception room specimens. Some photographers we know do this and make money at the same time. They pick out some of their nicest specimens and also those which are likely to sell, and have enlargements made of them. These are framed up tastefully, the larger sizes in wide oaks and the smaller ones on very large tinted mounts in a narrow band of a frame. A week or two before Christmas these are despatched by passenger train to the original customer for the photograph. A polite note follows, saying: "Mr. So and So has recently made several additions to his show-room pictures, amongst which is the one of Mr. ——. As it is so (beautiful?) he thought you might like to see it with a view to purchase, the price being ——. The print is (say) a carbon on opal, and is absolutely permanent."

Very frequently the pictures are purchased, and after all expenses for enlargements, framing, carriage, both on those forwarded and on return, and packing-case have been paid, it will usually be found that there remains a surplus and several specimens for show. Of course, this system, like the invitation one, can be abused, and doubt-

The Surrey Education Committee, in pursuance of a policy of rewards to encourage regular school attendance, has ordered 100,000 pictorial post-cards of places of historical interest in the county at a total cost of £500.

less is, but in proper hands we do not think there is much objection to it. The patron, instead of ordering from a small photograph, sees the picture before deciding whether or no to purchase.

As before mentioned, Christmas cards should be already shown, so also should any special winter line you make, say, groups at parties, balls, etc., fancy dress portraits, or anything appertaining to the season. We think the once popular pictures with snow worked in might be made into an attraction again. Those who do not remember these may like to know that the effect of falling snow was obtained by taking an old tooth-brush full of liquid colour, holding over film of negative, and knocking sharply. After a little practice it will be found that the film is covered with small opaque dots each separate from the other. The snow on shoulders, hats, shoes, and other parts of attire is put in with a brush by hand. Beside the actual display of photographs, the present is an excellent season for other means of publicity. A tasty folder or booklet dealing either with the studio as a whole or Christmas work especially, should, if sent to the right people, secure full orders.

In conclusion, if, during the dull and somewhat depressing winter months, you feel inclined to let your showrooms and studios get frowsy and dirty, or the specimens bedraggled and faded looking—don't. It is just now, when everything else is murky and cheerless, that the public will appreciate clean and bright rooms and work. Moreover, perhaps, the other fellow is letting things slide; if so, you can get a lead and an honest one, not the poor sneaky methods of price-cutting or personal animosity.

QUESTIONS SUGGESTED BY THE R.P.S. EXHIBITION.

By AN OLD-FASHIONED PROFESSIONAL.

THE Royal Photographic Society's forty-ninth annual exhibition has now been open a month, and has, as usual, attracted a large number of visitors, photographers, and the general public alike, and the opinions expressed on the merits of the work shown have been, on the whole, very favourable. At the same time, I have heard disappointment expressed in some quarters, and this has been chiefly by country professional photographers who have come specially to London to see the exhibition, and learn what are the latest things in the art-science upon which they depend for their livelihood. By many of them disappointment has been freely expressed—that is, from the technical point of view—and this brings us to the question as to whether the R.P.S. has not of late years lent itself too much to the art side to the neglect of purely technical photography?

It will be remembered that a few years ago, when advertising to this subject, Lord Crawford—as President of the Society—made some pertinent remarks on the overlooking of what he tritely termed the “bread and butter” side of photography. He remarked that when he visited places abroad he usually brought away with him a number of photographs of the scenes visited, and those he purchased, as most others did, were clear, sharp, and good photographs of the ordinary type, such as those shown in the shops there, and similar to the views sold here. In expressing these views, Lord Crawford, we venture to say, was simply echoing those of the public generally and those for whom professional photographers cater. Now, the exhibition at the New Gallery contains but few, if any, examples, of that class of work. Pure, unsophisticated photography seems to be conspicuous by its absence. One of the principal objects of the Society, when it was formed some fifty years ago, it may be mentioned, was the advancement of photography both as an art and a science. At one time prints that had hand-work upon

them were not admissible to the Society's exhibitions. In present, as in some previous ones, there are few, if any, that have not been more or less worked upon in one way or other, some to such an extent that little photography is recognisable. Not only are the prints themselves worked upon, but what they are enlargements from smaller negatives, made through the agency of transparencies, the latter, as well as the enlarging negative, has been in many instances most elaborately worked upon by hand, so much so, in some cases, that but little of original photographic base is distinguishable in the finished picture.

Great advances have been made in lenses during the past years, and that they are appreciated by photographers is evidenced by the large sales the instruments have met with at the hands alike of professionals and amateurs; yet the majority of works shown at the New Gallery could just as well have been produced by those of the most primitive type, some, indeed, even with common spectacle lenses. Amongst a certain class of people an idea seems to prevail that if a picture is sharp, and good technically, it cannot be artistic; to be that it must be more or less of the fuzzy order, and in low tones. But what about the works of the late Mr. Vernon Heath, the Messrs. Bedford, father and son, Col. Gale, and a score of others? Were their pictures not technically good as well as sharp photographs, and were they not artistic productions? Are not a very large number of the published portraits of celebrities, and landscapes, produced by the leading photographers, which are technically good photographs, artistic as well? In the exhibition there are some excellent interiors that are exceedingly sharp good photography—are they the less artistic on that account?

Turning again to the “bread and butter” side of the question, would many of the works in the exhibition, if published and shown in the shop-windows, meet with a ready sale, or those the merits of which are so loudly applauded by some? I venture to say that they would not, even if they were issued in a cheap or post-card form. Taking the portraits as shown in the pictorial section (with a few exceptions), would sitters, as a rule, if they had them taken by a professional photographer, and had to pay for them, accept them as portraits of themselves? It would be useless, we know, in the majority of cases for the photographer to try to persuade the sitter they were “art photography.”

Here is another phase of the question that is pertinent, and that there is so much sophistication in the pictures in the present show. It is this. Is there, technically, such good photography done now as there was two or three decades ago when photographers did not rely so much upon retouching to improve the work, as they appear to do at the present time? This is a question that is of considerable interest in connection with the advancement of photography, and it is one that must well be taken into consideration by the R.P.S., which is formed with a view to the advancement of photography. It is true that there is a section devoted to professional work, but what encouragement does it receive? Here a charge is made of wall space, and, as a consequence, there is very little indeed shown except by the manufacturers of material.

It must not be assumed for a moment that I am inclined to decry art in connection with photography—let us have as much of it as possible. But I see no reason why the technical side of it should be entirely lost sight of, and this, some may think, is slowly being the case. Could not one of the rooms in future be devoted exclusively to technical photography—unsophisticated landscapes and portraits—after being approved by committee of selection, composed entirely of technical photographers, without charge for space, and, perhaps, the award of a medal for the best pure photography having artistic merit? Failing this, is not the subject one that the Professional Photographers' Association might well take into consideration. An exhibition in London under its auspices might

and greatly to the improvement of the technical, and "bread and butter," side of photography, and at the same time, perhaps, to its funds.

THE PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION AND ASSISTANTS' CERTIFICATES.

Following is the draft of the prospectus of the first part of the scheme of the Professional Photographers' Association for granting certificates of competency to operators, assistants, etc. This is put forward by the Committee of the Association tentatively, with the intention of obtaining the opinions of those interested before finally settling the draft. In our correspondence columns appears a letter inviting criticism, under the signature of Mr. William Grove, hon. secretary to the Association, which should be referred to:—

Pending the maturing of a scheme for holding examinations in practical photography, the Association is prepared to grant certificates to operators, assistants, etc., who can satisfy an examination committee appointed by a Committee of the Association of their competency on the testimony of their past and present employers.

Certificates will be granted solely on the grounds of photographic ability, and will take no cognisance of personal character.

The right is reserved of requiring such examination as can conveniently be arranged in addition to employers' testimony of ability, and also of calling for specimens of applicants' work. Candidates for certificates for retouching, and those who wish retouching to be included in their qualifications, will be required to furnish specimens of their work upon negatives supplied by the Association, performed under prescribed conditions. Application for a certificate must be made upon a form to be obtained from the hon. secretary of the Association, furnishing full particulars of the applicant's employments, their duration, etc.

Enquiry of the applicant's present and previous employers as to the capabilities of the applicant will be made from the office of the Association. A form will be used, and ordinary testimonials or references will not be accepted except when a previous employer is dead or not to be reached. All information given to the Association in reference to the granting of certificates, whether from applicants or those giving references, will be treated as strictly confidential.

Certificates will be general or special.

General certificates will be granted to operators and assistants in three grades, and will be for competency in studio routine and the ordinary work of portrait photography, not including retouching. General certificates will be granted to printers in three grades, and will be for competency in the work appertaining to the printing-room.

Special certificates will be given for aptitude in branches of photography not included in the general certificates, such as enlarging, retouching, landscape and architectural photography, etc.

As, when arrangements have been made for granting certificates upon personal examination, an examination fee will have to be charged, and, as it is not intended that candidates for certificates upon the testimony of the employers shall be more advantageously treated than those who shall submit themselves for examination, the following fees have been tentatively fixed:—For first grade, £2; for second grade, £1 10s.; for third grade, £1. Fees are payable with the application.

No certificate of the first and second grades will be granted to anyone under twenty-one years of age. In the third grade, under twenty years of age.

No reference will be accepted for service of less than six months.

For a third-grade certificate candidates must have had at

least three years' experience of which they can give an account, and must be able to refer to employers as to their photographic abilities during service extending over two years.

For a second-grade certificate candidates must have had at least five years' experience of which they can give an account, and must be able to refer to employers as to their photographic abilities during service extending over four years.

For a first-grade certificate candidates must have had at least eight years' experience of which they can give an account, and must be able to refer to employers as to their photographic abilities during service extending over six years.

GENERAL CERTIFICATES.—OPERATORS AND ASSISTANTS.

Third Grade.—Assistant's Certificate.—The candidate should be able to take charge of the camera when acting as studio assistant, must be competent at developing, fixing, and washing plates, and bromides and gaslight papers, must be able to fill slides, back plates, prepare and pack up requisites for an outdoor job, and generally carry out directions with regard to ordinary photographic work not requiring photographic experience and skill. He should be acquainted with the ordinary routine of a photographic business, and be able to make rough proofs in P.O.P. or albumen.

Second Grade.—Operator's Certificate.—In addition to the qualifications entitling him to a third-grade certificate, the candidate must have a general knowledge of studio work, and be able to pose and light the sitter, and act in the absence of the principal. He should be able to take groups outdoor and home portraits, be expert at copying, and have a general knowledge of the requirements of landscape and architectural photography. He must be able to perform all the chemical operations that may be required in ordinary photography, including the mixing of solutions and the reduction and intensification of negatives. He must be able to varnish negatives and prepare them for the retoucher or printer. He must have a general knowledge of printing processes, also of enlarging, and of the special qualities of negatives desirable for various applications.

First Grade.—Principal Operator's Certificate.—In addition to possessing the qualifications entitling him to a second-grade certificate, the candidate must prove his ability to take entire charge of the studio of a high-class establishment. He should be competent in electric and other modes of artificial lighting, must furnish evidence of taste and artistic feeling in posing, lighting, the use of accessories, and also in the mounting, framing, and general get-up of prints.

GENERAL CERTIFICATES.—PRINTERS.

Third Grade.—The candidate must be able to attend to a reasonable number of printing frames with printing-out papers. He should be able to print by actinometer under supervision. He must be able to fill and refill frames, and be acquainted with a system of keeping register of the number of prints made. He must be able to tone, fix, and wash P.O.P. or albumen prints.

Second Grade.—In addition to possessing the qualifications entitling him to a third-grade certificate, the candidate should be able to print in bromide and gaslight paper, and must be able to print either in carbon or platinotype. He must be able to mask negatives to vignette accurately, and to prepare and keep in order baths and other solutions used in his department, and also to trim and mount prints.

First Grade.—In addition to the qualifications entitling him to a second-grade certificate, the candidate must be able to organise and take entire charge of the printing department of a high-class business. He must be acquainted with the working of all ordinary printing processes, and be able to print in clouds, and backgrounds, and be an adept at simple combination printing. He must also be able to improve the results from defective negatives by tinting, shading, or other means, and generally must display artistic feeling in dealing with the work of his department.

THE PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

Operator's and Assistant's Certificates.—Form of Application.

To the Honorary Secretary of the Professional Photographers' Association.

Sir,—In accordance with the published regulations, I beg to apply for a certificate, and declare that the particulars herein-after given as to myself and my photographic service are true.

I enclose fee.—Yours faithfully,

Signature.

Present address.

Full name.

Age last birthday.

Grade and description of certificate applied for.

Present employer's name and address.

Date of entering present employment.

Particulars of class of work engaged in.

Previous employers (give dates of entering and leaving their employment, and state kind of work principally engaged in).
Give full particulars, using the back of the paper if necessary.

THE PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

Information given to the

Association will be treated
as strictly confidential.

51, Baker Street, W.

..... 19...

Dear Sir,—Under the regulations of the Association for granting certificates to photographic assistants, upon the testimony of their present and former employers, a copy of which is enclosed, Mr. has made application for a certificate of the grade, and states that he was in your employment from to

The President and Committee will feel obliged if you will kindly supply the specific information required by replying to the questions left open on the enclosed form. The certificates of the Association take no cognisance of personal character, but are granted solely for photographic ability and proficiency in the business of a photographer.

A stamped addressed envelope is enclosed for the return of the form.—Yours faithfully,

HON. SECRETARY.

THE PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

Operator's and Assistants' Certificates.

To

Mr., of, having applied to the Association for a grade certificate, states that he has been in the employment of your firm, and that you are able to testify to his abilities in photography. A succinct reply to the questions is requested, and, at the conclusion, any general comments concerning the photographic qualifications of the applicant will be welcomed.

General.

How long was applicant in your employ?

(Gives dates from and to if possible.)

What position did he occupy?

Was he orderly, clean, and careful in his work?

Did you find his work satisfactory?

Third Grade.

Is he competent to develop plates?

" " develop bromide and gaslight papers?

" " back plates?

" " make rough prints in P.O.P. or albumen?

Has he assisted in the studio?

Can he adjust the camera?

Can he mount and finish prints?

Can he make good copies of photographs under supervision?

Second Grade.

Has he a general knowledge of studio work?

Can he take entire charge of the camera when acting as assistant to the principal?

Did you find his posing and lighting satisfactory?

Is he successful in the management of his sitter?

Can he satisfactorily manage groups
indoor?
outdoor?

Has he a general knowledge of the requirements of landscape and architectural photography?

Can he make good copies of old photographs and other difficult subjects?

Has he a general knowledge of printing processes?

Has he a general knowledge of making enlarged and reduced negatives?

Can he prepare developing and other solutions accurately?

Can he intensify and reduce negatives?

Can he varnish negatives?

Has he a good general knowledge of the ordinary routine of photographic business?

First Grade.

Has applicant been accustomed to have entire charge of your studio?

Is he successful in electric and other modes of artificial lighting?

Is he of good address and tactful with his sitters?

Do you consider he possesses artistic feeling in posing, lighting, and the use of accessories?

Also in the mounting and general get-up of prints?

Has he a fair knowledge of the optics and chemistry of photography?

THE PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

General Certificate.—Printers.

How long was applicant in your employment?

(Give dates from and to if possible.)

Was he clean and careful in his work?

Did you find his work satisfactory?

Third Grade.

Can he attend to a reasonable number of frames?

Can he print by actinometer under supervision?

Is he able to fill frames and keep register of prints made?

Can he tone, fix, and wash P.O.P.?

Can he tone, fix, and wash albumen.

Second Grade.

Can applicant print in platinotype?

" " " carbon?

" " " bromide?

" " " gaslight?

Is he a good vignetter?

Can he sensitise albumenised paper?

Can he keep the silver bath in good working order?

Can he make toning baths and other solutions?

Can he trim and mount?

First Grade.

Can he organise a printing department?

Can he control under-printers and assistants?

Can he print in skies to landscapes, and do other combination printing?

Does he thoroughly understand all the ordinary printing processes?

Is he able to improve the results of defective negatives tinting, shading, and other means?

Is he possessed of artistic feeling in the work of his department?

Has he any knowledge of chemistry?

THE PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

Retoucher's Certificate.

General Questions as for Printers.

Do you consider him a good retoucher?

What was the largest size heads he was accustomed to retouch?

Is he good at large heads (three inches or over)?

Can he successfully make alterations with the knife?

Is he good at reducing high lights and halation?
 Is he good at strengthening under-exposed parts of negatives?
 How many negatives can he do in a day of eight hours (say, heads of one inch from chin to forehead)?
 Has he a knowledge of drawing?

SELECTIONS.

NOTEWORTHY OPINIONS CONCERNING ART AND PHOTOGRAPHY.

[Translated from the "Photographische Correspondenz."]

FRANZ VON LENBACH expresses himself in the following terms with reference to the study of the old masters:—

"Only by studying the old masters can one succeed in understanding what art must really be.

"Beauty was the aim of the art of the old masters, truth is the rallying-cry of the moderns. But the beautiful is always true, when it is bound to us organically by the legitimate process of its creation. Yet what is true is far from beautiful, as Piloty was careful to teach.

"If a thing is harmonious its effect is tranquil; but it is this that some of our youths strive against, who are full of nerves, excitable, and long for sensation. The mad juxtaposition of baroque ideas, glaring colours, and distorted forms, the audacious representation of the hateful and shameless causes an outcry, and an outcry it is intended to excite.

"These rude, vehement efforts separate the moderns from the old masters, those sensitive representatives of art.

"The crude and the violent have always attracted the multitude more than the purely beautiful.

"If we cross a street, for example, and a cab is driven straight at a child, the wheel passing over it, and cutting it in two, we and everybody else would run to it, and our minds would be so full of the frightful sight that the Venus de' Medici, the Venus of Milo, and Pallas Athene might pass by, and we should scarcely observe them.

"Upon this trait in human nature some artists at all times have reckoned, who wished to surprise, dazzle, and excite, instead of quietly blessing mankind. But the great masters of former times draw one so gently and sweetly within their circle.

"The object of their art was the representation of Nature as they saw it with a harmonising mind."

THE FALSE EDUCATION OF TASTE.*—Photographers are an inexhaustible theme. The obliteration of their work will continue to remain the artist's Utopia. Yet it should be unnecessary, for photography may be art in the purest sense of the word, as the exhibitions by amateurs within recent years have shown. Even the work of professional photographers may show some trace of art.

With this object in view it is quite possible to imagine a high school for photographers. First-rate portrait-painters would be the instructors, for everything may be had for money. Psychological, æsthetic teaching would lead the scholars to understand a little of human physiognomy, to find what is characteristic, and to discover the pose in which it may be most truly expressed. Also a collection of copies of good modern portraits should be available for study; learned men, merchants, officers, and actors, slim girls fresh from school, and stout butcher-wives. The scholars would see that even the most commonplace subjects may be translated into art, and that the work of the portrait-painter in carrying out his subject does not consist of retouching. By turning over the leaves of his book of specimens he would find guidance for the pose and arrangement of his work, and by comparing it with similar portraits by artists he would become aware of the points in which it was most wanting in taste.

But what are the facts? The reception room at once shows that the industrial art movement of the last ten years has

passed by the photographer without any effect whatever. This would be of no consequence if fashion alone were concerned. But industrial art of the present day formulates a new principle. We are honest people. Take us as we are, and let us denounce as swindlers those who deceive us with high-sounding names. We should therefore demand honesty from the industrial arts. No false splendour should cover our inward hollowness. Everything must be what it proclaims itself. Purpose and material alone must determine its form. We are at last also awakened to the consciousness of class. We find it paltry now to decorate our rooms with plaster and papier-mâché, in imitation of the marble and bronze used for the decoration of king's palaces. The king is honoured by his dignity; the work of our hands should honour us. Our industrial art is evidence of this democratic pride.

Only at the photographer's do we find a parade of the columns, railings, balustrades, and swinging-doors, by which in early days banker's wives were given in their pictures the appearance of Van Dyck princesses. Here we see toppling tables, rickety stands, and elaborately-turned chairs. The miserable lumber not only stands there, but represents artistic accessories. It gives tone. The fat butcher's wife steps on to the balustrade and plays the part of Juliet spying for Romeo. The learned man sits, possibly straddles, the tilting-chair, before the what-not, and keeps still when the photographer places in his hand as insignia of his calling as investigator Meyer's Encyclopædia or Redwitz's "Amarant."

The most earnest people, when at the photographer's, appear as though possessed of the devil. Educated, as they are, in the history of art, they remember Millet's words: "The beautiful lies in the harmony of man with his work" and they find the truth of this confirmed in life. The peasant, who, in his jacket in the field, looked as dignified as a king, and the porter, who, in his blue blouse, was like a primeval giant, come out ridiculous and awkward, as though taking a walk on Sunday afternoon. The hat grows into a chimney-pot, the unaccustomed clothes confine him, and he loses his natural freedom and its character—that grand rhythm given by labour to his body. The waitress, who looks so smart and neat in her white apron, with a tankard in her hand, exposes her admirer to ridicule when she appears bedizened as a caricature of a lady "Unter den Linden." The educated man knows all this. Nevertheless, he puts himself in holiday humour when he goes to the photographer's. He uses the curry-comb, curls his moustache, permits a fur which does not belong to him to be thrown pictorially over his shoulder, and looks inspired, as though he were the recipient of a revelation. Finally, whatever remains of the character of the individual is effaced by retouching.

Everybody has some share of character. Life is the pencil which has drawn us. The skull is the receptacle of the thoughts which dwell behind the forehead. Every woman, every young girl, is beautiful, because in this world she exists but once, and resembles no other, even her twin-sister, from whom she differs in fine gradations. At the photographer's everyone poses the same, adopting one of the three attitudes which the catechism of photographic rules prescribes (?). The wrinkles are smoothed out, the missing hair supplied, and the snub nose straightened. The eye has lost its expression, the forehead its shape, and the face of the simple schoolgirl its freshness and charm. The head of the man has grown into a hairdresser's model, and the girl into a doll.

This appears to be of very little moment. But serious consequences are involved. According to Schiller, evil acts continue to bear evil. Such parodies, stripped of individuality, do not appear coarse to the photographer. On the contrary, he feels flattered by such a picture, sets it upon a walnut stand, or hangs it upon the wall in a plush frame and looks at it every day with satisfaction. Truly, it is not decorative—it

* Fragment of an essay. R. Muther, "Studies and Criticisms." Wiener Verlag.

should be "in oils." The empty, expressionless "cabinet" must be raised in power and become the emptiest, the most expressionless. It must go to an art institute to be enlarged and daubed with oil colour. Many think they would like to have their portraits painted. And then, woe to the artist! Begin how he will, the photograph was more beautiful. The martyrdom of our portrait-painters is owing to retouched photographs.

PROFESSOR RICH. MÜTHER.

[Fortunately, the conditions which are here depicted belong to the ocean of "tempi passati," and it has long been acknowledged—at least, theoretically—by all educated photographers, that the retention of characteristic form is a leading fundamental principle.—Ed. of "P. C."]

DR. KOENIG'S COLOUR PROCESS.

[Supplementary to what has already appeared on this subject, we are indebted to Mr. Jules Fuerst for the following translation of the lecture delivered by Dr. E. Koenig before the German Naturalists' Congress, Breslau, on the 21st September, 1904.]

WHILE the Leuko bases of some classes of organic colouring matter, i.e., of Safranines are so unstable that it is not possible to isolate them, others like the Leuko Malachite Green are, as is well known, easily prepared in a pure state, and are comparatively constant when exposed to air. Many chemists have probably observed that these most constant Leuko bases when kept for a long time, will colour strongly only when exposed to light. Careful researches about the light-sensitiveness of the Leuko bases have only been made by Gros, in Ostwald's Laboratory, who examined especially the Leuko compounds of fluorescein and its substitutes. He found that Leuko compounds, roughly prepared are nearly all more or less sensitive to light and measured the oxygen absorbed on exposure to light of the water solutions of Leuko bases, i.e., their salts.

Nobody else seems to have worked in this direction or to have thought of using the Leuko bases for making photographic images.

Before I start on my subject I will touch in a few words on a purely photographic subject. I presume the principle of three colour photography, as known, viz., of the object to be photographed three part-negatives are made, of which one, when copying, renders only the blue, the second, the red, and the third, the yellow parts of the object. The production of such negatives is comparatively simple, and the principal reason why three colour photography (which for the graphic industries is of greatest importance) has not yet found use in photographic practice is on account of want of a suitable copying process. I will not detain you by enumerating the various copying processes, but would only say shortly that all methods used hitherto base on the light sensitiveness of gelatine saturated with bi-chromates, be it by copying on to coloured pigment paper, or be it by colouring colourless gelatine images with organic colours. The three monochromatic part-negatives which have been got by one of the methods mentioned, are joined into one image, which then renders all the colour shades of the original. Undoubtedly in this way very nice three-colour images can be obtained, but their production is so difficult that only a few people can produce acceptable coloured paper images. Not the smallest disadvantage of the old methods is the impossibility to follow the progress of the copying process ocularly.

An ideal copying process for three colour photography would undoubtedly be one where neither colouring takes place, nor where copies are made on coloured paper, but which works only with colourless layers which when exposed to light will, according to their previous preparation, colour directly yellow, red, or blue.

To find such a process we in the Photo-Chemical Laboratory of the Farbwerke Meister, Lucius and Bruning, Hoechst a/M, carefully examined into the most different Leuko bases, but soon began to see that the Leuko bases by themselves on exposure to light are not capable of giving sufficiently vigorous and brilliant images. We then supported the Leuko bases by a layer of acetylhydrocellulose, or gelatine, but our hope to obtain thus more vigorous images was not realised.

Only when we chose collodion, as image carrier, we suddenly observed a marvellous step forward in light sensitiveness. Leuko bases which were exposed to light for hours by themselves, gave only a faint coloration, but were vigorously oxydised in presence of collodion in a short time. Other Leuko bases which for themselves were so light

sensitive that on fairly long exposure under a negative they gave distinct, although weak and photographically useless image, colour in the collodion film rapidly and intensively.

We soon concluded here that collodion could not act as a mere image carrier, and, in fact, it soon showed itself that the Leuko bases were oxydised on exposure to light at the expense of the nitric acid groups of nitrocellulose. We then examined a great many other bodies and found that, similar to nitrocellulose, all nitric acid esters, especially those of the higher alcohols re-acted. On the other hand the nitric acid esters and isomeric nitro compounds of the aliphatic and aromatic series are ineffective. The nitrosamines show similar, although weaker, effects than the nitric acid esters.

It is interesting to know that the light sensitiveness of mixture nitrocellulose and Leuko bases can be diminished considerably by addition of urea or antipyrin. This observation seems to point to the fact that the Leuko bodies are actually oxydised by No or No₂ groups which dissociate out of the collodion.

Addition of turpentine or aniseed oil, which are looked upon as oxygen carriers, do not or hardly accelerate the production of Leuko images. But when we once added to the solution of Leuko bodies in collodion various organic bases with the intention of preventing small air oxydation occurring in some Leuko bodies, we observed with astonishment the films (layers) containing chinolin and its homologues, increased again extraordinarily in their light sensitiveness. An explanation of this curious phenomenon cannot be given. It is very remarkable that more vigorous pictures should be obtained with chinolin bases than without, because it should be expected that the addition of a strong base would rather prevent the formation of colouring matter, as it is well known that the salts only of the colouring bases are coloured. In this picture you see clearly the influence of chinolin which, moreover, is principally effective with the Leuko bases of the blue and green triphenylmethan colours.

Nitrocellulose is not by any means the most effective of the above mentioned compounds, but is only specially suitable for the production of pictures because it produces at the same time the layer (film) that is destined to carry the pictures. Still more sensitive to light are the mixtures of Leuko bases with the nitric acid esters of glycerine, glucose, and mannite.

For instance, if a piece of blotting paper be saturated with ether solution, say of Leuko malachite green or Leuko flavanilin, barely colours with a short exposure, but if some nitromannite be added to the solution the paper exposed to light colours intensely and rapidly. The light-sensitiveness of mixtures of Leuko bases with nitrocellulose can be increased quite extraordinarily by the addition of nitromannite. You see here two pictures, of which one is much more vigorous than the other. The exposure in both was twenty seconds. The light sensitive film consisted of nitro-cellulose, Leukosetocyanin (o-Chlorotetraethylamidodiphenylmethan), and chinolin. To film for the first picture a small quantity of nitromannite was added.

I would repeatedly observe that it is quite impossible to produce approximately useful photographic images with Leuko bases alone, with Leuko bases which are carried by indifferent films. Copies result always flat and without vigour, the oxydation of the Leuko bases in light through the oxygen in the air seems soon to react maximum long before the entire quantity of the Leuko bases is oxydised.

Also bodies which are not so-called Leuko bases in the ordinary sense are oxydised by the light into colours in the presence of repeatedly named nitric acid esters, as, for instance, p-amidodiphenylamin. This base is known to be much used in carbon printing for oxydation black, and gives when mixed with collodion or similar bodies and coated on paper strongly coloured pictures, when exposed to light in a very short time.

Blue images can be made by means of o-Chlorotetraethylamidodiphenylmethan, green images with Leukomalachite green, violet images with m-nitro or m-amidotetraethylamidodiphenylmethan, red images with p-Leukoaminin or Leukohodamines, violet images with Hexaethylparaleukanilin, yellow images with Leukofluorescein and Leuko flavanilin.

The fixing of the images gave great difficulty to begin with. Since Leuko bases can be dissociated from the collodion film with benzene, toluol, ether, or chloroform, but such means of fixing are not used in practice. The nearest fixing mediums were diluted mineral acids, which nearly all Leuko bases are easily dissolved. Nevertheless, images could not be so fixed because the Leuko bases as well as collodion

show a certain tenacity to nitrocellulose and kept very fast under certain circumstances. Better result was obtained in fixing with diluted organic acids, and finally it was found that the monochloroacetic acid was the best fixing medium for nearly all Leuko bases; acetic acid, di- and tri-chloroacetic acid cannot be used.

Gros has already examined the behaviour of Leuko bases against multicoloured light, and "roughly," as he says, he found that with most Leuko bases a maximum appears when illuminated with complementary coloured light. Gros obtained with all Leuko bases the weakest effect under red glass, the strongest under "pink" ("Rosa"). We exposed the various sensitive films under colour filters, as used for the additive process of three-colour photography, and it was found that the exposed strips produce under the complementary coloured filter a maximum, and under equally coloured a minimum of intensity. Thus, blue, green, and violet is coloured strongly under red and yellow but scarcely under blue, whereas red under green and yellow filter is coloured very strongly, under blue little, and under red not at all. Finally, yellow under blue is coloured very strongly but scarcely under yellow. For information, we show here a strip of collodion paper which naturally shows the strongest black coloration under blue.

The strong action of the so-called nonactinic red on the blue and green light-sensitive films is very interesting.

Ostwald has already shown that the action of light on photographic preparations is not a peculiar one, that light really only accelerates effects which take place themselves after a considerable time even when light is excluded. Thus, as is well known, photographic plates and papers are decomposed when kept for a long time even in the dark, and especially rapidly the light-sensitive gelatine when mixed with bichromate. With our new light-sensitive films it is the same thing. The effect produced by light in a few seconds or minutes takes place in the dark after hours, days, or weeks, as the case may be, and the most light-sensitive films are also in the dark the least permanent, so that they must always be prepared only shortly before use. I wish, however, to observe that even when kept a long time in the dark the films are never coloured so deeply as they do in a short time on exposure to light.

The application of these observations for three-colour photography is therefore to be summed up in the following manner:—A piece of paper is coated with blue collodion and exposed to light under the corresponding part-negative. When it appears sufficiently vigorous it is fixed in a 10 per cent. solution of chloroacetic acid, washed and coated with a thin hardened gelatine film, and then dried. The gelatine film serves to protect the first collodion film from dissolution when coating the second. The dry blue image is then coated with red collodion and the corresponding part-negative is placed in such a manner that the contours of the negative register exactly with those of the blue image. Again, expose to light, fix, wash, and produce finally in quite the same manner the yellow image. On account of the perfect transparency of the extremely thin films and on account of the brilliancy of the colours used the copies appear very uniform, and the shaded colours especially show with great effect. The quantity of Leuko base, as used, is very small, in consequence of the enormous expansiveness of triphenylmethan dyes, so that a picture made in three layers is no more expensive than an ordinary gelatine or pigment print.

The light permanency of the pictures is, of course, not absolute, though relatively fast colours are used for making the part-pictures. The least fast is the blue, which, however, exceeds in permanency the so-called cyanotype (iron-blue prints). Considering the difficulties encountered up till now when copying from three-colour negatives the new direct copying process of the Hoechst *Farwerke* to be known as "Pinachromy" may be chronicled as an extraordinary improvement. As is well known, coloured diapositives have been easily made, but three-colour photography could not become popular so long as it was not possible to produce in a simple way white paper pictures (positives). This, we believe, our copying process affords, even for the mere amateur, and will, we hope, contribute to give new life to the somewhat stale interest in photography.

INSTRUCTIONS FOR "PINACHROMY," FOR PRODUCING COLOURED PHOTOGRAPHS (POSITIVES).

This copying process, based on the oxydation into colours by exposure to light, of colourless Leuko bases in the presence of certain substances like collodion or other nitric acid esters.

The main substance for all three preparations is a

1.5 per cent. collodion, made, for instance, by mixing
1 litre of a 3 per cent. commercial raw collodion with
500 c. cm. alcohol, and
500 c. cm. ether.

When using 2 per cent. commercial collodion mixed with

500 c. cm. 2 per cent. collodion.
85 c. cm. alcohol, and
85 c. cm. ether

The three part-negatives must not be weak or flat, but must be of good density and very clear.

Copying in direct sunlight gives specially brilliant pictures.

As a basis for the picture it is best to choose a white matte or brilliant Baryta paper, not too thickly coated. Many papers, especially those with a very strong layer of baryta, have the property that they are put out of shape by the various manipulations, and such papers are naturally useless as they prevent the images being correctly registered.

The black bottles contain the Leuko solutions.

The white bottles contain the necessary additions.

The bottles for blue, and additions for blue, are round.

The bottles for red, and additions for red, are square.

The bottles for yellow, and additions for yellow, are octagon shape.

(A weak colouring of the colour solution mixed with collodion has no importance for the success of the picture.)

For use, take:—

50 c. cm. collodion 1.5 per cent.,
5 c. cm. Leuko solution, and
5 c. cm. of the particular additional solution.

Mix same in a dark room lighted by artificial light. Make only sufficient for what is required during the same day.

It must be observed that the blue collodion is not sensitive to dark blue, very sensitive to red, yellow, and green light. The red collodion, on the other hand, is not sensitive to red light, little sensitive to dark blue, and very sensitive to green and yellow light. The yellow collodion in general is only sensitive to blue light.

I. PRODUCTION OF THE BLUE PRINTS.

Commence making the blue print by taking a piece of paper which is from 1.2 cm. larger than is required for the negative, and pour the blue collodion over it. The simplest plan is to turn up the edges of the paper about 5 mm. high, fix the paper with four pins on a piece of wood, pour the full quantity of collodion over it and drain under a continual rocking the remainder back into the bottle. Collodion which has already been used may be used again by the further addition of some alcohol and ether.

The preparation of the paper is made in a very weak artificial light.

To make a layer, 10 by 13 cm. size ($\frac{1}{2}$ -plate size), about 1.5 c. cm. collodion is used.

After the paper has been dried it is exposed under the red filter negative to daylight. When looking at the copy it is necessary to be very careful on account of the enormous light-sensitiveness of the paper.

The copying can be done very quickly, and with clear negatives and bright sunlight, 20-40 seconds are sufficient. It is recommended not to print the blue picture too deeply; with some experience one soon obtains the proper degree. The image is then fixed in the dark in 15 c. cm. fixing acid and 85 c. cm. water, and it is recommended to add to the fixing bath about 1 c. cm. of a 10 per cent. solution of sulphite of sodium. The bath, in consequence, remains clear for a longer time and can be used for fixing from 5 to 6 copies, 9 by 12 cm. ($\frac{1}{4}$ plate) size. After fixing, wash for five or ten minutes, and dip the copy into the following chrome-gelatine solution:—

3 grammes gelatine,
200 c. cm. water,

0.6 gramme chrome alum (it is best to use basic chrome alum).

This solution must be made up fresh every day.

To dry, use clips for hanging up the copy. Then again dip into the chrome-gelatine solution. When hanging up, it must be observed, the edge of the copy (which was in the first instance on top) must now be hung downwards.

II. PRODUCTION OF THE RED PRINTS.

The dried copy, prepared with chrome gelatine, is now covered with red collodion in a light red light, and is dried in the dark.

Cover the blue print with the green filter negative in such a manner that there is a perfect register. This work can be done by diffused daylight. Print until the red appears sufficiently vigorous* and fix for five minutes in the following solution:—

15 c. cm. fixing acid,
85 c. cm. water.

The addition of sulphite is detrimental here.

The copy must be kept actively moving in the fixing bath. This bath is used only once. It is recommended, when printing, to cover the projecting edges of the print with small strips of paper in order to protect them from the light.

The fixed print is washed for about five to ten minutes in the same way as the blue print, and covered twice with chrome gelatine.

III. PRODUCTION OF THE YELLOW PRINT.

Pour over the dried blue-red print the yellow collodion in light-red daylight, or white artificial light, and expose to light under the blue filter negative.

Fix for five minutes in the following:—

15 c. cm. fixing acid,
85 c. cm. water,
5 c. cm. sulphocyanide of ammonia, 1.5,
1 c. cm. sulphite solution, 1.10.

After fixing, the image is washed for five or ten minutes in distilled, or rain, water, and is again dipped into the chrome gelatine and then dried.

To protect the complete print against mechanical damage, it is best to cover it with a positive varnish.

We draw the attention of users to the fact that the concentrated fixing acid is very caustic, and that sensitive skins are irritated by the diluted fixing baths.

ROYAL PHOTOGRAPHIC SOCIETY EXHIBITION.

TECHNICAL AND SCIENTIFIC EXHIBITS.

THE section devoted to scientific and technical photography and its application to processes of reproduction contains a good number of what may be regarded as instructive exhibits, many of a merely interesting character and only a few that one would wish elsewhere. As was to be expected immediately after last year, when this section was devoted entirely to invitation work, from some points of view the technical section is not all that it should be. The break in the continuity of the section as a competitive one, dependent upon the voluntary entry of exhibits, makes itself felt, the effect being shown in the fewer exhibits and the non-representation of many phases of applied photography. There are many reasons which can account for a much greater shrinkage, however, than that shown in this year's exhibition. Photography undoubtedly attains its greatest and most lasting value, say what one may about its artistic aspect, as an impartial and exact recording agent, and there are more great men in science who recognise its unassailable position in that sense than those in the fine arts who admit its claim to rank as a means of artistic expression. On the other hand, it has to be admitted that few of these scientific men have any regard for photography for its own sake. They apply it to astronomical research, the microscope, surveying, and an endless list of purposes, but each centres his interest in the study in which he is engaged, not in photography, which makes it possible for him to achieve his ends. It is not so much the photograph of which the photomicroscopist is proud as the wonderful record of the subject he is examining. Firstly a microscopist, he is only secondly a photographer, and one must not wonder at his preference to show his results to his microscopical friends rather than to his brother photographers. This fact is certainly at the bottom of the want of character seen in most of the technical exhibitions we have had. In the pictorial side of photography, the photograph and the maintenance of its author's reputation as a photographer are everything, but in the direction of applied photography it is the subject to which it is applied that benefits. There is no cause for wonder, therefore, that the scientist who has successfully applied photography to his work so often fails

to be interested in a merely photographic show, and one should be encouraged rather than depressed by the fact that the section this year includes what it does, incomplete though it be.

Two medals have been given by the judges in this section, one to Mr. A. C. Banfield, and the other to Mr. C. Thurston Holland.

Mr. Banfield receives the medal for a series of thirty-two prints illustrating in a strictly comparative manner the successive motion of a cat and dog jumping an obstacle one foot high. There are sixteen pairs of photographs taken at approximately equal intervals, and they illustrate in a very convincing manner, as the catalogue points out, the ability of the animals to judge the amount of effort necessary to carry them clear of the obstruction. The prints show very clearly how the creatures take the ground and how their subsequent movement are ordered. The series is a clever supplement to the photographs of splashes shown in this section last year by the same exhibitor, and their recognition by the judges will be generously endorsed.

Mr. C. Thurston Holland gains the society's medal for a series of radiographs which are exceptionally fine. There are eighteen prints all of a pathological nature. We were most struck by the print of a malignant growth in the fibula, of myeloid sarcoma, which shows very clearly the growth within and expanding the bone. This was afterwards verified by operation. Next in importance is a print showing exostosis of the tibia, growing from a broad base and almost entirely composed of bone. Others which appealed to us show acute tubercular disease of tibia and fibula, and acute suppurative inflammation of the osium and periostium (the thin, delicate membrane forming the immediate covering of bones) of the tibia. Mr. Holland is to be congratulated on his excellent exhibits, which well deserve the distinction it has achieved.

The application of photography to the microscopic examination of metals is admirably shown in Dr. Carpenter's series of photomicrographs. One is enabled to distinguish with ease the change of structure in a boiler plate brought about by shearing. The breaking up of the two structural constituents of mild steel by rolling, the structure of welded mild steel plates, with satisfactory and unsatisfactory welds, and the structures of sound and faulty bronzes are also well rendered. The magnifications are principally 150 diameters.

Mr. Arthur E. Smith exhibits a number of fine photomicrographs of which the vertical section of the human tongue, showing fungiform papillae (x 175), is undoubtedly the best. We do not remember having seen a finer illustration of this subject in any medical text book. The section of human skin, by Mr. T. C. Hughes, showing sweat gland and duct, is also good, but the definition is not so fine as in the former. In another branch Mr. Smith's print of the eggs of housefly (x 72), is good, while for extreme definition his stem section, *Aristolochia Gigas* (x 50), can hardly be beaten. Mr. Walter Plover Young has four photomicrographs of botanical specimens, the most interesting being the single hair of the stinging nettle, showing the cutting edge still protected by terminal knot. Mr. Edgar Senior is represented by two photomicrographs, among them being one of the tongue of a butterfly (x 77). Other photomicrographs of a good order are the low power work by Mr. J. I. Pigg, who shows the stag beetle, hawkmoth and leaf insect.

Process work is represented by some examples of the student's work at the London County Council School of Photo-engraving, at Bow Court, including photolithographs, collotypes, and tri-colour impressions. Other exhibits coming under this head are the "Colourtype" reproductions from paintings by Carl Hentschel, and some of the work reproduced by Messrs. John Swain and Son. The Art Reproduction Company have a few frames of photogravures of very good quality, one being coloured after the method previously seen in this firm's work, and with considerable success.

Mr. F. W. Plews has on view a number of examples of photo-algraphy in three and more colours, made in an endeavour to introduce three colour work into lithography.

It is convenient here to mention the latest results by Mr. J. Horn Player, with his process of copying by passing light through the sensitive paper on to the print or design to be copied. The process has been described several times, and is now well known, but some new material will be found in the two copies of engravings printed on bromide paper by a luminous negative (excited to fuller action by heat), obtained by allowing yellow light to pass through an isolated phosphorescent surface on to the picture copied, the two being in close contact.

The Astronomer Royal sends ten photographs, which will bring hom

* The red collodion copies take a longer time to copy than the blue collodion.

to many who have not grasped it the magnitude of the task which observatories throughout the world have entered upon. They are specimens of the Greenwich section of the international photographic chart of the heavens, which will require as many as eleven thousand plates before completion can be announced. The work is being performed in duplicate, the second series being so taken that the central portions of the plates of the first series are near the edges in the second series.

Of natural history photographs there are several, the best amongst them being the small collection contributed by the Zoological Photographic Club. Mr. Douglas English helps the success of this department of the exhibition by his pictures of the polecat, the stoat, marten, shrew, weazels, and other creatures in characteristic attitudes; while his fellow-contributors, Messrs. R. Fortune, H. Lea, J. Atkinson, and W. Y. Sainsbury, also deserve high commendation for their work.

A clever photograph is that of a flying seagull, taken by Mr. B. H. Bentley, at sea. He tells us that the exposure was 1-500 second, at $\frac{1}{4}$, a reflex focussing arrangement being used in combination with a telescopic eyepiece to obtain a maximum of sharpness. The print is enlarged six diameters. Mr. R. A. Malby shows close by a set of prints illustrating the feathering of a thrush, the bird's side, breast, inner and outer sides of wing, feet, and legs being depicted. Miss E. Turner has succeeded in photographing a short-eared owl, enjoying a sun bath. As a record of a somewhat curious proceeding, the photograph is not without its interest.

Captain F. D. S. Fayer's photographs of the Daboia are somewhat unique, showing as they do much of the structure of the mouth and fangs, and the curious method of handling these venomous creatures. The same exhibitor's dragon fly preserves exceedingly well the delicate tracery of the wings. Close by Mr. J. P. Miller has two prints of the young cuckoo in the act of ejecting respectively an egg and a nest mate from the nest. The former is the more convincing photograph.

Mr. F. Martin Duncan, well known for his remarkable photographs of submarine creatures, shows a picture of the Eledon, a species of Octopus, engaged in a duel *a la mort* with a crab. His chameleon pictures are also very good. Miss Marie Léon's study of edible snails from the Surrey hills also makes a good, as well as an instructive, picture.

Very interesting is the series of six photographs by Mr. O. G. Pike, showing the progressive stages of a chicken emerging from its shell. The prints show in succession the newly-laid egg; the egg twenty-one days after, as taken from the incubator, the shell having been pierced by the chick to admit air; the appearance of the shell after further attacks on the shell by the bird from the inside; and the further stages up to the escape from the shell. The last print showing the chick surveying the wreck of its prison is very good.

There are a few examples of colour photography, but they are not inspiring. Mr. J. G. Jackson has utilised the carbon process, with three layers of differently coloured tissues superimposed, in the production of his exhibit, but it leaves much to be desired. Mr. S. R. Brewerton's fruit study is more successful, and is by the imbibition method of Sanger Shepherd. Miss Acland has two photographs in colour, the base being a pink carbon, the yellow and blue being added by imbibition. Mr. Otto Pfenninger has employed Dr. Jumeaux' process in getting his results, which do not, however, encourage one to think that colour photography in its perfect state is very near the popular grasp.

Mr. W. M. Martin shows photography adapted to the study of comparative anatomy. There is in the South Kensington Museum (Natural History) a case showing the progressive stages in the hatching of the chicken from the egg and in the frame now under notice. Mr. Martin has a series of photographs, seventy in number, showing the embryology of a chicken. Each photograph is fully described upon the mount and shows the expenditure of a considerable amount of skill, time, and patience. One of the photographs is taken by means of X-rays and the remainder some by transmitted light, others by a combination of transmitted and reflected light.

Among the miscellaneous exhibits the portrait taken by means of ultra-violet rays by Mr. Edgar Senior will arrest attention. In making this photograph the screen devised by Professor R. W. Wood to cut off all visible radiation was employed. Close by hang four examples of a method of photographing in low relief, claimed by Dr. F.

Detlefsen as his own. We have no particulars of the method, but the results do not make one feel the deprivation very seriously.

Mr. R. H. Baskett exhibits two frames of lace and wallpaper designs, produced by photographic means, from a small piece of lace, the leaves of common ragwort, bramble, forget-me-not, etc. The element, whatever it may be, from which the design is to be made, is reflected in two silver-surfaced mirrors and photographed in a manner described by the exhibitor, who points out that an endless number of designs can be produced of the greatest value to designers and art workers. Certainly, the few specimens shown have great promise, some being exceedingly beautiful and decorative.

The Rev. J. M. Bacon's balloon pictures are very similar to those he has shown on previous occasions, and do not call for much comment. With his daughter, who lectured on Monday last at the Gallery upon the camera and the balloon, he keeps this field of work very much in his own hands, and one cannot help feeling that, so thorough has he been, that there is little more that the balloon photographer can show us.

Before closing this notice it is only just to mention Dr. Rodman's radiographs of the Mollusca, which demonstrate in a very convincing manner the internal anatomy of shell. The exhibit speaks well of the author's skill, the delicate details of the substance of the shells, and their construction being excellently rendered.

Finally, it may be pointed out that this section must be taken no less seriously than the pictorial. A hurried examination will reveal little, while a careful inquiry into every exhibit will show us much that we may well emulate, even though we find much that calls for the reverse of praise.

THE DEFENCE OF BRITISH WEIGHTS AND MEASURES.

FROM the British Weights and Measures Association, of 25, Victoria Street, London, S.W., we have received a pamphlet written with considerable vigour of argument in favour of the retention of the existing system of British weights and measures, as against the adoption of the metre. The opening sentences of the pamphlet are as follows:—

"The persistent efforts of the advocates of the French metric system to get it enforced in the British Empire have brought into being the British Weights and Measures Association, whose primary object is to combat the metre. It also seeks to standardise and simplify British imperial weights and measures so as to make them in the greatest degree available for all purposes.

"There is a risk that the metric advocates will be successful if opposition is not organised, for the tendency is to let judgment go by default on account of the ignorance which prevails as to what the suggested reform really means to Britons. Believing that the enforcement of the metre in the British Empire would be a national calamity, we seek not only to organise those whose studies of the subject have enabled them to see the hollowness of the metric pretensions, but also to provide means of educating those who now directly support the metre by reason of their knowledge being limited to theoretical application, and of those by whose apathy the movement receives negative support and who may possibly have never had occasion to give the subject a thought, but who will be sufferers by it should it be enforced."

Our readers who have to deal with paper, cardboard, and the like, will, perhaps, be the more interested in the following, among many other concrete objections, to the "metric" system which are quoted in the pamphlet:—

"Throughout the Anglo-Saxon race paper is bought and sold by the lb.-weight and inch measurement. A man in the trade can judge to a nicety the weight of a paper by its feel. If you take the inch and pound away from him you take his trade off him, and compel him to begin learning afresh. So in cardboards and similar goods, the custom is becoming more general to buy and sell boards by the 'points,' or mills, thick, and the difference of one point (a thousandth of an inch) is often the difference between a fair profit or a considerable loss. Here again their micrometers and other measuring machines and gauges would needs be thrown away. Every repeat order that came in would require the lbs. of ink previously used transposing to grammes, and inches of paper to millimetres. The common size of 20 by 30 would then be simplified to 508 by 762

and the common crown 8vo, 5 by 7½, would appear as 126.997 by 190.496."

Again, in reference to the general aspect of the controversy, we read:—

"Measures of weight and of volume relate practically to the present and to the future, but measures of length, particularly in a great manufacturing nation, are linked irrevocably to the past. No Act of Parliament can obliterate them. It is considerably over 100 years since the metre was introduced into France, but neither fines, imprisonment, republican nor autocratic terrorism have killed the old measures of length. The manufacturers use them to-day, and the people also where they dare. Many engineers in metric countries concede the fact that the metre was an unfortunate length to adopt. The metre itself is too long even for large engineering work, the decimetre too short, and the millimetre is too long for fine work. The foot, the inch and the mill are ideal dimensions, and from one end of the world to the other are identical in length amongst the English-speaking race. To introduce the metre and its derivatives would be to introduce confusion where there is now uniformity. This anarchy would remain beyond the third and fourth generation, it would remain so long as the metre was enforced. The metre has neither virtue nor convenience in it; it is an unnatural length and must of necessity create trouble wherever and whenever enforced, so long as human beings are what they are to-day."

We note that the association is seeking to enlarge its membership. From time to time we have placed the aims and objects of the Decimal Association before our readers; we now have pleasure in giving equal publicity to the other side of the controversy.

Exhibition.

EDINBURGH AND MIDLOTHIAN.

The Edinburgh and Mid-Lothian Industrial Competitive Exhibition was opened in the Waverley Market, Edinburgh, on Friday last by Mrs. Burnet Smith (Annie S. Swan) and presided over by Lady Cranston. The Lord Provost and Lady Cranston have given their generous support to what may now well be regarded as an institution in the city. For the eighth year in succession the Exhibition has been held with ever-increasing popularity and success, until now the entries number 4,385.

The awards in the photographic sections are as follows:—Open Section.—Landscape: 1, R. M. Readdie, Edinburgh; 2, J. E. Latharn, Manchester; 3, Alexander Allan, Edinburgh. Animals: 1, R. M. Readdie, Edinburgh; 2, J. Dunlop, Motherwell; 3, W. H. Lindsay, Hamilton. Flowers, Fruit, and Still Life: 1, James Dunlop, Motherwell; 2, S. G. Kimber, Southampton; 3, Alexander Allan, Edinburgh. Portraiture: 1, John Smith, Hastings; 2, W. H. Lindsay, Hamilton; 3, S. C. Burgess, Ashby-de-la-Zouche. Child Portraiture: 1, W. H. Lindsay, Hamilton; 2, Mrs. Turnbull, Hawick; 3, J. A. T. Sturrock, Edinburgh. Architecture: 1, S. G. Kimber, Southampton; 2, James Dunlop, Motherwell; 3, R. M. Readdie, Edinburgh. Figures and Genre: 1, S. G. Kimber, Southampton; 2, Alexander Allan, Edinburgh; 3, James Dunlop, Motherwell. Snapshots.—1, Arthur W. Walburn, West Hartlepool; 2, W. H. Lindsay, Hamilton; 3, R. Dunlop, Motherwell. Seascape and Marine: 1, David H. Munro, Edinburgh; 2, D. Littlejohn, Glasgow; 3, Arthur W. Walburn, West Hartlepool. Any Subject (N.C.): 1, R. Lunn, Juniper Green; 2, J. A. T. Sturrock, Edinburgh; 3, S. G. Kimber, Southampton. Enlargements: 1, R. Lunn, Juniper Green; 2, Alexander Allan, Edinburgh; 3, J. A. T. Sturrock, Edinburgh. Carbon, and Sepia Platinotype Work. Landscape: 1, J. E. Latharn, Manchester; 2, Alexander Allan, Edinburgh; 3, S. G. Kimber, Southampton. Local Section.—General Photography: 1, William Bryce, Glasgow; 2, G. Sutherland, Edinburgh; 3, Adam Russell, Wishaw. Animals: 1, Albert Haynes, Alderley Edge; 2, J. S. Bryce, Lanark; 3, Isaac Lightbody, Hamilton. Flowers, Fruit, and Still Life: 1, A. Ramsay, Wishaw; 2, Thos. A. Thomson, Edinburgh; 3, G. Graham, Girvan. Portraiture: 1, R. N. De Pinto, Leith; 2, James Fallow, Wishaw; 3, J. A. T. Sturrock, Edinburgh. Child Portraiture: 1,

Albert Haynes, Alderley Edge; 2, James Fallow, Wishaw; 3, J. Jack, West Calder. Architecture: 1, Albert Haynes, Alderley Edge; 2 and 3, John Anderson, Belfast. Figures and Genre: 1, John Anderson, Belfast; 2, Wilton Rex, 12, Linkfield, Musselburgh; 3, David Munro, Edinburgh. Street Scene or Scenes: 1, Albert Haynes, Alderley Edge; 2, Robert Dykes, Edinburgh; 3, J. A. T. Sturrock, Edinburgh. Snap-Shots: 1, George Dunn, Edinburgh; 2, G. Graham, Girvan. Seascape and Marine: 1, David H. Munro, Edinburgh; 2, R. Lunn, Juniper Green; 3, Albert Haynes, Alderley Edge. prize list will be continued in our next issue.

FORTHCOMING EXHIBITIONS.

October 15-29.—Coatbridge Photographic Association. Hon. Sec. Geo. W. Campbell, Ailsa Cottage, Coatbridge, N.B.
October 19-22.—Rotherham Photographic Society. Hon. Sec., C. Hemmingway, Tooker Road, Rotherham.
October 26-28.—Watford Camera Club. Hon. Sec., H. G. T. foot, 3, The Parade, Watford.
November 2, 3, 4, 5.—Newark Photographic Exhibition. Secretaries, L. C. B. Appleby, Barnbygate House, Newark.
November 2-23.—Plymouth. Hon. Sec. Photographic Society, Chas. R. Rowe, 2, Walnut Villas, Cockington, Torquay.
November 3.—Frome M.I. Photographic Society. Hon. Secretary, B. J. Mitchell, 3, Willow Vale, Frome.
November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Sec. James Dunlop, Myrtlebank, Motherwell.
November 9.—Hackney Photographic Society. Hon. Secretary, Walter Selfe, 70, Paragon Road, Hackney, London, N.E.
November 15-19.—Sunderland Camera Club. Hon. Sec., Selby-O'Connell, 52, Frederick Street, Sunderland.
November 17-18.—Braintree and Bocking Camera Club. Hon. Sec. W. H. Tilston, 81, High Street, Braintree, Essex.
November 17-19.—Darwen Photographic Association. Hon. Sec. J. G. Thomas.
November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.
November 22-23.—Ipswich Camera Club. Hon. Secretary, R. Sutton, 37, Henley Road, Ipswich.
November 23-26.—Hove Camera Club. Hon. Secretary, A. Sargeant, 55, The Drive, Hove.
November 24-25.—Isle of Thanet Photographic Society. Hon. Sec. G. W. Simmers, Aberdeen House, Ramsgate.
November 25-26.—Ilford and District Photographic Society. Hon. Sec., W. N. Beal, 155, Thorold Road, Ilford.
November 26-December 3.—Glasgow Eastern Amateur Photographic Association. Secretaries, John Brough, 68, Dalmarnock Street, Park Head, Glasgow; and Geo. R. Johnstone, 591, Alexandra Parade, Dennistoun, Glasgow.
December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.
December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-10 West 101st Street, New York.
December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.
December 12-17.—Sefton Park Photographic Society, Liverpool. Hon. Secretary, H. E. Cubley, 3, Langdale Road, Sefton Park, Liverpool.
December 13-20.—Southampton Camera Club. Hon. Secretary, G. Kimber, Oakdene, Highfield, Southampton.
December 28-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 138, Glasgow Road, Wishaw.
January 12-14, 1905.—Boston Camera Club. Hon. Sec., H. M. Hames, 65, West Street, Boston.
January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.
January 20-21, 1905.—South Essex Camera Club. Hon. Secretary, T. Michell, 180, Browning Road, Manor Road, E.

January 28-February 12, 1905.—Photographic Society of Marseilles. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.

February 6-11, 1905. — Blairgowrie and District Photographic Association. Hon. Secretary, Wm. D. M. Falconer, James Street Cottage, Blairgowrie.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

March 4-11, 1905.—South London Photographic Society. Hon. Sec., H. Creighton Beckett, 44, Edith Road, Peckham, S.E.

June, 1905.—Northern Photographic Exhibition. Secretary, F. G. Isot, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

October 31.—Coxin. 68 prizes for users of Coxin. Judging twelve pictures. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.

November 1.—The "Graphic." £50 in cash prizes. Manager, Photo Competition, the "Graphic," Tallis Street, Whitefriars, London, E.C.

December 31.—Barnet. Nineteen classes. Prizes valued at £500 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

March 31, 1905.—Ilford. £750 in cash prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

THE MAKING OF A WELSBACH MANTLE BRIEFLY TOLD.

The incandescent gas mantle was invented by Auer von Welsbach in 1885, and patented all over the world. The manufacture and use of mantles was first taken up in Austria, and has since found its way in all of the civilised countries where gas is introduced. At the present time, writes "The Scientific American," it is estimated that no less than one hundred and fifty millions of mantles are manufactured annually. In the United States, although there are about forty millions manufactured annually, the industry is only partly developed. The public is gradually learning to use the mantle. The mantle is made as follows:—A "cone" or spool of No. 40 white cotton thread is knitted into a "stocking" or hose, about two inches in diameter. This stocking is thoroughly washed and dried. Then it is saturated with a solution of nitrate of thorium and one per cent. of nitrate of cerium. The thorium is manufactured from a sand called monazite, which is found in Brazil and in the State of Carolina, and is rather expensive, being sold at 6.50 dollars per pound. One pound of nitrate of thorium yields from 300 to 340 mantles, depending on the quantity distilled. After the cone has been washed and dried it is either cut to proper size and impregnated with the thorium solution, or is first impregnated and then cut to the required lengths. The impregnated stockings after being cut and dried are sewed at one end with asbestos thread, so as to form a head provided with a loop, which serves to hold the mantle in process of manufacturing and when in use on the burner. Then the impregnated stocking is hung on a wire by an asbestos loop, and heated in a gas flame of the Bunsen type. This is done in order to burn out the thread. The next process is called the shaping. The mantle now consists only of ashes of thorium (oxide of thorium) and is carefully held over a Bunsen flame, and gradually given the right shape, at the same time being hardened. As soon as the mantle is shaped and hardened it is practically completed; but in order to protect it from breakage it is "dipped" in a stiffening solution. There are many forms of "dip," but the one most used is made of soluble cotton (gun-cotton) dissolved in good alcohol and acetone. To this mixture castor oil and shellac are added. Before the mantle can be used on a burner this "dip" or coating must be burned off. The method employed in the manufacture will be described in detail in an early issue, and fully illustrated.

IPSWICH Social Settlement Camera Club.—The first meeting of the winter session was held on Friday night. The subject for the evening was "Flashlight Photography." Mr. Grix showed various methods of taking photos by flashlight.

New Books.

"Science and Practice of Photography." By Chapman Jones, F.I.C., F.C.S., F.R.P.S. Fourth edition. Rewritten and greatly enlarged. 569 pp. London: Iliffe and Sons, Ltd. 5s. net.

For some years "The Science and Practice of Photography" has been the textbook of many photographic technical schools and classes, and in the sixty-eight chapters every section of the subject receives careful treatment at the hands of the author, whose style is extremely simple and lucid. In this new edition the whole work has been most carefully gone through and brought up to date, a process rendered necessary and desirable by the large amount of photographic progress that has been achieved since the publication of the last edition. The work does not pretend to teach either chemistry or optics, but only to make clear to the student the matters that immediately concern him, and to enable him to use intelligently the methods given in his practical work.

One of the added chapters treats of the developable image. The theory that light, when it produces a developable image in an ordinary gelatino-bromide plate, causes decomposition of the silver bromide, in the opinion of the author, has long been untenable. A mechanical working hypothesis has been suggested.

Interesting chapters on the more exact testing of sensitive plates by the use of the Chapman Jones Plate Tester, and on measuring and comparing opacities are included, but, as the author remarks in his preface, "only the fringe of this subject is touched." If it were possible to write a useful treatise on this matter, the aim and scope of the present volume would render its inclusion impossible.

"The Optics of Photography and Photographic Lenses." By J. Traill Taylor. 98 illustrations. 270 pp. Third edition. With an additional chapter on Anastigmatic Lenses by P. F. Everitt. Price 3s. 6d. London: Published by Whittaker and Co., 2, White Hart Street, Paternoster Square, London, E.C.

Much of the matter in this little book was originally published in the columns of the JOURNAL more than twenty years ago, and some of it is even older. When Taylor wrote the various articles and delivered the many little discourses upon which the work is based, optical science was a very different thing from what it is to-day. It is not unjust to his memory to say that his life's work was practically over when the anastigmatic era set in. Hence it is that the first edition of the book, which was published about twelve years ago, contained little or no reference to the revolutionary labours of Abbe, Schott, Rudolph, Von Hoegh, and many other Continental optical savants. In a measure this deficiency is made up in the present edition by Mr. P. F. Everitt, who devotes the thirtieth chapter to a concise view of the principal anastigmats introduced since the year 1898, when the Concentric was patented by Dr. Schroeder and Mr. J. Stuart. Mr. Everitt, however, is of opinion that the Antiplanet introduced by Dr. Adolph Steinheil about 1879 "may be regarded as the forerunner of the Anastigmats." Steinheil's intention, adds Mr. Everitt, evidently was to construct a lens conforming, as closely as circumstances permitted, to the necessary conditions for correcting spherical aberration and astigmatism as subsequently published (that is, in 1897) by Dr. Rudolph Steinheil. These conditions are briefly quoted. Following the "Concentric," the Abbe-Rudolph triplet of 1889 is mentioned as being the first of the Zeiss lenses to be introduced, although in its construction apochromatism rather than anastigmatism appeared to be aimed at. To the Protars, patented by Dr. Rudolph in 1890, is assigned the distinction of being "the first successful attempt to supply photographers with an achromatic objective combining spherical correction with anastigmatic flatness of field." Thence, step by step, we are taken through the subsequent work of Dr. Rudolph, Dr. R. Steinheil, Dr. Kämpfer, Von Hoegh, Dr. Harting, and other German patentees. The achievements of H. D. Taylor and H. L. Aldis in this country also receive recognition. Each lens is diagrammatically illustrated, and the introductory parts of the chapter which deals with the nature of the glasses and the manner in which they are to be used in correcting errors should enable the "users of photographic lenses," for whom Taylor's book was avowedly planned, to understand in some degree the optical problems involved in modern lens construction. The other thirty-eight chap-

ters of the book have, where necessary, been subjected to revision, but the volume would not have suffered if the pruning knife had been occasionally applied to it, such paragraphs as: "Maps or charts A lens of the rapid class is most advantageous for this kind of work," having a distinctly obvious if not belated appearance. But on the whole, Taylor's book in its present form does not recede from the position it assumed on its first publication. It is a popular and easily comprehended introduction to the non-mathematical optics of the photographic lens used on the camera and the projection lantern, and it includes a great deal of general information which the photographer should find useful in his work. A word of reference is due to the historical portions of the volume, which should interest the student of lens evolution.

Patent News.

The following applications for patents were made between October 3 and October 8, 1904:—

Polychrome Photographs.—No. 21,210.—"Improvements in and relating to polychrome photographs." (Charles Louis Adrien Brasseur.)

Cameras.—No. 21,285.—"Improvements in Cameras." (John Stratton Wright.)

Cameras.—No. 21,295.—"Improvements in photographic cameras." Date applied for under Patents Act, 1901; October 14, 1903, being date of application in United States. (Magnus Niell.)

Developing Apparatus.—No. 21,335.—"Improvements in photographic developing apparatus." (James Wyndham Meek.)

Cameras.—No. 21,439.—"Improvements in photographic cameras." (Alexander Milne.)

Camera.—No. 21,527.—"Panoramic Camera." (William James Johnston.)

GILMOUR AND DEAN, LTD.—Registered October 3 in Edinburgh. Capital £30,000, in £1 shares. Objects: To acquire as a going concern the business carried on under the style of Gilmour and Dean at 50, North Hanover Street, Glasgow, with all or any of the assets appertaining thereto, and to carry on the same and the businesses of engravers, lithographers, printers, photographic and colour printers, die sinkers, stationers, etc. Registered office, 50, North Hanover Street, Glasgow.

"We do not, as at present advised," says the "Standard," "entirely condemn the Carlsbad authorities who insist on suppressing the amateur photographer." Neither do we when he makes himself a nuisance and persists in following persons of note with his camera, as he did in the case of Pierpont Morgan, to the exceeding annoyance of the would-be victim. I have recently come across a caricature of President Roosevelt under a broad grin, which probably the President would give many dollars to withdraw from circulation. There was money in it for the photographer, and probably this is a clue to the objectionable practice. It is presumed that public personages are public property, but good taste might be exhibited even in laying down such a questionable dictum. Our own King, in spite of his well-known good nature, must feel the ordeal terribly trying at times, and I have seen at least one snap-shot of him vainly endeavouring to cover his face with his hands. Some sort of a "black list" is necessary that the many innocent shall not suffer with the few guilty, and, although one would scarcely object to photographs of public men on public occasions, the privacy of domestic life might be left intact. It is not difficult to foresee that steps will have to be taken some time in the near future to protect the victims of the irresponsible or the mischievous snapshotter, and the Paul Pry of the camera will have an unhappy time. Thoughtlessness and the want of appreciation of the rights of others may have something to do with the nuisance. The man who makes exposures on fortifications, and is promptly hauled before the authorities, generally does it because he doesn't think, and not because he has found the picturesque or expects to make money out of it. A little discretion and good feeling on the part of the photographer is all that is needed to obviate any necessity for a Carlsbad suppression in this country.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

October.	Name of Society.	Subject.
24	Southampton Camera Club	In Birdland with a Camera. Illustrated. Mr. O. G. Pike.
24	South London Photo. Society	Enlarging Processes. Mr. H. Edmeads.
25	Glasgow Southern Photo. Assn	The Hand Camera, and What Can Done With It. Mr. Wm. A. Frame.
25	Rodley and District Ph. Soc.	A Bit of Old England. Mr. Mackay.
25	Hackney Photo. Society	Members' Lantern Slides.
25	Nelson Photographic Society	Members' Question Evening.
26	North Middlesex Photo. Society	Scottish Snapshots. Mr. F. Mortimer.
26	Boro' Poly. Photo. Society	Hints on Lantern Slides. Mr. Algernon Brooker.
26	G.E.R. Mechanics' Institution	Lantern Slide Making. Mr. H. Bennett, F.R.P.S.
26	Cricklewood Photo. Society	Lantern Slide Making. Demonstrated by Mr. T. C. Spencer.
26	Edinburgh Photo. Society	The Camera: and the Optics of Photography. Mr. Robert F. Sherar.
27	Royal Photographic Society	A Popular Talk on Colour Photography. Mr. T. K. Grant.
27	Camera Club	The Results of Recent Exploration in Egypt. Professor Flinders Petrie, D.C.L., F.R.S., &c.
27	Rugby Photographic Society	Photographic Novelties. Members.
27	Watford Camera Club	Second Annual Exhibition at the Club. Exchange.
27	London and Prov. Photo. Asso.	Open Night.
27	Southport Scientific Societies	The Innocents Abroad. Mr. F. C. Clifton.
27	Liverpool Amateur Ph. Assn.	Nosces from some Old English Stone. Mr. Adolph W. Beer.
27	Hull Photographic Society	North Wales. Mr. Godfrey Bingley.
28	Wakefield Photo. Society	Photographic Picture Making. Mr. Thos. Heaps.
28	Boro' Poly. Photo. Society	Instruction Evening. Development.
28	Watford Photographic Society	Printing Methods—Gum Bichromate.
28	Royal Photographic Society	The Engadine and Lucerne. Mr. Samuel J. Beckett, F.R.P.S.

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

OCTOBER 13. Mr. Thomas Bedding, F.R.P.S., in the chair.

The principal business of the meeting was the bestowal of the annual Henderson award for the best paper read during the past year. The voting ultimately went in favour of Mr. J. S. Teape for his paper on "Intensification Without Metallic Salts," which was reprinted in the BRITISH JOURNAL OF PHOTOGRAPHY for April 1904.

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

A MEETING of the General Committee was held on Friday the 14th inst. Present: Messrs. Alfred Ellis, F. A. Bridge, A. Mackie, Lang Sims, S. H. Fry, H. C. Spink (Brighton), H. S. Mendelssohn, E. Scammell Wm. Grove, H. Edmond S. Hull, P. Lankester (Tunbridge Wells), H. A. Chapman, J.P. (Swansea), W. Gill (Colchester), and P. E. Marshall (Hon. Solicitor).

Mr. Alfred Ellis (President) in the chair.

The minutes of the previous Committee meeting, held on September 9 were read and confirmed. The draft report of the Committee for presentation to the members at the annual general meeting on the 21st inst. was read and approved.

The draft prospectus of the Committee's scheme for granting certificates of competence to operators, assistants, etc., was read. That it should be brought forward and discussed at the annual general meeting had already been arranged, and in order that a full opportunity should be given for due consideration of the provisions before the Committee should finally decide upon issuing it in its complete form, it was decided that the draft should be handed to the Editor of the BRITISH JOURNAL OF PHOTOGRAPHY for publication.

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION, HULL BRANCH.

A MEETING of the Hull Branch of the Professional Photographers' Association was held on October 12, Messrs. Wellstead, Fussev, Duncan, and the Hon. Secretary being present. "Examinations for Assistants" and the proposed "Benevolent Fund" were on the agenda.

Mr. Fussey said employers would welcome a scheme which would enable them to discriminate between capable assistants and the large number of unskilled people who answered advertisements. There were many grades of photographers, but the class of inexperienced assistants seemed to be growing, and threatened to crowd out the better men altogether. He hoped the Association could arrange for practical tests, and not set too high a value on purely theoretical knowledge. Mr. Duncan said the ability to make money was the best sort of test, whether in master or assistant. Mr. Wellsted hoped it would be possible to secure a studio in town in which operators and retouchers could within a specified number of hours produce test work certified by the Association. It would have a peculiar value, and would appeal to those photographers who believed that a good man found himself at home anywhere, while such a test would be a trap to the duffer. The Hon. Sec., in pressing the claims of the proposed new Benevolent Fund, said that in February, 1902, when Mr. Lang Sims brought this matter forward, the then president of the P.P.A., Mr. Thomas Bedding, had earnestly urged the opening of a fund to alleviate the distress prevalent at that time. He had remarked that "the rapid distribution of the late Benevolent Association funds had destroyed the one and only centre towards which an unfortunate man or woman might direct his or her gaze." What was true then was much more so now, and he hoped the Hull Branch would do its share in this altruistic effort. As apologies for non-attendance from several members had been sent, it was decided to call another meeting in Hull soon after these important matters had been discussed in London.

HULL PHOTOGRAPHIC SOCIETY.

This society opened the winter syllabus on Thursday, October 6th, by a smoking concert of excellent proportions. Their room was full, and promises well for success and enthusiasm. The president spoke at some length upon the possibilities of photography as an art, from a pictorial point of view, and made much impression when he pressed each one to specialise. He also gave advice upon subjects which each one present might undertake, and proved conclusively that the best work and negatives was usually produced during the fall of the autumn, through the winter, and nearly spring, therefore there was no need to put away the camera, but have it ever ready for spare moments and unusual effects, and he was sure they would profit in their pictorial aspirations. It was also a fine opportunity to look through the existing negatives and pick out and study their merits with a view to making lantern slides, enlargements, and probably pictures for some public exhibition and for the glory of their friends. He also pointed out the extreme advantage of pulling together and for each member to attend regularly during the weekly demonstrations and lectures (this year's being the strongest and best that it is possible to have arranged), and feeling as if they had an individual interest in his fellow members, and by so doing it would not only be to their mutual advantage, but the furtherance of a noble, instructive, and most fascinating art as well as hobby. He gave many branches which might be taken in hand, according to the taste or ability of a member, and we believe a new light has been struck in the Hull society which should prove second to none outside London, and it only needs application to be on a par with several societies in the country, which have made their mark by combined vigorous enthusiasm, and we sincerely hope Hull may secure a share of what they appear to be aiming at. The harmony was contributed by some half-dozen gentlemen, friends, and members. The Rev. C. O. Stewart presided most ably at the piano, and also contributed several popular songs.

WILSTER AMATEUR PHOTOGRAPHIC SOCIETY.

The opening meeting of the session in connection with this society, which was established in 1885, was held in the club-rooms, the Museum, College Square North, on Monday last. Mr. David Elliott, B.A., T.C.D., presided, and, in expressing the pleasure it gave him to meet the members and friends of the society at the opening of the winter session regretted that since their last meeting they had lost one of the oldest members and workers, the late Mr. Alexander Tate, C.E., for many years a member of the council of the Photographic Convention of the United Kingdom. As regarded amateur photography, from the number of cameras to be seen in daily use and the increasing lists of dealers there evidently was an amount of pleasure to be gained in the hobby, and he hoped that the Lord Mayor's gold

medal would be well competed for. Mr. Thomas N. Murray, hon. secretary, read a lecture, written by Mr. C. H. Hewitt, on "Portraiture," illustrated by some very fine slides taken by himself. One of the slides showed a portrait of Miss Dorothy Catherine Draper, taken by her brother, Professor John William Draper, M.D., LL.D., of New York University, early in the year 1840, which is almost certainly the earliest sun picture of the human face.

LEICESTER AND LEICESTERSHIRE PHOTOGRAPHIC SOCIETY.

THE session of this society opened on Tuesday evening last with a lantern lecture at the Victoria Hall. Mr. L. Hough, the president, presided, and offered a few words of welcome to Mr. F. Martin-Duncan, whose lecture on "Denizens of the Deep, or Studies in Marine Photography" was greatly enjoyed by a large attendance. Marine photography, the lecturer said, had received comparatively little attention, but it was full of charms and interest, and when once taken up was never dropped again, but became a life-long hobby. The apparatus required was not of so elaborate a character as might be imagined, but a large and inexhaustible stock of patience was necessary, and sometimes he had to wait a fortnight and three weeks before he was able to obtain a successful photograph. The lecture was illustrated with a number of views thrown on the screen, and constituted not only an example of what may be achieved in the instruction of this kind of marine photography, but also a useful and instructive natural history lesson. Photos of the more familiar objects of the sea-shore were shown, some of the more interesting being pictures of various kinds of seaweed, marine insects and animals, small fishes, star fish, the sea urchin, crabs, sea worms, cuttle fish, and the octopus. The lecturer told of an exciting adventure he had in the Bay of Naples with a large octopus, whose tentacles seized round the legs and dragged him into the water. He was rescued with difficulty by a Neapolitan boatman. At the close of the lecture the president stated that the society numbered 120 members, and was most flourishing. Persons interested in photography were invited to attend the fortnightly meetings at the Oriental Cafe in the Market Place, where a dark room was set apart for the use of members.

ARCHITECTURAL ASSOCIATION CAMERA CLUB.

At the first meeting of this club, held on Tuesday evening at the Royal Architectural Museum, 18, Tufton Street, Westminster, a paper on "Westminster Abbey," illustrated by over a hundred lantern slides, lent by Mr. S. B. Bolas, was read by Mr. D. M. Mackenzie. Mr. Francis R. Taylor, chairman of the club, presided. Mr. Mackenzie briefly told the story of the Abbey's origin, rise, and progress, and, having shown and explained a ground plan of the Abbey church and monastic buildings, took his audience down the nave into the choir to see Blore's stalls and J. L. Pearson's organ case, through the north and south transepts, round the ambulatory chapels from south to north, pointing out some of the more noteworthy monuments, and having made a survey of Henry the Seventh's chapel and its north and south aisles, and an examination of the galaxy of royal tombs in the Chapel of the Confessor, concluded an interesting hour-and-a-half's lecture with glances at the chapter-house and its crypt and the cloisters, leaving the historic buildings by way of the Abbot's Courtyard. In proposing a vote of thanks to Mr. Mackenzie, with whose name that of Mr. Bolas was coupled, Mr. Francis Hooper remarked that now that the Architectural Association had removed its headquarters to the very doors of the Abbey, they might expect that their students would give its architectural treasures closer attention. He much regretted that, under the present régime, so few facilities were placed in the way of bonâ-fide students for sketching, and especially that permits were granted for such short periods. Mr. John D. Crace, in seconding the vote of thanks, remarked that the Council of the Royal Institute of British Architects ought to be moved to unite with the committee of the association in requesting that every facility for sketching and measuring at leisure should be granted to properly accredited architectural students.

DERBY PHOTOGRAPHIC SOCIETY.

THE annual meeting of this society was held at Derby, under the presidency of Mr. C. B. Keene. The annual report alluded to the recent visit of the Photographic Convention to Derby. There were

ninety-five members, and the accounts showed that the finances were in a satisfactory state. Sir William Abney and the Hon. F. Strutt were elected patrons of the society. Dr. E. Collier Green was elected president in succession to Mr. G. Herbert Strutt, and Mr. G. T. Lee and Mr. W. R. Bland accepted office as vice-presidents, Mr. Keece having expressed a desire to retire from office, though promising to remain an active member of the society. Mr. J. B. Copeland, who now lives away from Derby, resigned the hon. secretaryship, and Mr. A. H. Bennett was appointed as his successor. Mr. F. H. Gandy was appointed hon. treasurer.

News and Notes.

"HINTS on Lantern Slides, with Examples," is the title of lecture to be given by Mr. Algernon Brooker at the Boro' Polytechnic Photographic Society on Wednesday evening, October 26.

At the exhibition of the Brentford Photographic Society, to be held in March, 1905, the judges will be Messrs. Thomas Bedding, F.R.P.S., R. W. Craigie, and J. C. S. Mummery.

THE Austin-Edwards Monthly Film Negative Competition.—The prize camera for current month has been awarded to E. O. Henrici, Esq., 62, The Common, Woolwich, for his negative "The Matter-horn."

MESSRS. EYRE AND SPOTTISWOODE announce, in connection with their Woodbury lantern lectures by prominent authors, that they have arranged for two further lectures, which, together with full sets of slides, will be sent free of charge to any responsible applicant.

THE members of the Darlington Camera Club opened their winter session on Thursday last, when Mr. R. W. Chapman gave a demonstration on "Flashlight Photography," and in the course of his experiments photographed the company present.

ROYAL Photographic Society.—At the New Gallery, 121, Regent Street, on Monday, October 24, Mr. John H. Avery will give an account of "A Journey to Fanatical Fez," illustrated by his own photographic lantern slides. Gallery opens at 7 p.m., lecture at 8 p.m.

WHITBY Camera Club.—At the annual meeting the report showed a very satisfactory state of affairs, and promises of several new members with the opening of the winter season. Mr. G. S. French was elected president, and Mr. Woodhouse Parkinson, Ocean Road, Whitby, hon. secretary.

A WELL got-up little booklet from the well-known firm of Wratten and Wainwright, dry plate makers, of Croydon, has been sent us. It contains full particulars of the "London" plates, the reputation of which, for reliability, has been long recognised, particularly in tropical climates. Many excellent half-tone reproductions illustrate the price list.

NORFOLK Photographic Society.—At the first meeting of the winter session, held at Strangers' Hall on Friday last, Mr. A. E. Coe gave a demonstration of the best method of reducing and intensifying those negatives capable of improvement by these processes. It was decided later in the evening to hold the annual exhibition in February next.

SOUTH London Photographic Society.—The elementary evenings of this Society started off in fine style with a lecture on "Photographic Apparatus" given by the hon. secretary, H. Creighton Beckett. The Committee are glad to know that many unattached photographers have availed themselves of the offer made some weeks ago, and have applied for cards of admission to these evenings. Fuller particulars can be obtained from Mr. Beckett, 44, Edith Road, Peckham, S.E.

MRS. ALSTON begs to announce that, owing to the increasing number of her pupils, she has been obliged to remove her studio from 175, New Bond Street, to larger and more commodious premises on the first floor at 52, New Bond Street. At this address free demonstrations of crystalloleum painting, a new and beautiful process for tinting photographs, rivaling the finest miniatures on ivory, are being given daily from 11 a.m. to 12 noon.

SOUTHAMPTON Camera Club. The members held a meeting on the 17th inst., when, in the absence of Mr. W. D. Welford, F.R.P.S.,

who was unable to keep his appointment, Mr. G. Vivian very ably filled the gap, and entertained the company with his instructive lecture on "Old Southampton," which was illustrated by many incidental and interesting lantern slides. The lecture was much appreciated, and Mr. Vivian was accorded a hearty vote of thanks for his excellent impromptu entertainment.

"COXIN" Competition.—Messrs. W. Butcher and Sons have asked us to draw attention to the fact that the "Coxin" competition closes on the last day of this month. There will be sixty-eight prizes. 1st, all. The 1st prize is a Humber standard motor bicycle; 2nd, Riley combined billiard and dining table; 3rd, "Monarch" gramophone; 4th and 5th, photographic apparatus. Duplicates of these first prizes will be awarded to the dealers who sold the bottles having the winning coupon.

THE Scenic Artists' Association proposes to hold next month the First Annual Exhibition of the works of Scene Painters, started at present. Scenic artists, theatrical managers, and others willing to lend models of theatres, sketches of scenes, properties, and costumes of historic interest, old playbills, posters, portraits of celebrated scene painters, paintings, drawings, and photographs of stage scenes, etc., etc., are invited to communicate with Mr. H. Lawrence Harrison, the secretary of the association, at 5, Robert Street, Adelphi.

SOUTH London Photographic Society.—This Society had quite a gala night recently, when, before a crowded audience, nearly 200 slides were passed through the lantern. A large number of the slides were prize winners in some recent competitions promoted by the photographic Press, and some very fine work was shown. A very pleasing feature of recent meetings of this Society has been the numbers of nominations for membership announced, and it is confidently believed that the active membership will pass the 200 mark by the end of the year.

THE first ordinary meeting of the session, in connection with the Newcastle-on-Tyne and Northern Counties' Photographic Association was held on Tuesday last, at the Young Men's Christian Association, Newcastle. A lecture was delivered by Mr. A. E. Cowling on "Architectural Photography for Beginners." Mr. J. W. Lyson presided. The lecturer, who is chairman of the Federation of the Photographic Societies of Northumberland and Durham, illustrated his discourse by the introduction of a number of very fine slides. The second ordinary meeting will be held on Tuesday, the 26th inst.

YORKSHIRE Philosophical Society: Photographic Section.—The annual meeting of the Photographic Section of the Yorkshire Philosophical Society was held in the Museum on Wednesday last. The report for the past session was read by the hon. secretary, Mr. E. Dennis Taylor, who recapitulated the chief events of the session. Dr. Tempest Anderson, M.D., was unanimously re-elected to the office of president. Mr. J. N. Kitching, and Mr. N. Bellerby, were re-appointed vice-presidents, and Messrs. H. Dennis Taylor, Standcliffe Mount Villas, and Malcolm Spence, Marygate, joint hon. secretaries.

ONE of the most impudent thefts of a work of art that have occurred in modern times has taken place at the National Portrait Gallery. Last Wednesday week one of the most valued miniatures in the nation's collection was stolen from its place in the screen-room on broad daylight, during the hours when the gallery was open to the public, and while the attendants patrolled the rooms. The missing miniature is a portrait of Baron Thomas Dimsdale, the great inoculator for small-pox, and was painted by Andrew Plimer. It was presented by Lady Dimsdale, wife of Sir Joseph Dimsdale, ex-Lord Mayor of the City of London, to the nation in 1880.

HILLSBORO' and District Photographic Society.—The annual general meeting of this society was held at Miss Makin's schoolroom, Hillsboro', on Wednesday last, the 12th inst. The secretary and treasurer each gave a very satisfactory report on the year's working. A good collection of the members' competition prints was exhibited. The prize winners were: for the monthly competitions, Mr. Z. Carr; for the president's special competition, Mr. W. T. Furniss. The new officers elected for the ensuing year are: president, Rev. T. Campey; treasurer, Mr. T. Carr; hon. secretary, Mr. B. F. Glossop, Southey Villa, Walkley Bank Road, Sheffield.

THERE was a small but interesting side show at the soirée of the R.P.S. which could not possibly have been seen by anything like the present. Professor R. W. Wood was to have shown in person the

latest results by his diffraction grating method of photography in colours, which he described some years ago before the society (BRITISH JOURNAL OF PHOTOGRAPHY, June 9, 1899), but at the last moment he was called away and his exhibits were shown by Mr. T. E. Freshwater, who again demonstrated the beautiful results obtainable by this process at the meeting of the Affiliated Societies at the New Gallery on Friday last.

On Friday evening last, the 14th inst., Mr. Alfred Ellis, the retiring President of the Professional Photographers' Association, entertained the members of his committee with Messrs. P. E. Marshall, hon. solicitor, and Thomas Bedding, F.R.P.S., Past-president, at the Eccentric Club, Shaftesbury Avenue, W. An admirable dinner was served to a party of eighteen. The President read speeches entirely out of order, and the only instance of insubordination was on the part of Mr. Bedding, who, instigated to rebellion by a majority of those present, persisted in proposing Mr. Ellis' health and congratulating him on the important work which crowned his year of office. A delightful evening was spent by all.

MR. WILLIAM F. SLATER, F.R.P.S., has arranged during the winter season to lecture and demonstrate before photographic societies on Messrs. R. and J. Beck's novelties in hand cameras and lenses, illustrated with lantern slides. Synopsis: Some Errors and Corrections in Photographic Lenses; Distortion; Chromatic and Spherical Aberration; Astigmatism; the New "Unofocal" Anastigmat Lenses; "Zambex" Cameras for Daylight Changing of Ordinary Flat Films; "Dai Cornex" Cameras for Daylight Changing of Plates; Telephotography; The Negative Lens; Comparison of Long Focus and Telephoto Lenses; The "Multiflex" Telephoto Lens; Telephoto Cornex Hand Camera; Depth of Definition; Focus of Infinity; The Use of the "Cornex" Index; A Simple Method of Testing of Shutter Speeds.

SCOTTISH Survey Work.—The list of contributions acknowledged in this month's number of the Transactions of the Edinburgh Photographic Society is truly a goodly one, and Mr. James Burns, who manages the survey section, is to be congratulated upon the result. The portion of old Edinburgh between the Castle and Holyrood is being made the subject of a special effort to get as complete a record as possible of its aspect, both past and present. "It would be a good thing if one of our local societies made a step in this direction," remarks a Glasgow contemporary, "as there must be in the possession of photographers in our city quite a wealth of material which would yield a record of what has passed and is rapidly passing away in our midst. In the survey section of the Edinburgh Society prints are taken from negatives which, in some cases, are only lent for the purpose, but nothing seems to be left undone which will help to make the section a success. In this way from prints and negatives given, and from copies of old prints and every available source, a record is made of old and historic places, many of which are still in existence, whilst others have completely altered in appearance or passed away altogether."

POSE FOR OBESITY.—An amusing story has been told by a man who had to appear in the Paris courts to answer a charge of vagabondage, writes a correspondent to the "Morning Advertiser." He was a very tall man and terribly thin. "What is your profession?" asked the president of the court. "I pose as a model for obesity," replied the prisoner. The judges were surprised to hear that this lean specimen of humanity should pose as an advertisement in order to encourage those who desired to reduce their corpulency, and sought a detailed explanation. "Why, it was in this way," replied the prisoner. "I was in the service of a manufacturer of chemical products which reduced obesity. I donned a mail of rubber which could be inflated like a pneumatic tube. Then I was photographed. Afterwards my portrait was exhibited in a case with the inscription, 'Before treatment.' The rubber was then deflated a little, and another photograph was taken entitled, 'After a month's treatment.' Finally I was divested of my rubber garment, and a photograph of my original self taken. It was labelled, 'After two months' treatment.' The poor vagabond then explained that the dead season of his profession began. No more photographs were wanted. Those that had been taken were used for an indefinite period. He had therefore to starve. Hence the charge of vagabondage preferred against him.

Correspondence.

* * * Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.

* * * We do not undertake responsibility for the opinions expressed by our correspondents.

THE P.P.A. MEETING.

To the Editors.

Gentlemen,—At the annual general meeting of the Professional Photographers' Association, which will be held at the rooms of the Royal Photographic Society, 66, Russell Square, London, W.C., on (this) Friday evening, October 21, the committee will present their tentative scheme for granting certificates to photographic operators and assistants. Mr. Snowden Ward's suggestion for the formation of a benevolent fund will also be discussed.

As both these subjects are of importance to many outside the membership of the association, the committee will be pleased to have the attendance of any who may be interested.—I am, yours, etc.,

WILLIAM GROVE,

Hon. Sec. and Treasurer.

October 12, 1904.

[The above communication should have appeared in our last issue, but it miscarried in transit. Details of the proposed examination scheme are given in full in another part of the Journal. We trust that there will be a large attendance of photographers this evening at Russell Square, in order that both subjects before the meeting may be adequately discussed.—Eps. B.J.P.]

THE PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

To the Editors.

Gentlemen,—By your courtesy, in another part of the Journal will be found the draft prospectus of the first part of the association's scheme for granting certificates of competency to operators, assistants, etc., and I am desired to invite the attention of all who are directly or indirectly interested in the matter, and to ask their assistance in enabling the committee to inaugurate a system which shall be acceptable and useful equally to employers and employed. To this end the committee will welcome reasonable criticism, and, before deciding upon the conditions and provisions finally to be adopted, will carefully consider all suggestions placed before them. Our most useful critics will be those whose criticism is constructive, merely destructive criticism will help us very little, and the simplest and most easily understood method of conveying their ideas will be for those who desire to assist us to send a copy of the draft emended in such a way that it constitutes a complete prospectus of the scheme, embodying their own improvements. To facilitate this course I shall be pleased to send a printed copy of the draft upon request.

Owing to the wide differences there are in systems of conducting photographic businesses it has been found impossible to make provisions to meet every case exactly, and, where the necessity for compromise has arisen, an endeavour has been made to select that which appeared the most generally applicable. The importance of preserving the general applicability of the conditions I would impress upon the notice of those who may favour us with their comments.

In conclusion, may I remind your readers that the Professional Photographers' Association exists for the purpose of advancing the interests of professional photographers, and that its influence and power of carrying out its objects are dependent upon the support accorded it by the professional photographers of this country. The want which has long been severely felt, and which we are now attempting to provide for, is but one of the many pressing needs in professional photography that will be tackled in turn; but our progress would be quicker if the voice of the association were the voice of the majority of the profession. We are not impeded by want of able and willing workers to direct and carry out our schemes. We are not hindered for want of money, our trifling subscription provides for our current needs. What hampers us is want of loyalty on the part of those whose interest it is, and who should consider it their duty to accord us their active personal support.—I am, etc.,

WILLIAM GROVE, Hon. Secretary.

51, Baker Street, London, W.

THE PROPOSED BENEVOLENT FUND.

To the Editors.

Gentlemen,—I desire to state that if there is one member of the photographic profession in a position or qualified to press the claim of the proposed fund, I am that person. Naturally the reader will look down at the signature of this letter, and my signature represents my present position. On October 8, the same day that Mr. Watson's appeal appeared in your issue, my doctor sent me to bed, and I have been there more or less since that date, and have, therefore, had plenty of time for reflection. When one has gone for, say, forty years (taken all in all) almost in perfect health, save slight colds, etc., and is then brought sharp, without any warning, face to face with a blank wall (to use a figure of speech), and there is no turning or moving till that obstacle is removed, one's breath is almost taken away. I read Mr. Watson's letter in great pain and weariness, having undergone a somewhat painful (though minor) operation that same day, and have been obliged to lay up since that; though this has almost overwhelmed me, what would have become of my wife and children if this had happened ten or fifteen years ago, before my business was established, or I had assistants to take my place?

Now I am sure your readers will readily see this is the sort of case that if help was needed the benevolent fund might prove a lasting benefit to such a man and his family, that I appeal for subscriptions towards this grand and noble effort. I have pleasure in enclosing cheque for one guinea, and shall do all I can to further the same.—I am, yours, etc.,

October 17, 1904.

[We have handed our correspondent's cheque to the hon. treasurer of the P.P.A.—Eds. B.J.P.]

To the Editors.

Gentlemen,—I should be glad to pay a small annual subscription towards a Professional Photographers' Benevolent Fund. At the moment I could not find any other address to write to.—I am, faithfully yours,

W. MAYOR.

Leven, Fife, October 17, 1904.

[In last week's JOURNAL, p. 896, the address of the Hon. Sec. of the P.P.A. was given in full.—Eds. B.J.P.]

"ONE MAN AT THE SALON."

To the Editors.

Gentlemen,—The premier exhibitions have this year been, on the whole, very well treated by the lay Press, but I was surprised to find from one report in a London daily that the Salon was a one-man show. The learned critic here contributed five paragraphs, and, apart from the first, which is devoted to a verbose—not to say laudatory—criticism, in which such phrases as "most successful," "contributors and selection committee deserve heartiest congratulations," "commercial element reduced to the least possible dimensions," "members work together with rare skill and devotion," "animated by the single desire to infuse originality and artistic charm into a banal and not fascinating piece of mechanism," lead one to the expectation of a feast of good things. The last-quoted remark is rather suggestive of a wild goose chase, but it is evident that the writer's intentions are good.

The artistic notice continues somewhat in the strain following:

"Look, for instance, at Mr. William Bailey's 'Study in Scarlet,' a portrait well arranged and full of character, suggesting and revealing itself with perfect lucidity, yet delicately, and with a coy suggestiveness which is full of charm. Before such a picture one hardly feels the dualism of machine and artist, which, as a rule, makes itself too surely felt. The representative value of the picture is not sacrificed to the over-mastering impulse of the artist to make himself felt. It is a portrait of the sitter fixing and exhibiting the characteristics of the sitter, with something of the skill and intelligence of a fine draughtsman. Yet no one who has ever used a camera would suppose that the machine alone could do so much; it must first be mastered and controlled, and directed by an artist." Photographers will be flattered by the frequent use of the pleasant word "artist," and be no doubt envious of Mr. William Bailey's possession of a "machine" capable by its own volition of so much.

Compare Mr. Black's "Organ Player" with Mr. Bailey's "Study." Instead of the silvery opalescence which reveals forms and sinuities

in the most delicate modulations, Mr. Black pitches his picture in the deepest gloom. "Through the cavernous gloom a suggestion of something pallid—it may be a human face—and something that suggests a human figure can be discerned." The machine is being run by an imperious and over-mastering personality, who wishes to assert himself, to impress the spectator in some way. Such a master would drive his motor-car over newly-ploughed fields and through hedges and ditches, just to make himself felt and respected. "He'd wreck the machine just to show he was its master," and cut off his nose to spite his face. Really, there are some queer new machines on the market! "I find something of Mr. William Bailey's charm in the print of the girl 'Eating Bananas,' and in Miss Aurin's 'Mignonne.' The former is kept well within the centre keys, being neither too dark nor too white, and there are octaves above and below. The forms are pure and distinct, yet far removed from that superfluity of realisation which bores one so much in commercial photography." Other machines, other drivers.

The numerous works of Messrs. Noir and Blanc are generally well composed, and show great artistic skill and taste, with evidence of complete control of the machine, but how dark the gloom! The preponderance of black is depressing and monotonous. How vague and empty the blacks are. Look at the hair and environment of this figure, which look merely like clouds of fog or smoke. "It is therefore this rank unmanageableness of the blacks which makes one think that Mr. William Bailey and those who work as he does, by preference in the lighter keys, are wiser than the majority of exhibitors who revel greedily in gloom." Happy Mr. Bailey!—I am, yours etc.,

A. CHAFFEUR.

October 16, 1904.

NOTHING LIKE BUTTONS.

To the Editors.

Gentlemen,—Your editorial footnote to the letter by "Argus," published in the B.J.P. of October 14, leads us to the conclusion that you consider his remarks re sweating, etc., are specially directed at us. If that is so, and anonymous slanders are thus permitted, there is nothing to prevent any vindictive assistant who may have been discharged, or other evil-disposed person, from delivering a cowardly "stab in the back," while his identity remains concealed behind a "nom de plume." In case, therefore, your inference was correct, and that a personal attack was intended, we ask you in fairness to permit us to disprove any such insinuations, and show that, in connection with our firm, straightforward assistants have no cause of complaint. Our hours of business are from 9 to 6, one hour allowed for dinner; Saturday 9 to 4. No Sunday work, and no overtime excepting during the fortnight before Christmas. One week's holiday every year to each employee, salary paid. We employ now sixteen qualified assistants (exclusive of two apprentices, charwoman, and messenger boy). Two of these have been in our employ nearly sixteen years, four over six years, four over five years, two over four years, three over two years, and the other one, to complete the complement, seventeen months. In 1903 we paid £1,771 in salaries to assistants. This record should prove how little reliance can be placed on statements unsupported by the name and address of correspondents. As we have been established since 1879, it stands to reason that our experience of photographic assistants has been considerable, and while we are able to speak in terms of the highest praise of the bulk of them, we are bound to say we have met exceptions to the general rule, and have often been victimised by unscrupulous, dishonourable, and incompetent men. "Incompetent" assistants are common, and any firm endeavouring to maintain a high standard of excellence in their work must often have trouble with them. This class of assistant invariably has something to say to the detriment of his former employers, and no doubt many credulous people believe him. Another trait in his character is that he is generally unaware of his own incompetency. Directly he can take a photograph, or, having learnt the "stroke" of a retoucher sufficiently to ruin the "likeness" in a good negative, his arrogance knows no bounds, and he is (in his own opinion) a first-class man, good enough for any studio. If anyone doubts this, let them advertise in your journal for a "first-class" operator, and carefully analyse the replies. From remarks and correspondence received we find that the "spirit"

our humble contribution to your columns (for which you invented the heading, "Nothing Like Buttons") has been misunderstood. It is humiliating to have to explain that our "appeal" against the statement of our American correspondent, that "sooner or later we must become button manufacturers," was intended humorously. Gradually, next time we write anything of the kind, we must label our attempt, "This is a joke."

The second portion of our letter simply gave vent to our opinion that the practices of many professional photographers and others of these men do not turn out the crude specimens of portraiture you mention) were calculated to lower the tone of the profession generally, to bring it, in fact, into disrepute, and, by reflecting themselves and their work so cheap, create in the minds of the public a false idea of the commercial value of photographic portraiture. Obtaining the high profits "Argus" hints at out of women's at 8s. 6d. per dozen, must mean Sunday work, low salaries, and "sweating" for the employees. In proof of this, it is only a few months back that your paper contained an account of a "cheap" photographer who was fined for working girls long after business hours.—We are, gentlemen, yours faithfully,

MEDRINGTON'S, LTD.

Liverpool, October 18, 1904.

SOME PECULIARITIES OF DYES WHICH PRODUCE TOTAL SPECTRUM SENSITIVENESS.

To the Editors.

Gentlemen.—An article such as Mr. Wall refers to is necessarily open to much criticism, but that criticism need not be of the "biting" nature.

Mr. Wall states that a prolonged exposure to the spectrum of a plate bathed with wool-black shows an indistinct band from D to E; therefore this is the region to which the plate is least sensitive, comparatively. But this is the region of maximum absorption of wool-black. Hence my suggested law is proved!

Mr. Wall points out that eosin sensitises for the very region of its greatest absorption. That is precisely what my suggested law enabled, as I distinctly stated that with fluorescent dyes the reverse action was caused to that of non-fluorescent.

If only Mr. Wall would tell us something he has done that is original, instead of making quotation after quotation from the much overdone "German," what a treat it would be.

The Englishman likes originality and self-suggested research better than quotations, and I venture to think that Mr. Wall himself should think kindly of research, even if not carried out by a Valenta or an Eder, and even though he does not choose to follow or agree with the results.—Yours faithfully,

T. THORNE BAKER.

16, Rutland Park Mansions, Willesden Green, N.W.,
October 14, 1904.

THE KOENIG PROCESS.

To the Editors.

Gentlemen.—With reference to the article which appeared in your last week's issue in regard to Dr. Koenig's colour process, we now beg to hand you herewith full particulars of the process in question, including the working instructions.

Our Mr. Jules Fuerst has just returned from the works, and has seen the said process working, and the positive proofs which he showed you (one being a bunch of real flowers and the other being a living subject) were made in his presence.

To our mind there is no doubt that this process is a most remarkable invention of simply and economically producing positive images in natural colours.—Yours truly,

FUERST BROTHERS.

17, Philip Lane, London, E.C.,
October 18, 1904.

[The specimens shown us are excellent examples of the process.—Eds., B.J.P.]

HALF-HOLIDAYS FOR ASSISTANTS.

To the Editors.

Gentlemen.—Re Assistants' Half-Holidays. In reply to your correspondent's letter, published in your issue of the 14th inst., the Shop Hours Act, 1904, does not apply to workshops; these are fully dealt with by the Factory and Workshops Acts. These Acts have

large powers and mainly deal with women and children, and apply to a large number of photographers' establishments. The Shop Hours Act, 1904, deals absolutely with shops, therefore, the Act applies to all photographers occupying shops, and this will be welcome news to the many assistants employed by photographers. For once the shop is closed, business in the studio is, of course, brought to a close, thereby releasing many over-worked assistants, and, there is no doubt, many photographic assistants, employed by firms doing a cheap trade, work far too many hours. The Shop Hours Act cannot be too widely known, for it is an Act which leaves nothing to be desired, if it can only be brought into operation on behalf of the assistants, and there is no reason to suppose that the Early Closing Associations will neglect any time to ensure a speedy enforcement of the Act, which becomes law, I believe, next year. The expression "shop" under the Act includes any premises, or place, where retail trade (including the business of a barber) is carried on, and it provides for a closing order made by a local authority and approved by at least two-thirds of the occupiers of the number of shops to be affected, and confirmed by the central authority in manner provided by this Act, may fix the hours on several days of the week at which all shop or shops, of any specified class are to be closed for serving customers; shall not be earlier than seven o'clock in the evening on any day of the week, except that on one specified day in the week it may be an hour not earlier than one o'clock in the afternoon. The Act also provides that if any person contravenes the provisions of a closing order, he shall be liable on conviction to a fine of one pound for a first offence, and in the case of a second offence five pounds, and in the case of a third offence twenty pounds. The Act does not affect the sale of medicines, the sale of intoxicating liquors, and the sale of tobacco and newspapers. In conclusion, I should add that copies of the Shop Hours Act, 1904, may be obtained post free for three half-pence from Messrs. Eyre and Spottiswoode, East Harding Street, London, E.C.—I am, gentlemen, your obedient servant.

JAMES DENTON.

October 15, 1904

WE have received from the chairman of the committee of the American Photographic Salon at New York (Mr. Curtis Bell) a letter drawing attention to the great effort now being made to gather for the first time in America, a representative exhibition of the work of the world's great pictorial photographic workers. He says:—The greatest city in America—the centre of its art life—has never had anything in the nature of a photographic salon. Exhibitions of the works of a few masters have been frequent, confined to a limited number, and not open to the general public, but the fact that the general public is eager for such a treat has been proven by the generous support given this movement by the most cultured art lovers in America—support so unexpectedly liberal that it will be possible to make this the most important salon ever held in the world. One of the largest and most fashionable art galleries in New York city has been secured for the exhibition, and the attendance of that part of the public which gives practical encouragement to the artist is assured. Full particulars can be obtained from 100 and 102, West 101st Street, New York.

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Answers to Correspondents.

- * * * All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.
- * * * Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.
- * * * Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.
- * * * For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

- W. Jeffery, 8, Spurlingate, York. Photograph of J. G. Butcher, K.C., M.P.
 F. J. R. Mac'adyen, 151, Barras Bridge, Newcastle-on-Tyne. Photograph of Lord Charles Cavendish.
 H. Pickering, 54½ High Cross Street, Leicester. Two Photographs of the Late Miss E. Vaughan.
 T. S. Robinson, 125 and 127, High Street, Homerton, London, N.E. Photograph of the Clapton Orient Football Team.

VIDEX.—Probably the Ilford Monarch would suit you.

GARRATT AND ATKINSON.—You will see that the correspondent, whose address we did not keep, was replied to on page 899 of our last issue.

BOOK WANTED.—"APPRENTICE" says: "I should be much obliged if you could give me the name and price of a good book on lighting." In reply: "Artistic Lighting," by Inglis, 2s. 6d.; "The Studio, and what to do in it," Robinson, 2s. 6d., are good books.

COLLOTYPE QUERY.—Mr. W. T. Wilkinson writes that the formula for substratum for colotype plate asked for by "Collo" (Leeds) in last week's BRITISH JOURNAL OF PHOTOGRAPHY is as follows:—Dextrine, 1 ounce; syrupy silicate of soda, ½ ounce; water, 10 ounces.

DEVELOPER.—"EBONY" asks: "Would you kindly oblige with a good developer which would give black negatives?" In reply: Any of the hydrokinone developers will yield negatives of a black tone, but if you want them dense you must leave them in the solution for a good time.

ANILINE COLOURS.—"ARTIST" asks: "Will you kindly let me know address of agent in London for aniline dyes?" In reply: The colours may be had from Hopkins and Williams, Cross Street, Hatton Garden. They are also kept by most drysalters and dealers in dyers' materials. We do not answer correspondents by post.

SENSITISING ALBUMENISED PAPER.—"ALBUMEN" asks: "Can you give me instructions as to how to sensitise albumenised paper?" In reply: Make a solution of nitrate of silver, fifty to sixty grains to the ounce, of distilled water, according to the amount of chloride in the paper. Float the paper on this for three minutes and hang up to dry.

COPYRIGHT.—EMERY AND SON write: "We sell some views of the town to a stationer, giving him full permission to reproduce them as postcards, etc. Does that prevent us selling prints of the same negatives to other stationers in the town for the same purpose?" In reply: No. Unless you agreed with the first stationer not to supply others in the same line of business.

TONING BROMIDES.—"TONING" asks: "Will you kindly say if you know of any good formula for toning bromide prints in quantities? We wish to obtain a brown or purple brown tone." In reply: Any of the usual formulae will do as well for toning large quantities as for small. You have only to use more solution. A formula was given in reply to "T. Charles" in our last issue.

COMBINED BATH.—"A. R. S." writes: "I should be glad if you would inform me of a really good formula for toning and fixing combined (one that will give a good black)." In reply: A formula for a combined toning and fixing bath is given on page 10 of the ALMANAC, which see. Combined baths are not to be recommended if permanency is a consideration, but the one given is as good as any other.

OPINION WANTED.—"L. M. S." writes: "(1) I should be extremely obliged if you would kindly pass your opinion on the end retouching, and can I say I can retouch? (2) Also would you give me a recipe for a good negative varnish?" In reply: The retouching is only fairly good; that is all we can say at present. (2) Several good formulae for negative varnishes are given on pp. 1063-4 of the ALMANAC, to which we must refer. They are all good.

REMOVING BLACK SPOTS.—"BLACK AND WHITE" says: "Will you oblige me with a recipe for removing black spots from prints. I am working black and white enlargements, and often retouching with superfluous black marks, which I should like to remove if possible without scratching with the knife." In reply: Small spots are best removed by scraping them away with a sharp penknife. Larger ones may be dealt with by an eraser. These are the best means for removing them.

COPYRIGHT.—"A. O. Y." asks: "Would you kindly inform me if a private individual can have a copyright photograph enlarged by an amateur friend (or by a photographer) for the purpose of completing a set of pictures for his own room and not for purposes of sale now or at any time? The photographer who enlarges the photograph cannot undertake to enlarge this print." In reply: If the picture is copyright it would be illegal to reproduce it in any form. As the holder of the copyright cannot undertake to make an enlargement, possibly he will give permission to do so.

PHOTOPHIL.—Either of the forms shown in your sketches are good, and it is very much a matter of opinion which is the better of the two. One carbon does burn away faster than the other, and all good hand fed lamps are provided with adjustment by which the crater can be kept in the axis of the condenser. We regret we do not know the address of the maker of the material in Germany. The only colourists we know of are those whose advertisements appear in our pages. We are afraid they will not be very successful in taking a hundred yards of strip with a single magnesium flash. You will, we expect, require several flashes at different parts of it—fired simultaneously.

STAINED PRINTS.—"J. A." says: "I finished a batch of prints at five nights ago, and most of them turned yellow. Last night I finished a batch of 56 prints, and took the utmost precaution with regard to the hypo coming near the washing water at fixing. Seven of them turned yellow and the rest were all right in some cases one of the prints from the same negative would be yellow, while another would be all right. Can you tell me the cause, as it is rather puzzling? Enclosed is one of the prints." In reply: We are surprised that anyone styling himself a professional photographer should be at all puzzled by such a simple thing as this. The prints were not kept moving while they were in the fixing solution. Hence some were (as might be expected) stained.

BRONZING OF SHADOWS.—J. B. PARNHAM writes: "The following questions were asked at one of our meetings this week, and were not answered in a very satisfactory manner. I shall be very glad if you can answer them for me: (1) What is the cause of the remedy for bronzing in shadows on self-toning papers? (2) Using slow bromide papers for warm tones by direct development how can you obtain the same warm tone on each print when doing a batch at a time?" In reply: (1) Papers containing a large amount of silver usually bronze when they are printed from strong negatives. The bronzing, however, usually disappears in the toning and fixing. (2) Simply giving all the prints the same exposure, and removing them from the developing solution as soon as they assume the desired colour.

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THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1905.

Edited by THOMAS BEDDING, F.R.P.S.

The forty-fourth annual issue of THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC will be published on December 1. This year's ALMANAC reached a total of 1,604 pages, and the entire edition of 25,000 copies was sold out before publication. Of no other photographic book ever issued can two such unique facts be recorded. The edition for 1905 will also consist of 25,000 copies.

The growth in popularity of the ALMANAC is evidenced by the remarkable rapidity of its sales.

The 1900 Edition (20,500 copies) was sold within three months after publication.

The 1901 Edition (20,500 copies) was sold a fortnight after publication.

The 1902 Edition (20,500 copies) was sold a fortnight before publication.

The 1903 Edition (25,000 copies) was completely ordered before publication.

The 1904 Edition (25,000 copies) was also completely ordered before publication.

** The frontispiece of the ALMANAC will consist of a portrait study specially taken by Mr. Furlley Lewis (medallist of the Royal Photographic Society's Exhibition, 1903).

EX CATHEDRA.

Sensitive Test for Gold. We have had brought to us for examination samples of combined toning and fixing solution containing no gold, and self-toning paper represented to be made with the assistance of gold which contained not a trace of the precious metal, so far, indeed, as the ordinary modes of testing could reveal, though whether, "to save the face" of the maker, an infinitely small quantity may have been put in or not, we are not prepared to say; but even an amount which might justly be included under such a term appears now to be capable of detection. Herr J. Donan, in the proceedings of the Vienna Academy of Sciences, describes a method which he has devised which is capable of revealing the presence of so small a proportion as the five-millionth of a gram. A fibre of silk or wool is treated with a solution of tannin, or a solution containing pyrogallol and stannous chloride, and then immersed in the acidified solution to be examined for gold. If any be present it will be precipitated in the colloidal form on to the fibre, to which it imparts a red coloration which is observed by examining the fibre under the microscope.

* * *

Injuries by the X-rays. It will be remembered that a fortnight ago we chronicled the death of one of Mr. Edison's assistants in his fluoroscope experiments, after seven years' torture resulting from exposure to the X-rays, and the symptoms were described. Now we learn that Mr. Hale Edwards, of Birmingham, whom many of our readers know is one of our leading authorities on the X-rays, is suffering badly from dermatitis, brought about by continually working with the Röntgen rays. His hands, it is stated, are fearfully disfigured, and almost entirely covered with a kind of wart. The nails are black and the skin coarse and dry. It appears there is no specific remedy for the disease, and the only thing to be done is to abstain from using the rays. Sir Oliver Lodge has expressed the opinion, so the report says, that the rays themselves are not responsible for the trouble, but something which accompanies them, and which can be screened off by suitable appliances, whereas no screen will completely obstruct the rays. But from the report now before us no mention is made as to what are the "suitable appliances" that can be used to screen off the injurious "something that accompanies" the rays from the operator. It is said that the only remedy for the trouble is to refrain from working with the Röntgen rays and things will right themselves. This, it may be mentioned, is the only remedy in some cases in connection with photographic operations—working with the bichromates, for example. Some in working the carbon process continually have suffered badly from the bichromate, and there appears to be no specific for it. But

if the work be relinquished the disease soon cures itself. The same with metol. That acts injuriously on some, and for that there seems to be no actual specific. But let the metol alone and things right themselves in a comparatively short time.

* * *

A Modified Lippmann Process.

Photography in colours seems rather in the air at present, and notable improvements and modifications of existing methods are being brought forward with justifiable hopes that an era of improvement has begun. Among these may be noted a simplification of Lippmann's well-known process, of which we have not heard much of late, though the probabilities are that we may, if M. E. Rothé's process recently expounded at the Paris Academy of Sciences should prove to be a success. It will be scarcely necessary to remind our readers that the Lippmann process is founded on the photo-development of light-wave interference effects within the film, brought about by reflections from a bath of mercury in contact with the film, the metallic surface reflecting the spectrum, or other colours, thrown on the sensitive surface through the glass. To apply this mercury backing special appliances are naturally required, and the process is only attempted by those who are provided with the needful arrangements which are not such as can be readily extemporised. M. Rothé, after a careful examination of a number of the usual kind of Lippmann photographs, was led to the conclusion that a bath of mercury was not essential, and that the air reflection ought, if a sufficiently prolonged exposure were given, to be able to bring about the requisite interference phenomena. He put his theory to the proof, and found it was correct. The great advantage of the Rothé method is that no special material or apparatus is needed. *A priori*, we should have thought that the initial action of the impinging light would be so great as to nullify any within-film effect of interferences; but we record the account of the method which was read before the Paris Academy of Sciences on October 10 last.

* * *

Picture Post-cards and the Post Office.

Although the picture postcard has become such a universal institution, there is evidently misconceptions in some quarters as to what really constitutes a postcard according to the regulations of the Post Office authorities, for the Postmaster-General has found it necessary to issue a circular drawing the attention of publishers and the public generally to the regulations governing the transmission of postcards in the inland service. As these may be of service to some who publish cards of local views, and produce them themselves, we here reproduce the regulations as given in the circular. "Cards intended for transmission as postcards within the United Kingdom may not exceed $3\frac{1}{2}$ in. in length or $3\frac{1}{2}$ in. in width, or be less than $3\frac{1}{4}$ in. in length or $2\frac{1}{4}$ in. in width. They must be composed of ordinary cardboard, not thicker than the material used for the thickest official postcard, and not thinner than the material used for the thinnest." If any of these and other rules be infringed, the card is treated as a letter liable on delivery to surcharge. These regulations should be kept in mind by those photographers who publish postcards, or the purchasers of them will subject their friends to whom they are sent to an extra fee on delivery. It does not seem to be so generally known to many that nothing must be attached to a postcard. A photograph must not be mounted on a postcard, even if its entire thickness, when mounted, does not exceed that of the official thickness; but the photograph may be printed direct

on the thickest. While on the subject of postcards, it may be mentioned that according to a Berlin correspondent petition is to be presented by a committee representing Berlin commercial circles for the introduction of postcards on the front of which communications may be written similar to those used in England. At present, if an ordinary postcard be written upon on the address side and sent abroad the recipient is surcharged as if it were a letter. This has frequently been the case when friends here have, through ignorance of the rule, written on the address side of picture postcards.

* * *

Reflections in Water.

Sir Montagu Pollock, Bart., has recently produced a book bearing the above title, and our contemporary "Nature" a week or two ago gave an illustrated review of it. The work is notable for the number of excellent photographic and other illustrations it contains, one very singular example being reproduced in the journal named, besides a very effective ripple effect. Visitors to photographic exhibitions who have made a study of this subject have often been amused by apparently photographed reflections in water shown in the photographs, reflections which they could tell at a glance were only fictitious, having been printed in, possibly with artistic judgment and intent, but without knowledge. A study of Sir Montagu's book would enable the reader to avoid all such pitfalls, though, as a matter of fact, the photographer is not alone in committing these errors, many artists being sublimely indifferent to such scientific matters as the correct reflection of objects in water. As "Nature" says, "Sir Montagu Pollock has entered an almost untrodden region, within the border of both art and science. With the exception of some passages in the works of Mr. Ruskin, it would be difficult to refer to any other work dealing with the same subject. . . . although the book was written to aid artists in their study of nature, it will none the less be welcomed by men of science and those amongst the general public who attach importance to accurate observation." As we have said, photographs with pseudo-reflections, which, by the way, when efficiently made, require far more knowledge than the mere printing-in of clouds—too often a trap for the unwary—have been exhibited; but, on the other hand, there have been shown other entirely unsophisticated photographs, with genuine reflections, which, nevertheless, have been so peculiar that a very general cry has been raised against them. The example referred to above would, if exhibited, have been placed in this category, for the foreground of the picture—if the term "ground" may be applied to a sheet of water—composes so effectively, yet is so peculiar that the observer would almost involuntarily exclaim "faked!" when he first saw it. Before dismissing the subject, we desire to say that we must not be taken in by inferring that perfect reflections of objects in a sheet of water are, as a rule, desirable pictorially. So far is that from being the case that we unhesitatingly say that, as a rule, the more perfect the reflections in the water, the more atrocious to the artistic mind is the effect; and our concluding advice in treating such subjects is: "Immediate before uncapping the lens throw a stone into the water break up the reflections and prevent their being 'perfect'."

AWARDS at the St. Louis Exhibition.—Gratifying evidence of the recognition extended to British commercial enterprise is furnished by the honours awarded by the committee of the St. Louis Exhibition to Messrs. Burroughs, Wellcome and Co., the manufacturers of "Tabloid" photographic chemicals. Three grand prizes and three gold medals have been conferred for the scientific excellence of their products.

THE IGNORANCE OF SOME PHOTOGRAPHERS.

draft prospectus of the P.P.A.'s scheme for granting certificates (published in last week's JOURNAL) calls to mind in a forcible manner the depths of ignorance in which many photographers flounder. We are principally, of course, to lack of theoretical knowledge, which, however, is of the greatest use in practical work. Of course, with the present state of photography and the simplicity of all processes connected therewith, it is for a man to be a good photographer and yet not know anything of his business outside his own particular sphere. We note that the P.P.A. recognise this, and their scheme is baldly practical, and we think no one will attack it on that score. At the same time we should like every photographer to make as much progress as possible with photographic theory, for without at least a smattering of it it is almost impossible to reach the very top-pinnacle of photographic excellence.

If one glances through the columns of this JOURNAL—and we think we are safe in saying that a great proportion of its readers are professionals—one cannot help noticing a variety of questions which are asked and answered. It is not the variety, however, so much as the quality that strikes one. By this we mean not only the puerile simplicity of many of the inquiries which almost any textbook could answer, but also the meagre details which are at times given as a clue to the unravelling of some intricate inquiry, showing how little the correspondent knows of the materials he handles. This charge of ignorance, however, is by no means levelled at the heads of amateurs, looking them as a whole, leaving out the mere button-pushers who don't do the rest, and whom no one takes seriously, the serious amateurs, as a body, are better versed in photographic theory than many professionals. Of course, one does not expect the working professional to waste time and money over experimenting, but certainly he should know the rudiments of his business. It is certainly no use for us to clamour for photography to be included among the professions whilst the present state of affairs exists.

Apparently any one who has a camera and can make a fair guess at exposure and developing thinks he is entitled to practise as a photographer if he cares to, without the slightest reference to textbooks or even general education. How far the proposed scheme of examining assistants is likely to help us no one can say, but it is certainly a step in the right direction; but nothing but the somewhat utopian scheme of compulsory examination for employees can really advance us towards the higher goal which the better class professionals look. And that is the worst of it. Really good men have some right to consider photography a profession, for in their case expenses of materials are almost nil when compared with the price charged. As with the professions, their fees are for brains, not materials—not only the brains put into each photograph, but also the brain-work expended on reading up and getting to know their work thoroughly before practising. On the other hand, the dozen for 12s. 6d. men and the twelve a shilling persons are content with a slight percentage on their material, and have certainly never expended time, brains, or anything else on improving their knowledge of that which in some hands is not only a profession, but an art. As there is at present no dividing line between the two—the qualified and the unqualified—the perennial question of profession or trade is further complicated.

We opened this article with a reference to the general ignorance existing among many photographers, and an easy method for the reader to find out for himself—viz.,

the correspondence columns of a professional or semi-professional paper; but this doubtless in the majority of cases will be unnecessary, for any professional with a fair knowledge of his business must be always coming across instances.

For ourselves, we know of an operator of ten years' experience, good in his rule-of-thumb way, who is unable to calculate the ratio of exposure required by different stops. Say he is certain one second at F. 6 is right and F. 32 is required. Instead of doing the necessary calculation, which would perhaps take five minutes to learn and a fraction of a second to practise, he guesses.

Then again, when copying photographs, how many workers know exactly how much to increase the normal exposure by measuring the difference between usual position of focussing screen and the position occupied when taking that particular copy, or when enlarging, can they tell how much exposure is increased or decreased by the movement of the sensitive surface nearer to, or further from, the lens? In other words, is the simple rule that exposure varies in inverse proportion to the square of the distance of the sensitive surface from the lens at all well known? Practically the same rule as applied to bromide-printing—viz., quadruple exposure, as distance from illuminant is doubled—is better known.

These few simple points are doubtless called theoretical knowledge, and on this account are unknown to many workers; yet how greatly they simplify and make more certain every-day work!

Then, again, to take just one process—viz., the collodion-chloride—and glance through the various stages, and note where a little chemistry will help. The washing should be longer than for albumen prints. Why? Because, whereas albumen contains only free silver, C.C. has preservatives combined therewith, and these preservatives take longer to dislodge than the silver. Why should prints be washed between gold and platinum toning, and also why should separate dishes be used? Because gold precipitates platinum, and any free gold in the water or on sides of dishes would make muddy prints, and lead to great waste of platinum, besides the alkaline gold being liable to neutralise the acid in the platinum. Platinum must be acid, because it will not tone if alkaline, neither will gold tone so well if acid. Why is thorough washing after platinum necessary? Because any trace of acid in the hypo leads to sulphur toning, and therefore the acid platinum must be got rid of. And so on and so on. We could go through other processes in a similar way; but enough has been said to show the value of simple and easily acquired knowledge.

Another instance of ignorance which has come under our knowledge is the case of a high-class (price) professional who has only just learned what tone is—that is, of course, apart from its meaning of colour.

As for general education, only recently we were present during some exposures on an M.P., and one of the leaders of the Liberal party. A middle-class professional was also present. Here is a sample of his speech: "Just a moment, Sir 'Enery." But those examples are quite enough, and, we fear, far from uncommon. Before professionals can hope to raise the standard of the profession they must see to it that they at least learn the elements of their business. This should do more than any examination scheme, though I certainly hope and think that that is several steps onward.

The scheme drawn up by Mr. Dundas Todd on the other side of the water should also be keenly watched, and we are sure that if there is any good in it and any advancement on the upward grade, our own Photographic Association will advocate something similar.

In conclusion, all those who have the welfare of what is an honest, and should be a respectable, profession at heart should strengthen the hands of this body with their subscriptions, and, more important still, the moral weight of their membership.

TECHNICAL SCIENCE IN GERMANY.

MUCH has been written in this country about the encouragement given by the Government to technical science in Germany and the comments made upon its alleged neglect here. Attention has also been called to this subject in America by the American Consul-General in Berlin (Mr. Mason), who has just forwarded a long report to his Government pointing out the great influence exerted by science on the industrial development of Germany. In his report Mr. Mason particularly refers to the chemical industry as a case in point. He mentions that chemicals amounting to over 60,000,000 lb. are produced annually in Germany, thanks to chemists who, though they have received a University training, are willing to work incessantly for moderate salaries in the laboratories of the chemical manufactories. This is an important statement and one that might well be taken to heart in this country, where chemists, as a rule, demand very substantial salaries, particularly when they have received a University training. In the report mention is made of the fact that the aniline industry had its origin in England, but it was taken up by Germany, which now manufactures four-fifths of all the dyes and the greater part of all pharmaceutical preparations produced from coal tar. When the aniline industry was first commenced enormous works were erected at Greenford, near Harrow, and a very lucrative business was carried on there for some years, but, owing to German competition, it became lost, and when we passed the works a few years ago they were in a complete state of wreck and dilapidation. The report further shows that in 1892 Germany imported over three million and a half pounds of indigo. In 1897 Dr. Bayer discovered artificial indigo, and as a result the value of real indigo imported fell from about £900,000 in 1892 to £160,000 in 1902, while over 9,000 tons of synthetic indigo were exported in the same year. This is not pleasant reading, seeing that some of our Indian possessions are largely dependent upon the growing of indigo. Commenting on the American Consul-General's report, a correspondent, Mr. Bryan, University, Bangor, in a letter in the *Standard* one day last week, makes some remarks on the statement that German chemists work incessantly, and for moderate salaries, in the chemical manufactories, and says that we have here numbers of mathematicians, physicists, chemists, etc., who have taken the highest honours in the Universities who would only be too glad to earn a very moderate salary in the development of our national industries. But he adds (and we fear there is too much truth in what he says) "the control of these industries is in the hands of practical men who will have nothing to do with the scientific expert, and will not accept his discoveries or suggestions, even as a gift." In concluding his letter, Mr. Bryan says:—"There is no man so unpractical as the typical British 'practical man.' He persists in employing processes and turning out goods which the smallest grain of common sense shows to be defective. The quality which he values most in his assistants is mediocrity as opposed to real ability. Therefore, let him not grumble at having to take a position of mediocrity in the commercial world." As we have just said, there is much truth in what the writer says, but there are works in this country we know where expert knowledge is largely and profitably availed of, though not perhaps to the same extent as it is in Germany.

PROGRESS IN ENLARGING.

[A paper read before The Royal Photographic Society.]

WE may consider the lightest tone, either in a subject, negative, or a print, as the top of a slope, whose base is the darkest tone, and the positions between them the intermediate tones; further, by simply drawing a line to represent the slope and giving actual values to the space it occupies, we can represent any series of tones, whether sudden, steep, or delicate.

Fig. 1 represents in this manner a uniform gradation of tones, from black to white, across a quarter plate and a 16-in. print respectively. It illustrates in a simple manner why the

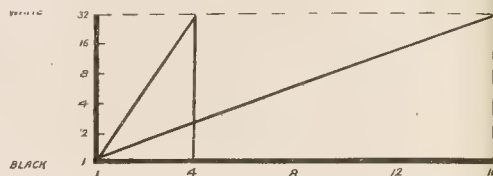


FIG. 1.

size of a print exerts such an important influence on character, and why enlarging so greatly increases breadth.

Equally well, a line will directly illustrate, by its upward or downward direction, and by its character of slope, curve, or step, the range of tone and value of the tones in any subject, negative, or print.

It is found with any particular printing paper and process that a certain fixed range of tone is required in a negative, all its gradations are to be impressed on the paper. To illustrate clearly what is meant, I have here a sample of bromide paper which has been exposed to light, so that we get a series of tones from black to white. To darken this paper black required 16 times the exposure necessary to tint it the lightest tone, which is only just distinguishable from white. It is evident, therefore, that any range of tone in a negative greater than this will only be partially rendered on the paper, as a longer exposure than 16 times cannot make the black paper any blacker, and any exposure less than the one does not produce any visible darkening whatever. In the ordinary practice of enlarging, it is necessary for this reason that the range of tone in the negative must not exceed about 16 to 1, if it is required to preserve gradation in all parts. To compare with this sample of bromide paper, I have also a sample each of P.O.P. and carbon paper similarly exposed, and they illustrate that for the one we require a range of tones in the negative of 1 to 64, and in the other (the carbon) a range of 1 to 256.

We require, therefore, to preserve gradation in the three processes, three different negatives, one for each.

Suppose it is required to produce an enlargement from a negative having a range of 1 to 64.

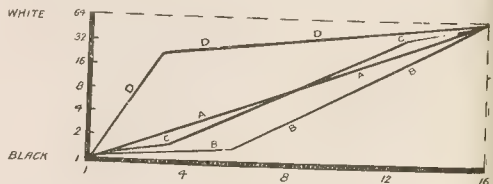


FIG. 2.

a, a, a, in Fig. 2, represents, by means of the slope, a gradation from 1 to 64 in a negative.

b, b, b, illustrates the loss of gradation when a short exposure is given for the enlargement.

c, c, c, represents the loss of gradation with a mean exposure.

d, d, d, represents the loss of gradation with a full exposure.

The point to notice is that with any exposure gradation

and black or white, or both, substituted, and the print, fully developed, has the well-known hard or chalky appearance.

[This example illustrates the position we at the present day occupy in regard to the conditions essential to successful enlarging, and assuming a subject which is perfect in itself; if we require an enlargement which is also perfect, two accurate adjustments must be made.

I. The development of the negative to the proper range for enlarging.

II. The correct exposure and development of the enlargement. I have not included the exposure of the negative because there is fair latitude in this respect).

In the great mass of work which is daily forthcoming errors in these adjustments produce the majority of failures or defective prints.

Suppose in a given case, having already found that a hard print lacking gradation is produced, we make a fresh enlargement, and, before the exposure is made, place in contact with the paper a photographic positive of a process screen, so that the two films are in contact. Wherever the opaque parts of the screen protect the bromide paper, it will remain more or less unaffected, and all the tones of the print will in consequence be lighter in proportion to the relative area of the opaque and transparent portions of the screen. A soft print is now obtained, which may be much more pleasing than the one without the screen; you can also vary the softness at will by placing a sheet of glass of suitable thickness between the screen next the paper, and varying the aperture of the stop, the action being due to a greater or less spreading or vignetting of the light after passing through the apertures of the screen, similar to that which takes place where the screen is used for process work. In all these cases, however (except in a particular to which I will refer presently), the range of the tones between which the gradations are reproduced will be less than when the screen is absent, in proportion to the percentage of light intercepted by the opaque portions of the screen, so that while the black-and-whiteness has been corrected, the loss of gradation remains, and the result is substantially similar to that obtained when the print is softened by variations in the exposure and development; no great advantage, therefore, would appear to result from the use of the screen.

Three years ago, while testing some supposed cases of halation, I became aware that something very different from either film or reflected halation was taking place, and that that something was irradiation. The conditions of this effect are more fully treated in the paper which follows on colour photography; it will be sufficient to mention here that irradiation occurs in nearly all photographic processes—that is, the action of light on a sensitive film, when it takes the form of a line or dot, spreads laterally with a sharp outline, in a similar manner to the apparent thickening of an electric lamp filament on the retina. In the former case the spreading increases with the exposure, in the latter with the brightness, the degree of spreading for a given increase of exposure depending upon the physical character of the film, and the optical constants of reflection and absorption. Owing to this action, by simply increasing the exposure a print can be obtained with full range from black to white, although a screen is placed with its film in contact with the paper, but (and here is the pith of the whole matter) the range of exposures required to produce black and white is much greater than that which produces black and white in the ordinary manner when the screen is not used. Therefore, when employed in conjunction with a screen, a negative may be said to possess any working range of tone, according to whether you work on the irradiation device or on the ordinary pure tone, or partly on each.

This being so, on taking a negative with a range of 1 to 64

or 1 to 256, we can at once adjust our procedure to suit the negative, and obtain an enlargement with perfect gradation, and any degree of softness, equally as well as with a negative specially developed for the particular effect required. I have here a portrait of a girl, and numerous other technical examples of enlargements produced in this way.

Let us now turn to the second adjustment, that of correct exposure and development of the bromide paper. The screen gives enlargements in which the tones are formed by minute dots differing in size, the space between the dots remaining comparatively unaffected, and we have also the effect of lateral spreading with increased exposure due to irradiation. This means, in fact, that the conditions are similar to a multiple coated plate, with a corresponding increased latitude in the exposure. For the reason also that all the dots are equally black or nearly so we remove the necessity for exact development; you cannot make a dot blacker than black, and so minutes more or less either in exposure or development become unimportant, and, even if overdone, prints can be reduced with facility without injury to the most delicate gradations.

The screen, therefore, removes the necessity for exact adjustments in exposure and development; at the same time we have by no means exhausted the advantages which its use confers. If you take a sheet of bromide paper and expose it in the enlarging lantern without the intervention of a negative or through a flat tint developed on an exposed plate so that the paper should show a flat tint on development, it will be found that the tint is always somewhat mottled or uneven; this defect at once disappears when the screen is employed, and in addition a degree of transparency or richness is imparted due to the screen texture.

Again, when starting with the supposed negative giving a hard print, it was assumed that the gradations of the subject were perfect, and the aim was simply to reproduce it properly as an enlargement. But in how many subjects are the gradations of lighting perfect; are they ever perfect? Take the case of a simple object such as a sphere. I have tried every possible device to illuminate this sphere, and get a photograph showing perfect sphericity; daylight, arc light, incandescent light, diffusers, and reflectors—with all or any of them result is defective. I have here an enlargement from such a photograph (5); alongside this defective print is one made with the assistance of the screen, a perfect sphere at once being created. What is true of this simple piece of shading is also true of complex cases.

Fig. 3 illustrates a common case where difficulties arise.

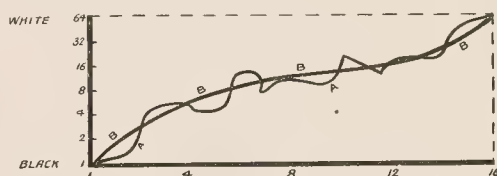


FIG. III

a, a, a, a case where the general character is satisfactory, but the gradations are broken up into local differences.

b, b, b, the same, treated with a screen.

And yet again, we have been assuming that the plates used for making negatives are always perfect, or nearly so, as regards their capacity for recording gradations, and that camera exposures are always accurate, but in practice we know this is not the case. Fig. 4 illustrates a subject which, through having a long range, shows under-exposure in the shadows and over-exposure in the high lights.

Please do not think I am endeavouring to show that picture-making is to become automatic; this will always depend, as it does now, on the taste, industry, and skill of the operator; what I am wishing to illustrate is that the optical conditions for success can be simplified and improved, that vexatious elements of uncertainty no longer exist, and that, by taking advantage of a simple optical device, you can employ it in moulding to your wishes the qualities of negatives and prints. A little practical experience with the screen on the part of individual workers will convey to them its remarkable influence and resources. It is possible some one may object to the use of the screen on the score that, having only seen its results when employed for process work, they will be prejudiced against its use in pure photography; if there be any such here, I would ask them if they have any fault (due to the presence of the screen) to find with the specimens they have before them; in all these specimens a somewhat coarse screen has been employed, 133 lines to the inch. I need hardly say that any degree of fineness can be used, and any kind of grain, lace, muslin, asphaltum, etc., the only essential conditions being the breaking up of the image into lines or dots. All the desirable qualities of a print are, as a matter of fact, improved by the

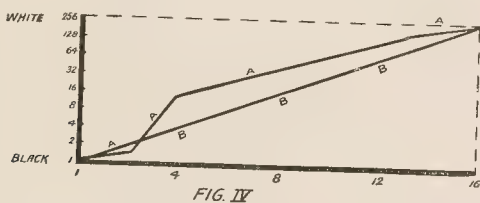


FIG. IV

a, a, represents the gradations of an ordinary enlargement from such a negative.

b, b, the same where a screen is used.

screen—greater delicacy of gradation, greater purity of tone, and a better texture.

There is one point on which I would solicit co-operation. The word "screen" being so widely used to indicate its employment in process photography, we require to distinguish it when used in the manner indicated to-night. I have, for this purpose, taken an analogy from gardening; if a man buys a piece of land to make into a garden (a large garden), the first thing he does is to grade the land, which means that he removes all the little irregularities, and connects the different levels by graceful slopes; this is exactly what the screen does in enlarging. I call it, therefore, in this connection, a "grader," and its employment the operation of "grading."

I have referred solely to the application of the grader to enlarging, because it has already proved its practical utility for such work by tests extending over the past two years, and is now in daily use at the Polytechnic. In its nature, however, it goes far beyond enlarging, and it has already received a most valuable application in colour photography. I reserve for a future occasion some further developments.

HOWARD FARMER.

HULL Photographic Society.—On Thursday, October 20th, Mr. Dyson (a member) demonstrated the carbon process before a large attendance. He proved its simplicity, and could not understand why so few took it up unless it be the mistaken idea that it was difficult. Quite a number of prints were developed, and the water was simply as hot as the hands could bear, doing away with the keeping up of the temperature, which he never troubles about. At his hands it was not necessary to use weights, except, of course, for supports, to keep in contact. There must have been many converts to a beautiful, certain, and permanent process. He used a sponge to develop, which was effective.

THE TESTING OF ORTHOCHROMATIC PLATES.

[A paper read before the London and Provincial Photographic Association, I.]

It is always much easier to find the faults than the good points in anything, and I am afraid, when I finish my notes, you will think that all I have done is merely to find fault; but I would ask you to believe that, at any rate, my intentions are good even if the execution is bad.

The subject which I have chosen is an important one, and important for two reasons: Firstly, if photography as a reproductive art is to improve, one of the directions must be in the improved rendering of colours in monochrome; and secondly, the use of colour-sensitive plates has so much increased of late that greater attention has been paid to them, and, consequently on this, we have had many papers dealing with the testing of the same which, in my opinion, call for some comment—a comment of rather a strong nature.

In the first place, I would like to call attention to the extraordinary increase in the number of spectrograms which have been put forward from various sources as proving the colour sensitiveness of this or that plate, some obviously from ignorance, and others for trade purposes.

We all know that the average testimonial is not worth the proverbial "tinker's dam"; there is no manufacturer who can not produce these by the score. But the matter is different when we come to papers published in our journals, or read before important photographic societies, and which, thus, in many cases, bear the imprimatur of an authority which they do not deserve, and which are subsequently used by others for advertisement purposes. This is a procedure which is, at least calculated to restrain any one who has any self-respect from naming any commercial preparation in a paper, which is, I think, a result not conducive to general knowledge.

I am afraid my notes to-night must be taken as a strict indictment of the present method of testing orthochromatic plates, and I propose to quote from various sources in support of my views, and would only explain, in self-defence, that my opinions were formed long before most of these papers appeared. (As a matter of fact, I objected to the current method of ortho-plate-testing in 1893), and, although I have long been dissatisfied, both from the practical and scientific side, with the method of testing ortho plates, I have not hitherto seen any way clear to suggest anything better.

I would first call attention to a note by Dr. Neuhauss in the "Photographisches Centralblatt," July, 1904, pp. 187-188, where he says, when treating of the colour sensitising of a Lippmann emulsion: "With all the plates the blue, violet, and ultra-violet zones appeared by far the quickest. . . . In order to obtain usable coloured camera exposures, we must, therefore, insert a yellow filter, which only transmits a third of the blue and violet light. . . . Under these conditions results will be obtained by Lippmann's process which will reproduce all the colours of Nature in an excellent manner. . . . If a plate sensitised with cyanine, erythrosine, and glycin-red, and exposed to the prismatic spectrum, be developed, the deposit of silver from the red to the violet appears absolutely equal. From this the conclusion must be drawn that the plate possesses equal sensitiveness for all colours. We have seen above that this conclusion is false, for the plate has at least three times too great a blue and violet sensitiveness. The prismatic spectrogram thus gives rise to a fallacious conclusion of the worst kind. Would that these facts were more generally appreciated. The expert can naturally make a correct deduction of the colour sensitiveness of the plate from the results obtained with the prismatic spectrum. When, however, as happens every day, spectrograms of this kind are published in journals destined for lay readers, there is again caused in wide circles quite false conclusions over the actual sensitiveness of the plates. To the

plate-makers this may be agreeable, but 'the man in the street' has no advantage from it."

This is the comment of an expert, and, whilst dealing with the Lippmann process primarily, it is obviously of general application, and is intended to be so applied.

Again, in "Photography" for August, 1904, p. 125, there appeared a paper entitled "Orthochromatic Exuberance: An Unorthodox View," by Chas. S. Dyer, the opening sentences of which ran as follows:—"It is a fine euphonious term—orthochromatic; it seems to lend a kind of distinction to the user, spreads a sort of academic halo round the subject, and adds a philosophic grandeur to the whole business. Perhaps this may have been of some influence in the present avalanche of claims on behalf of the colour-sensitive plate. Who knows? Why use orthochromatic plates for general purposes? The usual answer is that they give better colour values. My reply is that, if used without screens, they do not, in most cases, make any practical difference. Now, of course, in their own special lines and with light filters, they are invaluable; but to advocate their use in and out of season, and for all and every purpose, is really going too far. I humbly raise a solitary protest against the present flood-tide of intemperate eulogies made on their behalf. Their indispensability, with screens, for copying many pictures, for photo-microscopy with ordinary objectives, for tri-colour work, and photographing mixtures of blue and yellow flowers, is patent enough; in fact, in the case of the latter subject, the tests of orthochromatic plates show a tendency towards correct values even when they are used without screens. But, apart from that hackneyed blue and yellow flower mixture, which is pushed for all it is worth, the difficulty is to find any general subject in which they show the slightest appreciable effect, and, still more, one in which the marked benefit is obtained by employing them screenless. The results of exposing orthochromatic plates to the Chapman Jones tester seem to show wonderful efficiency. Better results have been got from the spectrum itself. But, when exposing the same plates to any average subject, the expectations raised by those tests are not borne out to any satisfactory extent. Nature's colours are, apparently, not so spectroscopically pure." I will not quote the rest, for I do not agree with all that was said by the author. This extract is enough for my purpose, and, without being rude to Mr. Dyer, I may say that this is practically the view of "the man in the street."

Again, in "Photography" for May 28, 1904, Mr. Arthur Payne, F.C.S.—who is, I believe, one of the chemists of Messrs. Mawson and Swan, the well-known dry-plate makers—says: "Considering the reliability of these various methods in the above order, sensitometers made after the pattern introduced by Warnerke are liable to give false results, because the absorption properties of the graduated deposit may introduce so large an error as to make the results entirely misleading; and, as the colour sensitiveness of the various plates is of so varied a character, this error cannot be easily compensated. The consequence is that the deposit acts as a light filter, and lowers the speed of the plate which possesses the least colour sensitiveness, and, when this happens to be an ordinary plate, the error introduced is considerable. If two plates of relative equal colour sensitiveness, but of different speeds, be compared, the error is not great; but when one of these plates possesses a stronger colour sensitiveness than its opponent, then the latter is placed at a serious disadvantage; for though the speed of the former plate is not increased by means of this sensitometer, yet it is apparently so, for the speed of the other plate is lowered below its actual value. In support of these statements the writer may quote the results of a series of tests he recently made, using a pattern of this class of sensitometer which is in favour at the present time, and in which the graduated deposits are of varying thicknesses of pigmented gelatine of a brownish black colour. An ordinary plate and a colour-sensitive plate were exposed behind this sensitometer

to the light of a standard candle. The plates were subsequently developed together with pyro-soda without bromide, and the result of a series of tests showed that it was necessary to give thirty times the exposure to the ordinary plate that was necessary to obtain the same result upon the colour-sensitive plate. Thus, by this method of testing, the colour-sensitive plate was thirty times more rapid than the ordinary plate to candle light. Two strips of similar plates were exposed simultaneously in the H. and D. exposing apparatus to the light of a standard candle; they were then developed together with the H. and D. standard pyro-soda developer, and, upon measuring the densities in the photometer, and plotting the curve upon the chart, it was found that the colour-sensitive plate was 5.6 times more rapid than the ordinary plate. In this method of testing there is no medium, except air, between the sensitive film and the source of light. Further tests were made by daylight, with the following results, in which the higher number represents the greater speed:—

Plate.	No. 1 Pattern Sensitometer.	No. 2 Pattern Sensitometer.	Camera Test.
Ordinary	1	1	1
Colour Sensitive	6	2	2

The sensitometer tests were exposed to daylight reflected from a sheet of white blotting-paper, and the camera tests were made upon a portrait. There was no medium interposed between the source of light and the sensitive plate in Spurge's sensitometer. The Warnerke type of sensitometer must consequently be avoided for this class of work."

Those of you who know Mr. Payne's book on "Orthochromatic Photography" will the more readily give weight to his words. To those who do not I would say read it, and they will at once appreciate the value of the quotation.

We have thus the remarks of Dr. Neuhauss on the spectrogram, Mr. Dyer on the spectrogram and the Chapman Jones plate-tester, and Mr. Arthur Payne on a sensitometer which he does not name, but which most of us can guess at.

I now propose to quote Dr. Eder. I can imagine some of you thinking that it would be a wonder if I did not quote him. My excuse is that he has a recognised position as one of our first experts, and has paid particular attention to the whole method of plate-testing, and in his work, "Systeme der Sensitometrie der Photographischen Platten," 1901, pp. 129-130, he says: "The total sensitiveness of orthochromatic plates compared to that of ordinary plates to white light—such as daylight, or the approximately similar, but not identical, arc light—cannot be estimated without considerable doubt from their total sensitiveness to candle light. It does not therefore, appear practical to give the sensitometer sensitiveness of ortho plates for the amyl or benzine lamps, when the numbers will be used for estimating the exposure by white light, such as day or arc light. The following table will show how the relative sensitiveness of an ordinary and ortho plate varies to the amyl-acetate and white light:—

	Amyl Light, Direct.	White Paper, Illuminated by Arc Light.
Ordinary Plate	1	1
Erythrosine Plate	2.3	1.27
Commercial Iso Plate A.....	1.6	0.67
" " B.....	1.2	0.42

As will be seen, it may even happen that, with the amyl light,

the ortho plates are more sensitive than the ordinary, whilst with the electric light the reverse is the case."

Again, in a paper by the same author, published in the "Photographische Correspondenz," 1903, p. 426, entitled "Ueber die Sensitometrische Prüfung Gewöhnlicher und Orthochromatischer Platten," or "On the Sensitometric Testing of Ordinary and Orthochromatic Plates," there occurs a table from which I make two extracts, and two only, because they deal with plates on the English market:—

	Benzine Light.	Daylight (Equal to an ordinary Plate).	Blue. Yellow.		
			Benzine, Direct.	White Paper.	
				Day.	Mg.
A Plate	13° S.	11—12° S.	1 1·3	6—7 1	4·3—5 1
B „	12° S.	9° S.	1 1·3	11·3 1	4·9 1

I have purposely suppressed the names of the plates, but an examination of the table is striking as regards the value of the light in testing, and the method employed is practically Hurter and Driffield's.

I stated that I had picked out these two plates because they were on the English market. There is another reason why I signalise these two plates, and that is that they happen to occur in a list of plate speeds given by Messrs. Newton and Bull in a paper read before the Royal Photographic Society in October last—a paper characterised by a wealth of detail, and showing evidences of the most careful and painstaking work, and one which is simply invaluable if read from the point of view of the authors—namely, that it was a record of particular batches of plates tested by a particular light and a particular method—but absolutely misleading when used, as it was, for advertising purposes by some one, or if used as a guide for outdoor work.

Now, these two plates were stated by Messrs. Newton and Bull to possess a certain ratio of speed, and I have converted their numbers into Dr. Eder's numbers, with the result that, as the latter gives the relative speeds of these two plates to artificial light as 18:14, Messrs. Newton and Bull give the speeds as 18:5½, whereas, by daylight, the speeds were as 14:7. When the relative speeds to blue and yellow are considered, we find that the two plates are nearly the same by artificial light, whereas by daylight, the A plate is 6—7 times more sensitive to blue than to yellow, and B 11 times more sensitive to blue.

In the face of this glorious muddle, I may certainly ask whether I am not justified in calling attention to the subject, from what I hope is an independent standpoint.

It is obvious, I think, from the few facts just advanced, that, if the plate is to be exposed by daylight, sensitometric tests by artificial light are damned, because, if I may judge from my own practice, photographers are not in the habit of carrying about with them complete installations for illuminating all and every subject by gas, amyl, or benzine lights, or even standard candles.

E. J. WALL, F.R.P.S.

A TRIP to Fanatical Fez.—An interesting lantern lecture bearing this title was given at the New Gallery, Regent Street, on Monday evening last by Mr. J. H. Avery, the well-known photographer and traveller in Morocco. Mr. Avery, who has had the honour of instructing the Sultan of Morocco in photography and other up-to-date accomplishments, interpolated throughout his lecture many amusing and illustrative anecdotes relative to the life, customs, and manners of the inhabitants of this little-known region, and endeavoured to prove in an eloquent manner that the Sultan was a much misunderstood monarch.

AFFILIATION OF PHOTOGRAPHIC SOCIETIES: HISTORICAL NOTE.

ON Friday week, October 14th last, at the New Gallery, after visitors had been received by the committee, the chairman of executive (Mr. C. H. Oakden), in the course of a short address, stated that the establishment of the Affiliation arose out of an explicit wish, on the part of some of the photographic societies in the country, to co-operate with one another for mutual benefit. It would be useful to shortly trace the history of the movement. Previous to 1889 some steps were made, but none of them with any great result. In 1889, Mr. H. M. Smith brought the suggestion under notice of the council of the Royal Photographic Society, who pointed a sub-committee to investigate the matter and report. About the same time Mr. L. M. Biden brought a scheme under notice of the photographic societies in the neighbourhood of London and a meeting was held at which the subject was discussed, but opinion was expressed that the movements should be undertaken by the council of the Royal Photographic Society. The report of the council's sub-council was further strengthened by the opinion expressed at the London meeting, and this ultimately resulted in the formation of the affiliation of photographic societies. The start was made in a small way, but the societies continually increased in numbers, until the present time. At first, business was conducted by the full body of delegates (the Royal Photographic Society pointing three delegates and each affiliated society two), but this was eventually found unworkable. The delegates then determined to transact the ordinary business of the affiliation through an executive council of ten, which they were empowered to do under the rules. This executive committee is elected annually by the delegates, so that each affiliated society can, if it wishes, take part in the election of their executive representatives. Since that time more progress has been made and the executive committee have endeavoured to provide the maximum benefits for the societies out of the funds at their disposal. They have provided lectures, accompanied by illustrations and slides, by competent writers. The executive committee gladly welcome suggestions as to the subjects for future lectures. Sets of lantern slides were also provided, and it was in order to meet this suggestion which was freely expressed, that lantern slides did not receive the recognition which it considered they should, that led the executive committee to establish the lantern-slide competitions which in recent years. Naturally a picture competition followed. The "red book" was also produced at considerable expense and trouble. At the present time in many places named in the list of permits the production of the "red book" was looked upon as a certificate of character of the holder. One warning upon the question of the use of the book appeared to be necessary. All permits granted to the owners of properties and custodians of buildings were granted as a matter of grace, the same as any ordinary permit. Members of affiliated societies should bear that in mind, and not attempt to claim that the permits entitled them to photograph as a matter of right and in contravention of the rules and regulations made for the comfort and convenience of visitors. The list of permits in the book is revised annually, and every endeavour is made to keep it up to date. The executive committee will continue their efforts to provide additional benefits in the future. In so doing they will bear in mind the necessities of such of the smaller and newer societies, which may not be favourably circumstanced, by having willing and capable workers in their ranks to assist them with advice and to guide the members in their efforts. The council of the Royal Photographic Society had always been willing to assist the affiliation whenever approached, and no reasonable request has been refused. The last request made to them resulted in this meeting, at which the attendance has exceeded all expectations, so much that it may safely be said that similar meetings will be held in the future.

A HAVERFORDWEST photographer did a good stroke of business over the unveiling of the county war memorial on Friday. At nine o'clock on Saturday morning he was out with some pretty and very effective picture postcards of the ceremony. As it was market-day, which half the people in the county visit the old town, his cards sold as quickly as they could be printed. And yet there are people who call Haverfordwest a slow town.

Exhibitions.

EDINBURGH AND MIDLOTHIAN INDUSTRIAL EXHIBITION.

PHOTOGRAPHIC SECTION.

In addition to the awards given last week, the prize-winners in the professional section of this exhibition are as follows:—

Portraiture: 1, Dan Dunlop, Motherwell; 2, H. S. Harrison, Edinburgh. Portraiture (Child): 1, Dan Dunlop, Motherwell. Landscape: 1, Dan Dunlop, Motherwell. Enlargements: 1, John R. Harper, Edinburgh. Carbon Work: 1, Dan Dunlop, Motherwell. Any other Subject: 1, Dan Dunlop, Motherwell. Enlargements, any Subject: 1, Dan Dunlop, Motherwell. Oil Painting (Original or Copy): 1 and 2, Miss M'Culloch, Kilmarnock; 3, Miss Howsley, Chesterfield. Water-colour Painting: 1, Miss M'Culloch. Chip Carving: 1, Herbert Metcalfe, Buzzard; 2 and 3, John Fraser, Edinburgh. Carving, A.O.D.: 1, J. T. Negus, Cambridge; 2, Frank G. Horsman; 3, Wm. Hughes. Poker Work: 1, 2, and 3, A. Davidson, 13, Teviotdale Place. Work Not Classed: 1, Albert Bonner, London. Poker Work, A.D.: 1 and 2, Miss N. D. Price, Irvine; 3, Miss C. Thompson, Leith. Work Not Classed: 1 and 3, Miss M'Culloch, Kilmarnock; 2, Miss E. Summers, Hull. Cabinet Work: 1, John Perrin, Halifax; 2, Joseph Ellison, Keighley; 3, F. E. Drury, Keighley. Carpentry, A.D.: 1, T. E. Drury, Keighley; 2, Edwin Hoyle, Keighley; 3, Benjamin Holmes, Keighley. Woodwork, A.O.D.: 1, T. E. Drury, Keighley; 2, Arthur Davy, Keighley; 3, F. E. Drury, Keighley. Nut Wood: 1, Benjamin Holmes, Keighley; 2, John Perrin, Halifax; 3, Benjamin Holmes, Keighley.

ROTHERHAM PHOTOGRAPHIC SOCIETY.

The fifteenth annual exhibition of this society was held in the Rotherham Drill Hall, on October 19, 20, 21, and 22, and proved exceedingly successful. The opening ceremony was undertaken by Lady Holland in the presence of a large company. Mr. E. Isle Hubbard (president) occupied the chair. The society's policy of not charging entry fees to exhibitors again met with ample recognition, and there was an extensive and interesting display of work. Altogether there were 224 frames in the open section, noteworthy classes being previously medalled work, architecture, still life, etc. The members made an improved show, there being altogether over 700 prints on the walls. The scheme of arrangement, including special electric light installation, met with general commendation. The Affiliation of Societies' (R.P.S.) prints were also on view. Each evening there was instrumental music, cinematograph and lantern slide exhibitions. The judges, Messrs. C. Barrow Keene, F.R.P.S., and T. A. Scotton, both of Derby, made the following awards:—Open Section—Class A: Champion class, any photograph previously medalled in open competition—Silver plaque; No. 4; Chas. F. Grindrod, Malvern; "Hauling Timber." Class B: Portraiture and figure studies—Bronze plaque; No. 35; Rachael L. Manners, Mansfield; "Despair." Bronze plaque; No. 54; Ernest H. Atkin, Nottingham; "Insight." Bronze plaque; No. 57; Wm. H. Foxall, Tunstall; "An Ancient Mariner." Class C: Landscape, seascape, and river scenery—Bronze plaque; No. 95; T. V. Simonson, Dore; "Autumn." Bronze plaque; No. 97; Charles F. Grindrod, Malvern; "Carting Kelp." Bronze plaque; No. 113; Dan Dunlop, Motherwell, N.B.; "In Birnam Wood." Class D: Architecture—Silver plaque; No. 147; Arthur de Silva, Sheffield; "In Torcella Cathedral." Bronze plaque; No. 167; Ernest H. Atkin, Nottingham; "The Sunlit Alley." Class E: Flowers, fruit, still-life, or other subject not included in the foregoing classes—Bronze plaque; No. 203; Dan Dunlop, Motherwell, N.B.; "Poppies." Bronze plaque; No. 204; Ernest H. Atkin, Nottingham (withheld); "Thistle-down." Bronze plaque; No. 209; Edward Seymour, Watford, E.; "Nettles." Bronze plaque; No. 207; F. Pinder, Burnley; "Animal Study." Class F: Lantern slides (sets of four)—Bronze plaque; F. G. Tryhorn, Lavender Hill, S.W. Bronze plaque; G. A. Booth, Preston. Bronze plaque; F. Parkinson, Spalding. Members' Section—Class G: Landscape, seascape, and river scenery—Bronze plaque; No. 215; R. H. Law; "Welcome Spring." Bronze plaque; No. 218; William Firth; "A Woodland Path." Class H: Architecture—Bronze plaque; No. 235; J. C. Cox; "Leicester's Hospital." Bronze

plaque; No. 242; H. C. Hemmingway; "The Nave, Chester." Class J: Miscellaneous subjects, not included in the foregoing classes—Bronze plaque; No. 246; J. W. Stamp; "Harvesting." Class K: Lantern slides (sets of four)—Bronze plaque; W. Firth. Class L: Best board of exhibits—Bronze plaque; J. C. Cox. The plaque has been specially designed for the society.

KETTERING.

THE third annual exhibition of the Kettering Photographic Society was opened at the Church Institute, Kettering, on Tuesday last. The entries totalled over 250 pictures, and with regard to quality the show proved to be a marked advance on previous years. The judge, Mr. W. R. Bland, of Duffield, Derby, appeared to have given great satisfaction as the outcome of his decisions. The exhibition was opened by Mrs. Wentworth Watson, of Rockingham Castle. The awards in the open section were:—Landscape and seascape, Mr. W. Clayden, Plymouth, first, for "A Gleam of Light"; E. J. Jarvis, Plymouth, obtained second. C. D. Taylor, Birmingham, was h.c. for "The Hillside"; J. W. Johnson c. for "Golden Cross Passage, Shrewsbury"; and E. J. Jarvis c. for "The Pride of the Morning." Others which should be noticed were from A. W. Walburn, West Hartlepool; S. G. W. Stevenson, Sevenoaks; H. M. Hames, Boston; A. M. Berry, Henley; W. Pinkney, Newcastle; S. C. Burgess, Ashby-de-la-Zouch; G. Franklin, Tonbridge; Miss Lacy, Hants; and W. Stainthorpe, Saltburn. There were eighteen specimens in the class for architecture, interior or exterior. Mr. S. G. Kimber, Southampton, was awarded first for "A Shaft of Light"; the second was given to Mr. J. W. Johnson, Kettering, for "Moreton Corbett Church." S. G. Kimber, Southampton, was h.c. (debarred) for "From Transept to Nave, Winchester"; Mr. A. W. Walburn h.c. for "An Old-time Street"; and Mr. F. T. Pinkney, Newcastle, c. for "An Open Door." Others were from various parts of the country, including three portraits from Miss Tyrwhitt-Drake, Hemel Hempstead. Portraiture, figure, flower, fruit, or animal studies had 25 entries. H. M. Hames, Boston, was first with "An Old Cobbler at Work." Mr. J. Smith, Hastings, was second with "A Veteran." J. Smith, Hastings, was also h.c. for "A Typical Fisherman"; W. Clayden, Plymouth, h.c. for "Home Life"; and H. Banston, Halifax, c. for "A Vegetable Shop." Lantern slides (sets of three): 1, T. G. Tryhorn, London; 2, F. Parkinson, Spalding; c., H. Wormleighton. Photographic Postcards (sets of three): 1, W. Pickering, Bishop Auckland; 2, W. F. T. Pinkney, Newcastle; h.c., H. C. Cross, Cotingham; c., J. T. Roberts, Gravesend.

FORTHCOMING EXHIBITIONS.

November 2, 3, 4, 5.—Newark Photographic Exhibition. Secretary, L. C. B. Appleby, Barnbygate House, Newark.
November 2-23.—Plymouth. Hon. Sec. Photographic Section, Chas. R. Rowe, 2, Walnut Villas, Cockington, Torquay.
November 3.—Frome M.I. Photographic Society. Hon. Secretary, B. J. Mitchell, 3, Willow Vale, Frome.
November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Sec., James Dunlop, Myrtlebank, Motherwell.
November 9.—Hackney Photographic Society. Hon. Secretary, Walter Selfe, 70, Paragon Road, Hackney, London, N.E.
November 15-19.—Sunderland Camera Club. Hon. Sec., Selby-Ord, 52, Frederick Street, Sunderland.
November 17-18.—Braintree and Bocking Camera Club. Hon. Sec. W. H. Tilston, 81, High Street, Braintree, Essex.
November 17-19.—Darwen Photographic Association. Hon. Sec., J. G. Thomas.
November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.
November 22-23.—Ipswich Camera Club. Hon. Secretary, R. H. Sutton, 37, Henley Road, Ipswich.
November 23-26.—Hove Camera Club. Hon. Secretary, A. R. Sargeant, 55, The Drive, Hove.
November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., G. W. Simmers, Aberdeen House, Ramsgate.
November 25-26.—Ilford and District Photographic Society. Hon. Sec., W. N. Beal, 155, Thorold Road, Ilford.

November 26-December 3.—Glasgow Eastern Amateur Photographic Association. Secretaries, John Brough, 68, Dalmarnock Street, Park Head, Glasgow; and Geo. R. Johnstone, 591, Alexandra Parade, Dennistoun, Glasgow.

December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.

December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104, West 101st Street, New York.

December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.

December 12-17.—Sefton Park Photographic Society, Liverpool. Hon. Secretary, H. E. Cubley, 3, Langdale Road, Sefton Park, Liverpool.

December 13-20.—Southampton Camera Club. Hon. Secretary, S. G. Kimber, Oakdene, Highfield, Southampton.

December 28-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 138, Glasgow Road, Wishaw.

January 12-14, 1905.—Boston Camera Club. Hon. Sec., H. M. Hames, 65, West Street, Boston.

January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.

January 20-21, 1905.—South Essex Camera Club. Hon. Secretary, T. Michell, 180, Browning Road, Manor Road, E.

January 28-February 12, 1905.—Photographic Society of Marseilles. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.

February 6-11, 1905.—Blairgowrie and District Photographic Association. Hon. Secretary, Wm. D. M. Falconer, James Street Cottage, Blairgowrie.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

March 4-11, 1905.—South London Photographic Society. Hon. Sec., H. Creighton Beckett, 44, Edith Road, Peckham, S.E.

March 20-25, 1905.—The Cripplegate Photographic Society. Hon. Sec. John B. Parnham.

June, 1905.—Northern Photographic Exhibition. Secretary, F. G. Essot, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

October 31.—Coxin. 68 prizes for users of Coxin. Judging twelve pictures. W. Butcher and Sons, Camera House, St. Bride Street, London, E.C.

November 1.—The "Graphic." £50 in cash prizes. Manager, Photo Competition, the "Graphic," Tallis Street, Whitefriars, London, E.C.

December 31.—Barnet. Nineteen classes. Prizes valued at £500 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

March 31, 1905.—Ilford. £750 in cash prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

Patent News.

The following applications for patents were made between October 10 and October 15, 1904:—

Developing Rocker.—No. 21,688. "Photographic developing rocker." Arthur Ernest Thwaites.

Panoramic Cameras.—No. 21,830. "Improvements in panoramic cameras." Wallace Fairweather.

Negative Frame.—No. 22,077. "A negative frame with triple plate-holder for colour photography." Jean Frachebourg.

Photographic Apparatus.—No. 22,134. "Improvements in photographic apparatus." Walter Frederick Giles.

Cameras.—No. 22,163. "Improvements relating to photographic cameras and the like." Henry Frank Purser.

Plates Cleaner.—No. 22,207. "A substance for cleaning and removing the scum from gelatine shading plates." George William Dick.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

October.	Name of Society.	Subject.
29.....	Royal Photographic Society ..	<i>The Engadine and Lucerne.</i> Samuel J. Beckett, F.R.P.S.
31.....	Southampton Camera Club	<i>A New Carbon Paper.</i> Demonstrated by Mr. W. A. Max Mills.
31.....	South London Photo. Society..	<i>Trimming and Mounting.</i> Mr. Calder Marshall.
Nov.		
1.....	Nelson Photographic Society ..	Members' Lantern Slide Evening.
1.....	Glasgow Southern Ph. Assn....	<i>The History of Photography.</i> James M. Maclean.
1.....	Hackney Photo. Society	<i>Amateur Photographer Slides.</i>
1.....	Sheffield Photographic Society	<i>Field Days of a Sun Artist.</i> Percy Lund.
2.....	Edinburgh Photo. Society ..	<i>The Picturesque in Parks and Gardens.</i> Mr. James Craig.
2.....	North Middlesex Photo. Soc....	Lantern Slide and Print Competitions.
2.....	G.E.R. Mechanics' Institution	<i>Some Novelties in Cameras, etc.</i> Messrs. Beck. Mr. Slater, F.R.P.S.
2.....	Boro' Poly. Photo. Society ..	Members' Night.
2.....	Redhill and Dis. Camera Club..	Lantern Night. Members' Slides.
2.....	Cricklewood Photo. Society....	<i>Amateur Photographer Prize Slides.</i>
2.....	Windsor Camera Club	<i>Carbon Processes.</i> Demonstrated by Messrs. Illingworth & Co.
2.....	Everton Camera Club	<i>Devonshire.</i> Mr. E. Youds.
3.....	Southport Photo. Society.....	<i>Bromide Contact Printing.</i> Mr. J. Rigby.
3.....	Hull Photographic Society	<i>Lantern Slide Making.</i> Demonstrated by Mr. J. W. Atkinson.
3.....	London and Prov. Photo. Assn	Lantern Night for Mrs. Welford's and Members' Slides.
3.....	Liverpool Amateur Ph. Assn	Lecturette Evening (Architectural).
3.....	Watford Camera Club	<i>Amateur Photographer Prize Slides.</i>
3.....	Richmond Camera Club	Lantern Night.
3.....	Rongten Society	Ordinary General Meeting.
3.....	Ealing Photographic Society ..	Miscellaneous Lantern Slides.
4.....	Wakefield Photo. Society	Members.
4.....	Boro' Poly. Photo. Society	<i>Photography Prize Slides.</i>
		<i>Lantern Slide Making.</i> Mr. W. Page.

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

A COMMITTEE meeting was held, before the annual general meeting, on Friday, October 21st, at the Royal Photographic Society, 66, Russell Square. Present: Messrs. Alfred Ellis, F. A. Bridge, Martin Jacolett, Lang Sims, Wm. Grove, H. C. Spink (Brighton), A. Mackie, J. Edmonds (Hull), E. Scamell, P. Lankester (Tunbridge Wells), T. C. Turner (Hull); Mr. Alfred Ellis, president, in the chair.

After the items in the agenda were disposed of, which consisted of the reading of letters from members asking advice, etc., the financial arrangements for the annual general meeting, etc., the committee passed a very hearty vote of thanks to their retiring president, Mr. Alfred Ellis, for his indefatigable efforts to further the interests of the association and for the great encouragement he had given all the members of his committee in their work.

The fourth annual general meeting was held at the Royal Photographic Society, 66, Russell Square, W.C., on Friday, October 21st, 1904. Mr. Alfred Ellis, President was in the chair, and there was a good attendance of members.

The annual report of the Committee was read:—

ANNUAL REPORT.

Since the last annual general meeting 57 new members have joined the association. During the year three members have died, six have formally resigned, and letters addressed to ten have been returned marked "gone away," "address not known." The number of members on the books at present is 604, but 69 of these have not paid last year's subscription, after four applications, and in default of payment at the time of publishing the next Handbook these names will not be included in the list of members. The accounts show that there was a balance of £88 0s. 6d. in the hands of the hon. treasurer on June 30th the termination of the financial year. The Fine Art and General Insurance Company have issued 64 policies to members, the annual premiums amounting to £117 7s. 1d. Three members' meetings have been held, and the proceedings have been reported in the BRITISH JOURNAL OF PHOTOGRAPHY. The General Committee have held 11 meetings and the average attendance has been 12. Special sub-committees have held six meetings. The local branches at Edinburgh and Liverpool and Hull continue active. The annual dinner was duly held, and was a very pleasant gathering. There was, however, considerable falling off in the attendance, and as it is evident that

there is no general desire for a gathering of the kind, and as there are many expenses connected with it which are not covered by the price of the ticket, and which cannot be charged to the association's funds, and have therefore to be met by private contributions, the committee have decided to recommend that a dinner shall not form part of the official programme. An exhibition of work by the members was held during the months of June and July, including the convention week, in the Corporation Art Gallery at Derby. Although many members had from time to time expressed a wish for the opportunity of such an exhibition it was only with great difficulty that a sufficient number of entries could be obtained to fill the galleries, although no charge was made. The experiment will probably not be repeated. The thanks of the association are due to the Mayor and Corporation of Derby for placing the Art Gallery at our disposal, and to Mr. W. Crowther, the Curator, for his valuable services in connection with the exhibition.

Applications for advice continue to be numerous, and, although the subjects range over a wide field, a large proportion are with regard to copyright matters. The committee are always glad to assist members in their business difficulties, but they feel bound to say, with regard to copyright difficulties, that in nearly every case brought to their notice, the difficulty would not have arisen if the applicant had previously studied the information about copyright given in the Handbook and had adopted the methods there advised. Continual complaints are received of failure to obtain payment from Press agencies. If before entering into business relations with any agency a reference were made to the hon. secretary as to its commercial standing these troubles would often be avoided. Advice given by the committee has undoubtedly often prevented members from commencing legal proceedings on a case which it is hardly possible could succeed, and the mediation of the hon. secretary in several cases of disputed account, or in some cases of the hon. solicitor, has been successful in promoting a settlement. In the course of the year a dispute as to the value of photographs supplied giving rise to an action in the Reading County Court, was referred to the committee for arbitration by His Honor the Judge, and in due course the committee made an award. The committee have spent much time in considering a scheme for granting certificates of proficiency to operators, assistants, etc. This has now been published, but before issuing the prospectus as an official document it has been thought desirable to invite general opinion as to the provisions and regulations with a view to ensuring that the system finally adopted shall be equally acceptable to employers and employed.

The thanks of the association are due to the Royal Photographic Society for allowing the meetings to take place at their house, and to the Editor of the BRITISH JOURNAL OF PHOTOGRAPHY for publishing notices, reports, and other information relating to the association. The committee also wish to express their indebtedness to the hon. solicitor, Mr. Percy E. Marshall, for the valuable assistance he has rendered them.

WILLIAM GROVE,
Hon. Secretary.

Mr. Jacolette said he was sorry it had been deemed advisable to exclude the annual dinner as part of their official programme, but as so little support had been given to it by the members, and as any loss could not be made good from the Association's funds, he thought the Committee had done wisely in abandoning it. Personally, he more regretted this being done as on these occasions he had met many very dear friends of the photographic profession.

Mr. Birtles, of Warrington, suggested that the dinner should be held at Manchester or Liverpool, as it could not be expected that members would journey all the way to London to attend a dinner.

The President said he was afraid that if the London men would not attend the dinner when held in London, they were not likely to go all the way to Liverpool or Manchester to attend. He saw no reason why a dinner should not be held, but it was thought advisable not to include a dinner in their official programme.

On the proposal of Mr. J. Done, seconded by Mr. C. H. Skillman, the report was adopted.

Two reports from the local branches, Edinburgh and Liverpool, were then read.

Mr. T. C. Turner said that only two meetings of the Hull branch had been held, at which the business transacted had been duly reported in the BRITISH JOURNAL OF PHOTOGRAPHY. Among the sub-

jects discussed was the question of assistants' certificates, the proposed Benevolent Fund, and the abuse of proofs. He found that large quantities of untuned proofs were systematically brought from time to time to dealers and others to be toned. It was hardly possible that this practice should be allowed to go on to any great extent, and the matter required very serious attention. A suggestion had been made that all proofs should be stamped across the front with the name of the photographer issuing them. He thought it well to mention that at their first meeting at Hull they well discussed the Oxo business, which has now been settled, and another big meat extract firm finding there was such strong feeling on the part of photographers had abandoned their intention of initiating a similar enlargement scheme.

The Hon. Treasurer read the balance-sheet. The financial statement was thought to be very satisfactory, and it was proposed and carried that the balance-sheet as read be adopted.

The names of those gentlemen nominated as officers for the ensuing year were read. As the nominations exactly filled the vacancies no ballot was necessary, and the President formally declared that the gentlemen nominated were elected. Officers elected:—President T. C. Turner (Hull); vice-presidents, Wm. Crooke (Edinburgh), Martin Jacolette (London), A. F. Mowll (Liverpool); committee (London members), Arthur C. Banfield, F. A. Bridge, Ernest C. J. Elliott, S. Herbert Fry, Wm. Grove, H. Edmonds Hull, Alex. Mackie, H. S. Mendelssohn, Daniel Prodger, Edgar Scamell, Lang Sims, R. Fellowes Willson; country members, Wm. Barry (Hull), H. A. Chapman (Swansea), Wm. Gill (Colchester), Percy Lankester (Tunbridge Wells), Frank P. Moffat (Edinburgh), G. W. Morgan (Aberdeen), Ralph W. Robinson (Redhill), Henry C. Spink (Brighton), G. Watmough Webster (Chester), Alfred Werner (Dublin). Messrs. M. B. Barraud and Frank Turner were elected as auditors.

Certain alterations in the rules, recommended by the Committee, were then read and adopted. This completed the formal business of the annual general meeting.

The President said a copy of the tentative scheme for granting certificates to operators' assistants, etc., was in the hands of all present, but as they would not have had time to grasp the details he would not ask for a formal discussion and would not put any resolution to the meeting. The Committee, however, would be glad to hear any comments. The intention of the Committee was to elicit the opinions of as many professional photographers as possible on the scheme as it stood, and before finally issuing their prospectus to consider carefully the suggestions that may be made to them. To this end the scheme had been published in the BRITISH JOURNAL OF PHOTOGRAPHY, and an invitation had been given by the Hon. Secretary to all interested to state their views.

After several questions upon points of detail had been asked and replied to

Mr. T. C. Turner said he was of opinion that it was hardly the time or place to go into details of the scheme. Photographers could hardly realise what it meant to them if they would only back it up. He suggested that all the details of the scheme be left to the Committee to work out, after receiving suggestions. He was of opinion that the depression in photography was due to unskilful work. Master photographers should be highly educated in their work, and their natural successors were those who had been assistants. The reason so many photographers went down to-day was that the clever men of yesterday had no clever men to follow them, that the assistants could not follow them.

Mr. Jacolette said, on behalf of the Committee who had spent a very great deal of time and labour in thrashing out this question, he would ask the members outside the Committee to thoroughly interest themselves in the matter, and to add their experience to that of the Committee. If they would only do as their President suggested, i.e., take the draft of the scheme away with them and give their time and consideration to it, he was sure the suggestions sent in would receive every consideration. He was convinced of the ultimate good which would accrue to photographers as the result of such a scheme. If the scheme was not supported, and they afterwards got bad and inexperienced assistants, they would fully deserve it.

Mr. Prodger asked if the views of assistants could be given.

The President replied they were anxious to obtain the views of assistants, and announced that the Committee would meet on November 11 to consider the suggestions that had been sent in. With regard

to the final item on the agenda, the consideration of Mr. Snowden Ward's suggestion of the formation of a Benevolent Fund, Mr. Snowden Ward had been invited to be present, and he would ask him to place his views before the meeting.

Mr. Snowden Ward said that before giving his reasons for the suggestion that a new Benevolent Fund should be instituted, he should like to give an emphatic denial to the suggestion which he understood had been made in some quarters that the funds of the late P.B.A. had not been entirely devoted to the purpose for which they had been subscribed. During the many years he had been connected with the administration of the Association, with the exception of the comparatively small amount which had been spent in necessary office expenses, postage, printing, etc., he was certain the whole of the funds had been properly devoted. At the final dissolution of the Association the balance of the funds was devoted to the payment of a weekly allowance of 3s. to a provincial photographer who had been of some standing but was then incapable of work, and this sum, together with 3s. and a loaf of bread which the parish allowed him, was all he had to live on. His reason for calling the attention of the Professional Photographers' Association to this matter was simply this. He was practically the last secretary of the late Benevolent Society, and people in distress and photographers who wanted to help people in distress were frequently writing to him. The reply he was obliged to make was that it was not his business to run a Benevolent Association. In the case of the photographer he had referred to, when the funds of the Benevolent were exhausted he made an appeal, and received from a few people enough money to keep that man going for five years or more. But what he wanted to do was to be in a position to give a definite reply to people who are constantly saying that it is his duty to be responsible for the Benevolent Committee, and he hoped that after this meeting he would be able to reply in a manner these people expect. He gave examples of the manner in which assistance had been rendered to photographers who once had been in good ways of business, and expressed the hope that the P.P.A. might see its way to take up the whole question. He suggested a possible committee of eighteen, six from the P.P.A., six from the Royal Photographic Society, and six of the late committee of the Benevolent Society, of which he thought a few remained, notably, one in the person of Mr. Mackie, who had given such valuable assistance formerly. As regards support, he had not the slightest doubt that there would be plenty forthcoming, as he had since the publication of his intended proposal received many interesting letters and promises, one of which being from one of the largest manufacturing concerns in the country. In conclusion, he felt sure that with sympathetic administration a small fund could be made to go a long way in alleviating cases of distress.

Mr. Jacolette said he was greatly in sympathy with the proposal, but he would remind the members that their committee had already had some experience in these matters. During the presidency of Mr. T. Bedding they had suggested a Benevolent Fund as part of the Association, and they found so little support then that they did not feel justified in spending time and energy perhaps better devoted to the primary interests of the Association. He hoped that as far as this Association was concerned, whatever alms were administered would be administered to members of the Association simply. It was not their object to go outside the Association, and personally he was of opinion that efforts should be within their own arena.

It was intimated that four letters had been received by the Hon. Secretary in reference to the scheme promising support.

Mr. Ellis asked Mr. S. Ward how many promises he had received from provincial photographers, and received the reply, "Not more than three or four."

Mr. A. Mackie said one point to the advantage of the new scheme was that in the time of the old Benevolent Association it was said to be impossible for photographers to combine at all. That it was not impossible now was exemplified by the Association, and possibly a much larger number of them might take up the Benevolent scheme. In the old Benevolent Association they never had more than forty subscribers who were professional photographers, although the subscription was only 2s. 6d. per annum. The fact that there were letters from professional photographers anxious to assist showed that there is a greater chance now of success.

Mr. Groves brought under notice the fact that he had received a

cheque for a guinea towards the fund, as notified in a letter to the Editor of the BRITISH JOURNAL OF PHOTOGRAPHY.

Mr. Lang Sims said he was deeply interested in the proposed scheme, but he did not agree with Mr. Jacolette. If the scheme was taken up by the P.P.A. they must take in the whole of the profession. If they got a nucleus of £200, he did not think there would be any difficulty in forming a big Benevolent Fund. He was anxious that the scheme should go through. It was P.P.A. work and would be safe in the hands of the Committee.

Mr. Done said he would like to know if it was intended to confine this Benevolent Fund amongst photographers, or whether it would be thrown open to camera makers, plate makers, etc.?

Mr. Ellis said they were waiting to see what support they could get. The Committee would then see whether it was possible to go on with the matter. They wanted to hear all sides, and all suggestions so that the new Committee could go further into the matter and report upon it. They could not ask for money until they had a proper scheme. Getting at the easy part of it first, no doubt they could get sufficient money for what is required. But there is a very great doubt as to whether they had the machinery to apply the money properly. At the present moment they had not. It was necessary before giving money to find out whether the case was a genuine one. Inquiries would have to be made. It would be a very wrong thing to receive money until they were ready to apply it. Personally he felt very strongly about it. As long as he had known anything of photography when money was wanted, it was the custom to go round and rely upon the trade for the principal portion of the money subscribed. This should not be, and he strongly protested against any application being made to traders and trade companies to assist. Charity should come from themselves.

Mr. Gill said it seemed to him that in connection with this subject they were dealing with a matter of charity, and not a business matter. He thought the less money spent upon machinery and distribution the better. Ordinary Charity Organisation Society methods did not appeal to him where charity was in question. If they selected the right men they could leave the question as to whether the need was justified to them.

After further discussion the Chairman said it was not proposed to take any resolution which would pledge the Association to any course that evening.

Finally, it was proposed by Mr. Rigden, seconded by Mr. Cherry and carried, that Mr. Snowden Ward's proposal be favourably considered by the P.P.A.

The meeting terminated with the proposal by Mr. Lang Sims of a very hearty vote of thanks to their retiring President, Mr. Alfred Ellis, for the valuable services he had rendered the Association during his year of office.

This was enthusiastically carried.

GLASGOW AND WEST OF SCOTLAND.

THE first meeting of the Glasgow and West of Scotland Amateur Photographic Association was held on Monday evening. This being the annual general meeting, the annual report of the secretary and the treasurer's statement were submitted, and it is gratifying to note that the funds show a balance of £60 to the good on the year's working. After the election of office-bearers, the new president, Mr. Jas. W. Reoch, gave his presidential address. The subject chosen was a retrospect of experiences during the past twelve years, and a brief history of photography from its commencement. Photography holds the palm for being the most varied and many-sided of the hobbies that one may take up, and it leads one into paths of pleasantness and wonder. Some of the works evolved in recent years are the X rays, cinematograph, and three-colour work. After alluding to the work done by Niepce, Daguerre, Fox Talbot, and others, in the early days, the lecturer stated that Fox Talbot and Herschel were in reality the founders of photography. Coming down to the present, photography now was an immense subject to grasp thoroughly. Many were the roads that radiated from it—chemistry, optics, physics, astronomy, and these and many other things were indebted to it. Time to most of us prevents us from following it in many of these roads, and the photographer therefore must specialise. The powers of observation were quickened and enlarged, so that with an artist's standard of feeling the photographer goes to nature and selects and composes a picture and passes

by the rest. The scientist will produce the best negative, but the combination of artist and scientist is the best. Mr. Reoch concluded his remarks by alluding to the glorious prospect unfolded before the student of photography, and the pleasure to be derived from its pursuit, and finally the advantages offered in such a society in the help it affords the amateur in his work.

CROYDON CAMERA CLUB.

OCTOBER 19th.—Principally for the benefits of beginners, Mr. A. E. Isaac gave a lucid and interesting exposition on lantern slide making, dealing both with the cold tones resulting from normal exposure and developments, and the warmer tints obtainable by increasing the exposure and restraining the developer in the well known manner. In the short discussion which followed, a question was raised as to the why and wherefore a lantern slide showed such slight traces of halation, having regard to the tenuity and transparency of the film. Mr. Isaac said that halation seldom, if ever, appeared in contact slides, but when they were obtained by reduction this defect occasionally showed, especially if a strong illuminant were employed. The president, Mr. S. H. Wratten, also pointed out in this connection that a lantern emulsion was but slightly sensitive to the red end of the spectrum, and the film itself, being of a ruby colour, rays reflected from the back of the plate were in a large measure robbed of their actinic value.

DEVONPORT CAMERA CLUB.

OCTOBER 19.—The autumn session of Devonport Camera Club was opened. The President (Mr. W. H. Mayne), in an address, said photography had proved itself artistically capable of effecting results which not so very long ago the prosaic party would have denied the possibility of its ever achieving. Capabilities or tendencies unsuspected in the past must lead one to anticipate development in the future. What to-day was declared a presumption to attempt would be passed by to-morrow as too familiar to be even remarked upon. The photographer-artist was becoming more and more the master in the literal sense. He could command, even if within a small area, for he was not entirely under the domination of his camera and chemicals. Never was photography so popular as at present, and never before was the hand camera so much in vogue. There was no other hobby which brought so many subsidiary advantages as photography. It opened up for the serious student many branches of study, perhaps, either partly or wholly neglected. There followed a natural desire to imitate; hence the student was driven out in the haunts of Nature to get the materials for his picture. He learned more and more of her beauty, studied with more loving attention her changing moods, learned to love her more subtle aspects, and to work on an altogether higher platform than formerly. The more they knew the more they desired, and so the study of pictorial composition became a passion, ever increasing with added experience. The past year of the club had been a record one. The most important event had been the first open exhibition ever held by the club, and proved the finest and best held in the West of England. He should like to see a continuation of the exhibition, and expressed the hope that it would be supported by every member, and not leave it to a percentage to make the event a success. He pleaded for a larger membership, believing that there were a large number of amateur photographers still outside who could well be brought inside. The lecture by Mr. F. J. Mortimer on "Marine Photography," was read, the pictures shown being exceptionally fine.

PLYMOUTH PHOTOGRAPHIC SOCIETY.

Mr. J. TROUREN TREND, the hon. treasurer, reported at Plymouth Photographic Society's annual meeting last Wednesday evening that on the ordinary work of the year there was a loss of 2s. only. Unfortunately, however, the exhibition organised in the spring was so little appreciated that it involved the society in a loss of £12. Against that sum, however, there were assets of £10 13s. The President (Mr. F. Johnson), moving the adoption of the report, said the position was not discouraging. The society had discharged a public duty in affording an opportunity for enjoying some of the best photographic work of the day. That it was not appreciated was no fault of the society, although it had to bear the loss. Football seemed to be the only thing in the town just now. Mr. J. T. Johnson was elected president. Messrs. H. S. Hill and F. Blanchard were elected vice-presidents. Mr. J. T. Trend was re-elected hon. treasurer, and Mr. A. W. Hicks hon. secretary. A special vote of

thanks was very heartily accorded Mr. W. Grist for the great services he had rendered the society during the four years he held the secretaryship. The ballot for the committee resulted in the election of Messrs. Grist, F. Johnson, Clayden, E. G. Turney, Dymond, Bowtell, Coleman, and Wibling. Messrs. F. Johnson and W. Clayden were elected as delegates to the Royal Photographic Society.

SHROPSHIRE CAMERA CLUB.

THE annual meeting was held at Castle Chambers, Shrewsbury, on Wednesday last. The President (Mr. H. W. Hughes) gave a brief review of the work of the past year. A circular had recently been sent out urging the claims of the photographic survey of Shropshire, and the President appealed to the club to take part in this useful and interesting work. The hon. treasurer presented his accounts, which, notwithstanding some exceptional expenditure, showed the largest balance-sheet he had yet had. The president, vice-presidents, treasurer, and secretary were re-elected, and two vacant places on the Council were filled by the election of Messrs. J. Gouldbourn and W. H. Witherby.

Mr. W. E. Harding gave an interesting account of travel in Spain, which was well illustrated by a large number of lantern slides. One of the chief features of the evening was a small but very interesting exhibition of pictures lent by two well-known photographers, Mr. J. Cruwys Richards and Mrs. Dumas. Mr. Richards sent a number of portraits and figure-studies in gum bichromate, and Mrs. Dumas lent some very beautiful pictures of woodland scenes.

EALING PHOTOGRAPHIC SOCIETY.

OCTOBER 20.—Annual general meeting. The council were able to report that the society may be considered as in a flourishing condition. There are seventy-one members on the list, and the accounts show a balance of £12 12s. 4d. in hand. The president, Mr. W. T. White, who has held office for four years, tendered his resignation, not because he took less interest in the society than formerly, but because he thought a change would be beneficial. On his nomination, the hon. secretary, Mr. J. Watson, was unanimously elected to succeed him. The remaining officers for the ensuing year are:—Council, Messrs. Fryer, Pelling, F. C. White, Stewart, Clifton, and Portway; hon. curator and lanternist, Mr. A. Richardson; hon. treasurer, Mr. A. F. Taylor; hon. secretary, Mr. S. Taylor, 38, Hamilton Road, Ealing, W.

KINGSTON PHOTOGRAPHIC SOCIETY.

THE Kingston and District Photographic Society opened its winter session at headquarters, the Sun Hotel, on Monday evening last. It is customary to hold a series of twenty lectures, demonstrations, etc., ten before and ten after Christmas, all the meetings taking place on Monday evenings. The first of the present series proved very successful, the subject being "Animal Studies," illustrated by slides lent by Mr. Lewis Medland, who is well known in connection with this branch of photography. Mr. Medland was unable to be present, and the slides were entrusted to Mr. W. R. Stretton (a vice-president), who announced the names of the animals as they appeared on the screen. In the course of a subsequent discussion, Mr. East explained that at illustrated lectures the heat of the room condensed on the slides, and the reason the views were so clear that evening was because the slides were warmed by means of hot water. This was the suggestion of Mr. H. M. C. Sprunt, their hon. lanternist, and he believed that Kingston was the only place where this effective method of overcoming the difficulty was in use. After Christmas the headquarters of the society will be at the hall of the new Museum. Mr. East, to whom a large measure of the success of the society is due, is shortly leaving for South Africa, and in his absence all the secretarial work will be carried out by Mr. A. W. Grant, of Woodleigh, Cranes Park Avenue, Surbiton.

In the photographic competition instituted by "Parke's Drug Stores, Limited," the following awards were made:—First prize, J. F. Johnson (Harlesden); 2nd, Mrs. M. E. Turner (Stroud Green); 3rd, E. A. Perfit Harvey (Whitehall Park, N.) Commended, T. McCallum, T. C. Edwards, W. J. Jones, and A. B. George.

News and Notes.

THE Stanley Cyclists' Photographic Society has been formed at 106, Tollington Park, London, N., and is, we are informed, progressing with a great amount of success.

THE Cripplegate Photographic Society announce that the annual exhibition will be held on the following dates, viz., March 20 to March 23, 1905, inclusive.

THE annual general meeting of the British Optical Association will be held on Wednesday, November 16, at 2.30 p.m., in the Lecture Hall of the Mount Vernon Hospital, Fitzroy Square, W.

RICHMOND Camera Club.—Mr. J. A. Abbott, of St. Leonard's Place, East Sheen, is the new hon. sec. of this club, vice Mr. Richardson, who has resigned.

THE R.P.S. Exhibition.—We would remind our readers that tomorrow (Saturday) is the last day of the R.P.S. Exhibition at the New Gallery, Regent Street. Those who have not already visited the show should do so before it is too late.

SHEFFIELD Photographic Society.—Entries for the forthcoming exhibition of this society close on Saturday, November 5. The opening ceremony will be performed by the Lord Mayor-Elect of Sheffield. The Hon. Sec.'s address is 62, Vale Road, Sheffield.

BOLTON Amateur Photographic Society.—The winter syllabus of this society is now in course of preparation, and the secretary, Mr. A. Robinson, of 2, Fold Street, Bolton, will be glad to hear from any gentleman who are willing to deliver lectures or give demonstrations.

NEWPORT Photographic Exhibition.—The second exhibition of the Isle of Wight Photographic Society was held in the Medina Hall, Newport, on Wednesday and Thursday last. The opening ceremony was performed by Mrs. Godfrey Baring, and Professor J. Milne, F.R.S., F.G.S., presided.

BIRKENHEAD Photographic Association.—The opening meeting of the winter session was held in the Y.M.C.A. Rooms on Friday last. The president, Mr. R. J. Russell, presided. A lecture was delivered by Mr. E. Rimbault Dibdin, curator at the Walker Art Gallery, Liverpool, on "Sunny Seas and Sunlit Cities."

NOTICE of Removal.—Mrs. Alston announces that, owing to the increasing number of her pupils, she has been obliged to remove her studio from 175, New Bond Street to larger and more commodious premises on the first floor at 52, New Bond Street. At this address free demonstrations of crystoleum painting are being given daily from 11 a.m. to 12 noon.

THE annual general meeting of the Photographic Club will be held at the new headquarters, Huggett's Red Cross Hotel, 19, Paternoster Square, E.C., on Wednesday evening, November 2, 1904, to receive the balance sheet and report of the committee, to elect the officers and committee for the ensuing year, and to consider certain alterations in the rules, of which notice has been duly given.

BOWES Park and District Photographic Society.—On Monday last, at Unity Hall, a reception of members and friends of this society was held by the president and vice-president. Prints from photographs taken by members during their annual holidays were entered for competition, a good display being made. The following was the result of the voting:—Mr. A. Bird, 1; Mr. A. J. Craston, 2; Mr. Oliver, 3.

ABERDEEN Photographic Association.—This society held the first meeting of the present session in their rooms, 54, St. Nicholas Street, on Friday night last, the subject under discussion being the new Nernst burner, which was explained in an interesting manner by Mr. W. F. Borthwick, lanternist to the society. Discussion following, it was agreed to purchase one on behalf of the society, to be used both for lantern and enlarging demonstrations.

THE annual meeting of the Dundee and East of Scotland Photographic Association took place on Friday last. The following office-bearers were elected:—Mr. G. D. Macdougald, president; Mr. George Worrall and Dr. Cowan, vice-presidents. It was intimated that the

Council had arranged for a series of demonstrations, forming a complete course of instruction in photography for beginners, during the ensuing session.

SOUTHAMPTON Camera Club.—Mr. O. G. Pike, the well-known bird photographer, gave an illustrated lecture, entitled "In Birdland with a Camera," at this club on Monday last. The lecturer handled his subject in an instructive manner, and he took his audience into the haunts and homes of the rarest British birds, giving minute details of their habits and recounting many interesting episodes of the dangers encountered whilst obtaining the negatives for some of the unique lantern slides with which the lecture was illustrated.

MESSRS. CHAS. ZIMMERMANN AND Co., of 9 and 10, St. Mary's Hill, write:—"As many amateurs are at a loss to know what experience is entailed and what is necessary to thoroughly take up the new pigment paper printing process, we are issuing outfits as per circular enclosed." The outfit in question appears to include everything necessary for turning out finished prints in this process, and is very inexpensive. A postcard to above address will bring full particulars.

KING'S Souvenir of Bootle.—His Majesty the King has been pleased to accept an album containing photographs in connection with the recent opening of the Stanley Garden, Bootle, by the Earl of Derby. The principal view is that portraying the statue of the King, which forms the central figure in the gardens. The Mayor of Bootle has the honour on Tuesday last of presenting the souvenir to Lord Knollys, who received the gift on behalf of his Majesty.

THE Prize Distribution of 500 Cyko Cameras.—Messrs. John Griffin and Sons, Ltd., write:—"We find that the time allowed for purchasers of our Cyko Cameras under the scheme detailed in our published circular was insufficient to permit of them sending in pictures in competition. We have therefore decided to extend the last day of sending in entries until a date early in the spring of next year. This date will be determined as soon as a reasonable number of purchasers of these cameras have sent in pictures for competition."

At the Brentford Photographic Society on Tuesday last Mr. Turner, F.R.Hist.Soc., gave an address on "Record Work," and outlined a scheme for the new section just started. The society will be glad to hear from any one interested. The next meeting of the society will be on November 1. We hear the society is now in position to accept any gifts of books bearing on photography, etc., and the hon. sec., Mr. Hilton Grundy, North Grove House, Brentford, will be only too pleased to acknowledge any such gifts and put carriage on same if required.

SHEFFIELD Photographic Society.—A meeting of this society was held on Tuesday evening last at the Builders' Exchange, Cross Burgess Street. The society having arranged a course of elementary demonstrations for the benefit of the less advanced members, the first was given at this meeting by Mr. Thomas G. Hibbert on the making of lantern slides. Several slides were exposed and developed, and the result of over, under, and correct exposure shown. Instructions as to masking and binding were also given. A series of slides by Mr. Hibbert were afterwards exhibited on the lantern screen.

LIVERPOOL Amateur Photographic Association.—The weekly meeting of the members was held on Thursday last at the room in Eberle Street, Mr. F. A. Schierwater presiding. The lecturer for the evening was Mr. F. Anyon, who gave one of his practical demonstrations, his subject being the optical lantern. He illustrated and described the various principles governing the optical system, the various luminants, etc. The latter included acetylene gas by the latest approved methods, the new spirit lamp, the electric arc lamp, and the injector jet. The demonstration proved most instructive.

READING and District Photographic Society.—The annual meeting of this Society was held in the Abbey Gateway on Friday evening last. The Hon. Secretary presented a satisfactory report on the past year's working. Financially, the Society is in a good position. The Hon. Treasurer holding a balance of £4 8s. 9d.. Officers for the year were elected as follows:—President, Mr. Alfred Palmer, J.P.; vice-presidents, Mr. C. E. Keyser, J.P., and Mr. G. Gilligan, J.P.; honorary treasurer, Mr. G. W. Webb, J.P.; joint honorary secretaries, Messrs. C. A. Reading and George Green; committee, Captain J. E.

Henderson, Messrs. A. Burton, E. Cardwell, C. A. Elliott, D. Haslam, Jun., H. A. King, A. Malpass, and E. W. Tabor.

"ONE-WOMAN" Show at Russell Square.—The admirable collection of photographs by Mrs. G. A. Barton now on view at the Royal Photographic Society's Rooms, 66, Russell Square, W.C., will remain on exhibition until Wednesday, November 30. The pictures are all very fine examples of this well-known worker's peculiar and successful style, and are well worth considerable attention and study. The exhibition is open daily from 11 a.m. to 7 p.m., and permission to view to non-members of the Society will be gladly granted by the Secretary, Mr. A. W. W. Bartlett, at the above address. Sixty-seven pictures are hung, and we hope to notice some of them more fully on a future occasion.

SOUTHERN Photographic Society.—Mr. C. J. King, of St. Mary's, Scilly, delivered a lecture on "The Sea Birds of Scilly" at the Technical School on the 12th inst. In taking the photographs of puffins, shearwaters, petrels, terns, etc., much ingenuity has to be exercised in order not to alarm them. Mr. King said that on one occasion he spent five or six hours under a huge focussing cloth waiting for the moment when he could snap a crowd of puffins to the best advantage. At another time over a ton of stones and rocks were removed bodily in order to photograph the nest of a stormy petrel. This makes it clear why the eggs of this bird are so comparatively rare. The lecture was brought to a conclusion with some good photographs of breaking waves for which the Cornish coast is so well known.

NEWPORT Camera Club.—Mr. J. B. MacLachlan, of Blairgowrie, was the lecturer for the opening night of the session, and the Club Rooms held a keenly interested audience last Wednesday night, when he spoke from the text "Union is Strength." Mr. MacLachlan treated of the importance of combination in photographic work from various points of view. Specially he commended the value of club comradeship to the amateur, and, passing to speak of the larger unions, he detailed the aim and object of the Scottish Photographic Federation, with which he has been connected as secretary since the formation. The many and varied services this national union is able to afford were pointed out, and in interesting fashion the lecturer described the work accomplished by the Federation, with special reference to the salon at Perth, one of the notable successes of this year's efforts.

AMATEUR Photographers Open a New Studio at West Hartlepool.—The formal opening of a new studio formed the occasion of a very interesting and instructive gathering in connection with the West Hartlepool Amateur Photographic Society last Wednesday. The studio, which is situated in the Victoria Buildings, Tower Street, is in a most central position of the town, and should be the means of considerably adding to the strength and utility of the society. A very able and practical address on photographic printing processes was given by Mr. A. W. Walburn, who dealt principally with platinotype, carbon, and bromide, and showed the need for choosing the printing process to suit the particular subject and class of negative, besides giving a range of tones to be obtained on platinotype and bromide papers, and producing, in illustration, prints in black and white, sepia, blue, brown, and intermediate tones. The programme for the winter session is a very comprehensive one.

The Optical Society.—This society opened its winter session on Thursday night with a *conversazione* at its headquarters, 20, Hanover Square, W. Between sixty and seventy members were present, including Dr. R. T. Glazebrook, F.R.S., the president, Dr. C. V. Drysdale, Mr. C. Hyatt-Woolf, and Mr. W. A. Dixey, vice-presidents, and Mr. J. Aitchison, hon. treasurer. An exhibition of optical and other scientific instruments and apparatus had been arranged under the direction of Mr. W. Salt, the hon. secretary, and some interesting demonstrations were given during the evening. Mr. F. Harrison Glew showed some of the wonders of radium, and the working of various scientific instruments was explained. The exhibitors included Messrs. Adam Hilger (Ltd.), who showed a new spectroscope, Messrs. Sanger-Shepherd and Co., who showed a new camera for colour photography and other specialties, Messrs. Romaneet and Gilbert, who had a good selection of lanterns and arc lamps, Mr. R. W. Paul, and Mr. Aitchison.

"It may interest the amateur at home," observes a writer in one of the Glasgow papers, "to know the method recommended by an amateur in the South Sea Islands for varnishing a negative. He advises that a box, such as plates are sold in out there, is to be filled to a sufficient depth with varnish. After exposing the negative to the sun until warm, it is dipped face down in the varnish until it is covered up to, but not overflowing on, the back." A pneumatic plate holder was used to hold the plates and prevent the fingers getting covered with varnish, and meanwhile watching that there were no air-bubbles on the film side. Lift from the varnish by a tilting movement, which will allow it to drain off evenly, and place in an almost upright position in the sun to harden. The sun is never so intense in our northern clime as to be able to be annexed in this way by the amateur as an aid to varnishing, but the difference in the method in the South Sea Islands is interesting, if not possible here.

ROYAL Geographical Society.—The new session of the Royal Geographical Society opens on November 7, when Captain Robert F. Scott will deal with the leading features of the national Antarctic expedition of which he was commander. Captain Scott's lecture will be profusely illustrated with lantern slides; he has 2,000 photographs and hundreds of coloured sketches to select from. This meeting will be held in the Queen's Hall, and we understand that the demand for tickets by the Fellows for themselves and their friends far exceeds the accommodation provided in the hall. The Antarctic expedition will form a prominent feature in the proceedings of the session. At subsequent meetings Lieutenant Royds will deal with the meteorology of the expedition, Mr. Ferrar with the geology, Dr. Wilson with the zoology, and Mr. Bernacchi with the terrestrial magnetism. Moreover, Captain Scott has consented to tell the story of some of the leading incidents of the expedition to young people about Christmas, when again there will be an abundance of lantern illustrations.

SPORTING Photographs.—Everybody who has seen the fine volume just published by Mr. John Lane, "Fifty Leaders of British Sport," says one of the daily papers, "has been remarking on the wonderful portraits that illuminate the book, and surprise has been expressed that so many famous sportsmen should have been 'caught' by the camera while enjoying their favourite recreation. How was it, for instance, someone has asked, that Messrs. Elliott and Fry managed to catch the Marquis of Granby when he was playing a fish, with the water well up to his knees?" Mr. Ernest Elliott has now explained that most of the photographs were, as a matter of fact, taken in his studio in Baker Street. The stream in which Mr. Courtenay Tracy is otter-hunting, the wicket at which "Ranji" is standing in his well-known attitude, the jungle wherein Gen. Sir Montagu Gerard is looking for tigers—all these and many others, were "built" in Baker Street. Looking through the originals it was a matter of considerable difficulty to select those which were taken in the open air from those which were not. The deception is really astounding, and Mr. Elliott not unnaturally is pleased with the result of his two years' work.

DRYING Negatives Quickly.—Some writers on photographic matters appear to have unlimited faith in the virtues of methylated spirit as an agent for the rapid drying of negatives, writes a contributor to the "Westminster Gazette." One such asserts that negatives which have been immersed for two minutes in the spirit will be dry "in two minutes, if the spirit is strong enough." No doubt many readers will share my desire to get hold of some of that spirit. I have tried many kinds of methylated spirit for the purpose of hastening the drying of a negative, but it has never been my good luck to get a brand strong enough to present me with a dried negative in the space of two minutes. If any of my readers have made a note of the quickest results they have achieved in drying negatives in this way, I should be much obliged if they will send along some account of their experience. This question has not received so much attention from our chemical experts as it deserves, for to the professional photographer the rapid drying of a negative is often of great importance. It still remains true that one of the best and safest methods of drying a negative quickly is to place it in a strong current of air, but care must be taken that the air which plays on the surface of the film is not charged with particles of dust.

EDINBURGH University.—Opening the new engineering classes yesterday in Edinburgh University, Professor Hudson Beare, M.Inst.C.E., in an introductory lecture, referred to the purchase by the University for £15,000 of the site of the old infirmary, and said that the block at the north end of the old hospital buildings, including that portion which was originally the High School, had been assigned to the engineering department. During the past summer he had been engaged in the preparation of the preliminary plans in connection with the utilisation of these buildings. These new buildings would provide them with greatly increased accommodation which they were urgently in need of. On the ground floor of the front block would be large lavatories for testing of materials, and for hydraulics, and on the upper floors classrooms, photographic rooms, laboratories for special work, etc. The block of buildings standing behind the main block would be converted into a large lecture theatre, and above this would be a large well-lit drawing office. There was every hope that within the next twelve months the necessary alterations would be carried out, and that by this time next year they might probably be able to move into the new building.

X-RAY Victims.—There are in London, it is estimated, a score of X-ray operators suffering from that mysterious disease which proved fatal in the case of Mr. Clarence Dally, Mr. Edison's assistant. The disease, which is apparently incurable, is set up as a direct result of the manipulation of the Röntgen rays; and the hands of the operator appear to be the most vulnerable part. A fortnight ago one well-known doctor, who is in charge of the X-ray department at one of the largest of the London hospitals, had the first two joints of the forefinger of his right hand amputated, and last Thursday it was found necessary to take the remainder of the finger away. "You can see from the fingers of the right hand how the trouble has developed," he remarked to a "Weekly Dispatch" interviewer. The hand seemed as though it had been severely scalded. It was covered with an ulcerous eruption, and the nails looked as though they had been crushed and torn to pieces. "All the earlier workers," proceeded the doctor, "are suffering in greater or less degree; and this is due solely to the fact that we did not know what we were working with, and took no precautionary methods against possible danger." Mr. Harry Cox, of Rosebery Avenue, who supplies the Admiralty and the War Office with X-ray apparatus, is another of the victims. He carries his left arm in a sling as the result of his injuries.

PHOTOGRAPHY from Balloons.—Miss Gertrude Bacon, daughter of the Rev. John Bacon, the well known aeronaut and investigator, attracted a large audience to the R.P.S. Exhibition at 121, Regent Street, last week by her lecture on "Photography from Balloons and Airships." The clever and witty descriptions which Miss Bacon gave of her many experiences in mid-air and in cloudland were illustrated by a large number of excellent photographs taken by herself and her father while on their voyages. Balloon photography, she said, had very strict limits. It was not possible to obtain sharp results nearer to the earth than 250 ft. or 300 ft., because the ascent was so rapid and the descent had to be carefully watched. On the other hand, good pictures could not be secured at a greater altitude than 2,000 ft. because of the presence of particles in the air which prevented good definitions being made. The views secured at heights varying from 400 ft. to 2,000 ft. were greatly admired, particularly those of London and the surrounding country under various atmospheric conditions. The pictures of cloudland in sunshine and moonlight represented, as Miss Bacon remarked, a veritable fairyland. From ballooning experiences the lecturer passed to descriptions of her airship flights from the Crystal Palace with Mr. Spencer, and claimed to be the first lady to make a long voyage in this manner. Until then she had imagined ballooning to be the best experience in life, but it was as nothing compared with sky-sailing in an air-ship. She looked forward to the time when aerial navigation would be one of the finest sports in the world.

THE Picture Postcard Craze.—Few can question the fascination of picture postcard collecting as a hobby. These pleasing little missives bring to memory sights and scenes almost forgotten, helping one to live again through experience of holiday or travel. The hobby has the advantage over its sister one of stamp-collecting in that the slenderest purses can participate, and being an open field of industrial

enterprise, there are no expensive issues or possible forgeries trouble about. There are a few that fetch prices a little above the original value, such as those taken by the officers of the good ship "Discovery" lately returned from the South Pole expedition; and a few that have been suppressed on political or moral grounds. Governments of various Continental countries. The Russian Government issued an edict forbidding Count Tolstoi's portrait to be used on postcards. The Turkish Government is still more sweeping in its prohibitions; an Iradé forbids any postcard to be circulated bearing the name of God or Mohammed, any drawing of the Kaaba, or any portrait of a Mohammedan woman. In France there is a censorship of cards, and several have been suppressed for offences against good manners. Some time ago 80,000 cards were destroyed as the result of a single raid, and an eye has to be constantly kept on the cards which satirise crowned heads. One card was suppressed for ridiculing the corpulence of the King of Portugal; others for gibes at Prince Henry of the Netherlands and the late Queen Draga of Serbia. The climax was reached when the anti-clerical Government of M. Combes had to stop the circulation of a card as being deficient in reverence towards the Pope. The most intrinsically valuable cards are those that ensure the recipient against accidents for a month for the sum of £50. A series of Dreyfus cards originally published at the moderate price of one and a half francs has since changed hands for £8. Quite probably the famous card said to have been sent by the late President Kruger when the officials wrote to him, after his flight from South Africa, asking for their pay—"Read Proverbs vii. 19, 20"—would command a fair figure if offered for sale.—From the "World's Work and Play" for November.

On Saturday night last a fire broke out at Beavan and Son's photographic studio, Lowther Street, Carlisle. The studio is three storeys high, and is above valuable property. The flames spread rapidly around the top storeys of the block opposite, the General Post Office, and considerable damage was done. The fire brigade and police, however, succeeded in checking the spread of the fire, but the roof of the building was destroyed, and also a large quantity of negatives and photographic apparatus. Damage to the extent of several hundred pounds was done.

J. LANCASTER AND SON, LTD.—This company has been registered with a capital of £10,000 in £1 shares, to acquire the business of a manufacturing optician and importer and manufacturer of and dealer in chemical, scientific, and photographic apparatus, carried on by W. J. Lancaster as J. Lancaster and Son, at 37, Colmore Row, Birmingham, and to carry on the same and the business of electric engineers, makers of and dealers in films, photographic chemists, etc. The subscribers are W. J. Lancaster, C. J. Lancaster, Miss L. M. Lancaster, Miss A. L. Lancaster, E. H. Lancaster, F. J. Heathcote, and A. H. Cox.

TOPICAL Events Illustrated in the Schoolroom.—On Thursday evening last a lantern lecture on the Russo-Japanese war, illustrated by sixty photographic views, was given at the Ricklinghall School, Ipswich, by Mr. W. Palmer to his thirty evening scholars, the parents and friends. The lecturer expressed the hope that as a result of the lecture his audience, which numbered about 100, would be enabled to take a more intelligent interest in the conflict now waging in the Far East. The causes leading to the war, and the description of the views, were listened to with keen interest. On the following evening the lecture was repeated at the Hinderclay School, at which nearly the whole village attended.

TESTS of Potassium Bromide.—Chloride and carbonate, the two impurities most commonly met with in potassium bromide, are both detrimental to its use in emulsion making. Its functions as a restrainer in development are not likely to be affected by the possible proportions of these impurities, and hence the plate-maker rather than the photographer will be interested in the results of a series of tests of bromides, extending over eighteen months, which appear in the "American Journal of Pharmacy." The samples represented six, presumably American, manufacturers, five of whom were found to supply a reliable product. In most cases the titre of the bromide was up to 98 to 99 per cent., in several instances it was as low as 95 to 96 per cent., these bromides containing excess of potassium chloride and showing a strongly alkaline reaction.

Correspondence.

Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.
We do not undertake responsibility for the opinions expressed by our correspondents.

THE PHOTOGRAPHIC CLUB.

To the Editors.

Gentlemen,—At the special meeting of the members held last week, it was unanimously decided to terminate the tenancy of the club at Anderton's Hotel, and to remove the headquarters to Huggett's Hotel, 19, Paternoster Square, E.C., and I beg to inform you that in future the meetings will be held at that address on Wednesday evenings at 8.

As it was found impossible to make accommodation for the bookcases containing the library and historical collection, for much of the apparatus and the contents of the dark room, it was decided to dispose of the same, and the committee were empowered to make the necessary arrangements.

Accompanying this is an inventory of the principal properties with the estimated value; should any of your readers desire to purchase any of the items at the prices marked, I shall be glad to receive their applications.—Yours faithfully,

T. W. DERRINGTON,

49, Princes Road, Wimbledon, S.W.

Hon. Secretary.

October 24, 1904.

Property of the Photographic Club with estimated value:—

	£	s.	d.
The library, contained in three bookcases	60	0	0
Pair of optical lanterns, by R. R. Beard; best quality; mahogany bodies with panelled rosewood doors; two pairs of 4½ in. condensers; long and short focus; a pair of Dallmeyer's 6 in. lantern objectives; each is complete as a single lantern, and they may be placed side by side, or used one on the other as a binocular; the fittings include pair of best blow-through jets, dissolving taps, slide tinters, etc.	15	0	0
A 9-ft. opaque screen in lock-up case	1	5	0
A high-class stereoscope, by Beck, with all adjustments... ..	0	15	0
A complete set of Daguerreotype apparatus	1	1	0
Well-made scales, in box; with ordinary and metric weights ..	0	5	6
The well-known collection of Daguerreotypes	1	10	0
Early specimens of photographic enamels, by Lafon de Camarsac and Joubert, in an elegant case by Zaehnsdorf	5	10	0
A revolving album, by Hare			

[We would specially commend the attention of our readers to the opportunities given by the dispersal of the Photographic Club's apparatus to secure some excellent bargains. From long personal knowledge of the items offered, we can pronounce them of good value at the prices indicated.—Eds. B.J.P.]

THE "STEADMAN" EXPOSURE SYSTEM.

To the Editors.

Gentlemen,—What Mr. Watkins says in your issue of September 23 is true concerning the perfect rendering "on one plate" of a subject having foreground, middle distance and bird's-eye planes. But if these conditions exist in the same subject pray how can he assume that I advocate classifying that subject into its three separate parts, calling it three subjects, and giving each part a different diaphragm during the intensity exposure? This would be outside of the possibilities and is foreign to the real reasons for differentiating between foreground, mid distance, and bird's eye subjects.

Supposing that the reader is really interested in the truths that are under discussion I will be pleased to explain as briefly as possible what my opinion is in this matter. In the first place, I class as a foreground subject one which has objects in the foreground which occupy a considerable amount of the visual area of the picture field (for their image, such an area in proportion to the area of the whole image cast by that field). And this whether there are mid distance and bird's-eye planes in the field or not.

A mid-distance subject is one having objects in the middle dis-

tance, but none in the foreground. (It may or may not have a bird's-eye plane.)

A bird's-eye subject is one having neither foreground nor mid-distance objects in it. I think that this classification will be considered logical by all.

Let us consider a foreground subject having both mid-distance and bird's-eye planes as well. Say that the plane in the distance has an intensity of 32 units, the high lights of the foreground, 24 units; the shadows or shade of the mid-distance objects, 16 units, and the half-tone of the foreground objects, 8 units, and its shade, 1 unit. The contrast within the bird's-eye plane is very little, and is what I call "minimum" contrast in studying intensity and its analysis.

There is now a subject confronting the lens which has a contrast factor of 1.32. This contrast is quite within the range of the modern plate and film.

For convenience let us say that to overcome the inertia of the sensitive film is to bring it to that state which will just show a reproducible contrast (when printed) from the "clear glass" plane in the negative during normal development.

Now if this image be allowed to rest on the film long enough to enable the one unit intensity surface to overcome the inertia once, the 32 unit intensity plane will overcome it thirty-two times, the shade of the mid-distance sixteen times, and the high lights of the foreground twenty-four times.

If this latent image be developed to the desired contrast condition for some certain printing medium, that act will locate as desired the highlight and the deepest shadow tones, while the other three planes will assume in the normal development satisfactory positions throughout the scale of tones and opacities.

But suppose now that a small section of the negative, that representing the bird's-eye plane, be cut away and used as an independent negative from which to print a photograph of that particular plane. It is readily seen that although its "minimum" contrast is well rendered as a part of the whole picture, it is too little contrasted to create a satisfactory rendering of the bird's-eye plane alone, if printed as a separate photograph.

Take a parallel case in an artist's hands. Would he treat a small bit of bird's-eye plane occurring in a picture consisting mostly of foreground to the same scale of tones as though the whole picture consisted of a bird's-eye scene? Most certainly not. He is obliged to make his shades or tones "go round" and cannot use them all up in rendering the bird's-eye plane when it occurs as a part of a foreground subject.

For reasons of construction, determined by the most common of common sense, he would also make a painting having a bird's-eye character throughout cover some considerable part of the natural scale of tones.

In all pictures there must be contrasting tones. On this depends the very creation of the semblance of things on a flat surface. There must be drawing there. And the photographic worker must use his chemical actinism in connection with the sensitive film to create a like variety of tone rendering, to agree with the character of the subject to be treated and also to satisfy in an ever-changing variety of manners, his taste.

Suppose that the "minimum" contrast of the bird's-eye plane to consist of values from 30 to 32 units in intensity. While the latter is overcoming the inertia thirty-two times, the former will do it thirty times, the difference in the work done being therefore about seven per cent.

Now reduce the exposure so as to allow the 32-unit plane to overcome the inertia sixteen times, the expressions for the whole series of intensity planes would be as follows:—

Intensities	32	24	16	8	1
Inertias overcome	16	12	8	4	$\frac{1}{2}$

This latent image developed to the same desired contrast factor would spread fewer tones over the tone scale, and the lowest value before detailed would now be thrust down to "clear glass."

Reducing the exposure again by half (which I do by reducing the "speed diaphragms" of subjects as they demand it) the work done by the different planes during exposure would be as follows:—

Intensities	32	24	16	8	1
Inertias overcome	8	6	4	2	$\frac{1}{4}$

Now although these numbers still bear the original relations to each other it must be remembered that one of them, representing the

lowest value, is already sent below the detail line into "clear glass," and that all the effect, with each reduction of exposure, becomes more and more confined to the surface of the film. For this reason, in forcing the greatest effect up to the desired point of density by longer development or intensification the intermediate effects are caused to cling with more and more stubbornness to the opacity of the "glass."

This is simply the effect that undertiming is well known to have on the opacity or tone curve.

By cutting the exposure again in two, the 8-unit intensity plane is enabled to take on the condition before arrived at by the 1-unit intensity. Plus a little further density by reason of the additional development necessary to bring the greatest effect to the required density and the negative therefore to the required contrast factor.

Without carrying the illustration farther I am sure that the reader will understand why a subject having a short range of tones should be allowed to overcome the inertia of the sensitive film less times than the brightest part of a subject which has a long range of actinic intensities in its different parts: Simply that the little differences which it does have may be made to draw themselves with more decisiveness in the negative on development, and thus to spread itself out to a greater range in the tone scale of the photograph.

Notwithstanding Mr. Watkins thinks that actinometers "should have swept (subject classification) away," I am strongly of the opinion that classification is truth's logical handle. I have found it a great help to make the light measurement always the direct explanation of the intensity of the light falling upon the measure, and to think the colour and contrast of the subject and the speed of the plate or film in diaphragm terms. By separating the two truths the mind weaves around them a feeling of greater certainty and confidence, which has greatly aided me in grasping the truths of contrast construction by exposure alone (followed by sufficient development with normal developer).

We seem not to be awake to the poverty-stricken condition of photography to-day! We have no unit of actinism. Actinism is not numerically considered (except in "intensity time" as used with meters, which is not even the beginning of what should be). The brightest professor of physics, if photographing, would simply wonder, if he desired to make a snap shot, whether the light was strong enough or not, and that knowledge, or rather, judgment, would have been derived from his previous experience in "snapping." We have in use no uniform system of either plate speed markings, diaphragms, light, or opacity measurements. And still the average photographic worker wades through the world and really seems proud that after ten or fifteen years of practice and the use of much material he becomes able to do his work with some considerable accuracy. I say he then seems proud, but it is difficult to see why, since any child of school age with any good meter, or any sensitive paper, could learn in an hour or less to expose with a far greater degree of accuracy than such a worker could arrive at in a lifetime. If such a worker had a son who wished to practise photography it seems strange that he should require that son to wade through the years of failure that he went through, thus by actual preference delaying success, and piling up expense, and all for a prejudiced point of view that would be similar to keeping the rule away from the boy, if he were learning carpentry, so that he could the better learn to guess distance. Pray what is this added glory that crowns a dimension, quantity, or an intensity, by having been guessed? Actinism is simply a tool, but is the most important of all the tools of the photographic worker.

It seems to me the veriest of good sense to say that the more we can know of actinism and of all the steps of the photographic process the better and quicker we are able to use these steps for the construction of pictures.

While photography is cursed by the conditions mentioned above, it seems to me a great error on the part of Mr. Watkins to even intimate that there is any over-classification in my bringing the subjects of nature into classes and under logical heads as I have done.

To the worker I will say that it will pay to take the subject list from my first article in the pages of the Journal, and make an effort to really understand the application of it. Not until the meaning becomes clear to the worker is it possible to realise the real intention of the plan or to get the good out of its use.

So far as Mr. Watkins and I are concerned, it is plain that we have

no argument on at the present time. He will say "amen" to the most that I have said, and if I should care to classify nature with greater precision than he finds necessary, that is a small difference between us.

What would be of infinitely greater value to photographic advancement would be for some scientist to explain the absence of simple units of actinic intensity, or for some old school "guesser" to come out and take a stand for his hobby and explain the benefits of "not knowing" his tools.

It would also be interesting for some prominent plate maker to take up the justification of the stand that there should not be a uniform method of plate speeding or marking adopted, and for some manufacturer of lenses to explain why there should be half-a-dozen diaphragm scales in existence.

It would also be of interest to have some educator explain the absence of photography from the public school course.

Also, with all the searching for effective kindergarten work, how is it that a child grows up without the least idea of the actual duration of a second of time, when the use of a simple phrase will allow any child to have under perfect control, the quarter, half, and full second, and any number of seconds?

Also why is it that the shutter makers insist on giving a scale of speed intervals that do not agree with the needs of the diaphragm openings as they enlarge? For example: If diaphragm F. 32 should, in a certain case, require one second of exposure, the relations of diaphragms to exposure throughout the larger openings would be as follows:—

	F. 32	F. 22	F. 16	F. 11	F. 8	F. 5-6
Exposure ...	1 sec.	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$	1-16	1-32

Will some shutter manufacturer please teach us the benefits of having the speed intervals of the shutter not agree with this need of the diaphragms?

The discussion of these things would lead into interesting and important paths. I am, sir, sincerely yours,

New York City,

R. M. STEADMAN.

October 15, 1904.

NOTHING LIKE BUTTONS.

To the Editors.

Gentlemen,—Referring to Messrs. Medrington's letter in your issue of October 21, the concluding paragraph of which reads, "Obtaining the high profits 'Argus' hints at, out of promenades at 8s. 6d. per dozen, must mean Sunday work, low salaries, and sweating for the employees." In proof of this, it is only a few months back that your paper contained an account of a 'cheap' photographer who was fined for working girls long after business hours," and which I believe refers to myself. I would like to offer a few words of explanation.

I do not make a high profit out of promenades at 8s. 6d. per dozen, and have no need to overwork, underpay, or otherwise illtreat my assistants. My assistants do not work on Sundays, their hours are not long (I believe they are identical with Medrington's), and they are not sweated; the only exception to these statements being that during the fortnight preceding Christmas (a very busy time) four of them worked extra time after six o'clock, and for a period of four hours on the Sunday, and for this I was fined.

I certainly thought that payment of the fine ended the matter, but Messrs. Medrington evidently think otherwise, and now perhaps they will state that they themselves did not work overtime at the same period, and so become equally liable to a penalty.

Assistants do not voluntarily leave my employment, in proof of which I may state that all the assistants engaged by me from the day I commenced are still with me. I can confidently join issue with Messrs. Medrington that my workers are as well paid, and have as easy hours, as those engaged in any other properly managed photographic business in this city.

As regards the "cheapening" of photographic work in the public estimation, I do not consider that a reasonable price cheapens the work so much as the methods employed by some firms to secure business. Messrs. Medrington are a firm who issue free invitations by the hundreds, and even give away enlargements. These are undoubtedly means of "cheapening" photographic work, and I, for one, have never descended to this level, and do not intend to do so.

It may hurt Messrs. Medrington to know that I can do good

work at a low price and still manage to make a little profit, but proper up-to-date management is the explanation, and no free sitting trickery.

I am not a "cheap" photographer. I have a special line at a low price; but the class of my work will not permit of an all-round reduction in prices, and my prices have not been reduced since I commenced business nine years ago.

In conclusion, I consider that a firm of the reputed standing of Messrs. Medrington are demeaning themselves sadly when they descend to the level of mud-throwing.—I am, Gentlemen, yours truly,
E. T. VANDERBILT.

Liverpool, October 24, 1904.

To the Editors.

Gentlemen,—As one of your constant readers, I would like to point out that your correspondent, who signs himself "Argus," is talking of something he knows very little about. Is he aware that there are a great number of first-class men who have taken up the three cabinets for 2s. 6d. and promenades at 10s. 6d. the dozen, and which are equally as good as those who charge a guinea, and by giving his clients good value can smoke the "big cigar" and ride in a "motor car," and also put by enough for the so-called (rainy day) without sweating his employees? I might point out to him that there are P.R.S.'s who are guilty of this terrible offence, and why in all conscience the photographer that does honest work at the above-mentioned prices is so ridiculed by a member of the profession (which I doubt he belongs to) is beyond me. There are many firms in London where "Argus" can have a portrait taken at the above prices that would probably astonish him. Move with the times is the advice of yours, etc.,
ONE OF THE MUSHROOMS.

October 22nd, 1904.

THE P.P.A. EXAMINATION SCHEME.

To the Editors.

Gentlemen,—The tentative scheme of the Professional Photographers' Association for granting certificates to employees must, I think, be regarded by employer and assistant alike as a step in the direction of a long-needed reform. To the employer it should furnish an approximate criterion of an assistant's capacities before entering into an engagement, the result of which might be otherwise disappointing. And, further, no competent assistant who is honest will object either to undergo examination or to have his record inquired into. Thus the employer will be safeguarded to a very fair extent. As, however, the secretary of the association invites criticism of a constructive nature, may I venture, in meekness and with much fear and trembling, to suggest that the scheme should also embody some provision for safeguarding the interests of the poor assistant after he has undergone the ordeal of the cross-examination which appear to be involved. Assuming that he emerges whole and sound and with, it may be, flying colours, what is there to guarantee him anything approaching security of engagement, or against certain frictional disturbances resulting partly from inconsiderate exigencies and caprice of temper on the part of his employer? Apparently he is still liable to be dismissed at a week's notice for causes which may be outside his control, such as, for instance, business depression, competition in salaries, or he may have to consider the alternative of long hours, sweating, gratuitous overtime, or an amazing versatility in his requisite accomplishments. Of course, no employer who enjoys even a moderate reputation would dream of placing himself at such an ultimate disadvantage as the non-observance of the golden rule would bring about. But there are others. Therefore, since it is proposed to reduce to a minimum the chance of imposture by the incompetent, may not one justifiably ask that there should also remain as little risk of the conscientious being imposed upon. It has occurred to me that a form corresponding to that it is proposed to employ for assistants might in some cases be used with advantage in the case of employers. I would also beg leave to suggest that any employer who avails himself of the proposed scheme, that is, in requiring candidates to produce a certificate or to undergo examination, be prepared to offer a yearly agreement to his employees. This would, in my opinion, certainly tend to diminish whatever of friction there may at present exist between those whose interests are, after all, mutual, if they could

only see it. As I do not desire to shelter myself anonymously, I beg to subscribe myself, your faithfully,
G. F. A. FRANKLIN.

47, Castle Street, Bolton.

October 22nd, 1904.

SOME PECULIARITIES OF DYES WHICH PRODUCE TOTAL SPECTRUM SENSITIVENESS.

To the Editors.

Gentlemen,—Obviously Mr. Thorne Baker is exceptionally sensitive to criticism, and would have one and all of us accept the results of his original (?) research as gospel, and without criticism or question, even when those results are entirely opposed to the results obtained by men who have had thirty years' experience in the particular subject.

Had your correspondent chosen to drop rude personalities and discuss the subject I might have been induced to publish some of the results of my own experiments (I do not call them "original research") to prove that he is wrong. But, Gentlemen, I have lived long enough to outlive the youthful desire of self-advertisement, and the childish disease of *cacoethes scribendi*.

"The much overdone German" is a worm to be despised when his results do not accord with your correspondent's, but the dyes used, the instrument employed, and the principle involved all originated with "the much overdone German."

Your correspondent is at liberty, so far as I am concerned, to fill your pages, and the pages of every other English journal, photographic or otherwise, and when he attains this height in the near future, I shall content myself with those of the despised Teuton, where I can get original matter that is worth reading.—Yours faithfully,
E. J. WALL.

Foot's Cray.

TANQUEREY IN ENGLAND.

To the Editors.

Gentlemen,—In last week's issue of your paper a correspondent draws your attention to the fact that Tanqueray is now working the free portrait swindle in Ceylon. This is due no doubt to competition in England. At the present time Bedfordshire and Buckinghamshire are being freely worked by the free portrait gentry, who send round women canvassers, that force themselves "by sheer cheek," into the homes of country people and get hold of some sort of photograph which they will enlarge free, just for advertisement, as they put it. In some cases a handbill is found stating that it will be necessary to buy a frame. This is usually found long after they have left the place. Nothing more is heard until the framed picture is brought home and the money demanded, this time by a man, with threat of a summons if they dare deny payment. The usual charge is 25s. to 30s. for framing. One of the daily papers once stated that if Tanqueray were in England he could be proceeded against. Tanqueray did give his victim the option of leaving the lot when they knew they were had. But these gentry of Leighton Buzzard simply force the thing on the unsuspecting public.—Yours faithfully,
A. T. BURR.

7, Great Western Street, Aylesbury.

October 18th, 1904.

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Answers to Correspondents.

- **All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.*
- **Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*
- **Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.*
- **For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

PHOTOGRAPHS REGISTERED:—

- J. Weir, Burn Cottage, Well Road, Moffat. *Photograph of Old Black Bull Inn, Moffat.*
- Grant & Pickeman, 7, South Guildry Street, Elgin. *Three Photographs of the Rev. R. Cowan.*
- F. Aspden, 48, Church Road, St. Anne's-on-the-Sea. *Photograph of St. Anne's-on-the-Sea Telegraph Messengers.*
- E. Lippiatt, The Beach Studios, Clevedon, Somerset. *Two Photographs of Rough Sea at Clevedon, August 15, 1904.*
- B. and W. Fisk-Moore, 4, St. George's Gate, Canterbury. *Photograph of W. J. Fisher.*
- W. H. Hoare, 68, Oxford Street, Swansea. *Five Photographs of the G.W.R. Disaster near Llanelly.*
- P. Wynne, 518, Coventry Road, Small Heath, Birmingham. *Two Photographs of the School Children at the Opening of Small Heath Bridge.*
- A. J. Piper, 6, Cotton Road, Nuneaton. *Photograph of Nuneaton Conservative Club.*
- S. A. Baker, 118, London Road, Southborough, Kent. *Photograph (Interior) of Old Oak Room, George and Dragon Hotel, Speldhurst, Kent. Photograph of the George and Dragon Hotel.*
- D. Whyte, 57, Church Street, Inverness. *Five Photographs of Glenquoich Lodge, Inverness-shire. Two Photographs of the King. Two Photographs of the King and Party.*

APPRENTICESHIP.—"INDENTURE" writes as follows: "In the event of a photographer having to dismiss an indentured pupil through the pupil's misconduct, do the clauses of the indenture hold good, say in the matter of his starting in opposition?" In reply: This, we imagine, will depend upon the wording of the indentures. The question should be referred to a solicitor with the indentures.

RESIDUES.—"C. W. Y." says: "I should esteem it a favour if you could let me know if the cuttings from collodion chloride papers are worth retaining for the silver they contain?" In reply: At the present price of silver, unless you use a considerable quantity of the paper, the cuttings are scarcely worth the trouble of saving. If, however, you save your other wastes, these should be added to them.

THE VERANT.—A. MASSER writes: "Will you kindly inform me if there is any further information re notes concerning Dr. Moritz Von Rohr, contained in the last paragraph on page 671 of last year's B.J. ALMANAC, concerning stereoscopic photography, in which I am deeply interested, or could you enlighten me further on this subject?" In reply: Our correspondent will find full particulars in the forthcoming ALMANAC.

MATERIAL FOR BACKGROUNDS.—PEMBERTON BROS. ask: "Will you please inform us where we can procure canvas up to 8 ft. wide as enclosed sample, and you will greatly oblige?" In reply: Sheetting up to 8 ft. wide may be obtained from most of the large drapery and upholstery stores. The latter may possibly supply canvas that width, inquire of them. If you read the notice that heads this column each week you will see that we do not reply to correspondents by post.

COPYRIGHT QUERY.—A. J. STONES says: "I should be glad to learn if the copyright of the lantern slides of the Columbian Exhibition, Chicago, 1893, has expired, and if I may reproduce them for trade purposes." In reply: If the pictures were registered according to the English Copyright law, the copyright in them lasts during the lifetime of the author, and for seven years after his death. Whether he is still alive, or, if not, when he died, you must find out yourself.

COLOURING PHOTOGRAPHS.—M. WALTON asks: "Will you kindly tell me what special preparation of colour you would recommend for colouring photographs apart from dyes, both bromides and

silver prints; and also if the photographs should be prepared in any way before colouring?" In reply: Ordinary water colours are what are usually employed. No preparation is necessary, but should the surface of the photographs be at all repellent of the colour, they may be washed over with very dilute ox-gall. Prepared ox-gall is sold by all the artists' colourmen.

STAINED NEGATIVE.—WALTER WELLS writes: "Through inadvertence printing before the negative was perfectly dry a print (P.O.P. paper) stuck in one corner. In order to remove it I soaked it, and succeeded in getting it off without damaging the film of the negative, but it has left a nasty ruby-coloured stain the size of a penny. My trouble is how to remove the stain, which copious washing does not touch." In reply: Stain of this kind is very difficult of removal without leaving a mark or damaging the other portions of the negative. Soaking it for a long time in a new solution of hyposulphite of soda.

BURNISHING.—"PERPLEXED" asks: "Will you kindly inform me the reason why some P.O.P. prints do not burnish evenly, and some not at all, while others do? Also tell me the correct heat and pressure to use, and anything to remedy these faults. I have used castile-soap dissolved in alcohol. I use a Tylar's burnisher." In reply: If the prints that do not burnish evenly were dealt with the same as those that do, the results would be the same. Make the burnisher as hot as the hand can bear, and apply sufficient pressure to get the gloss desired. We should advise you to get some one who knows how to use a burnisher to show you how to use yours.

LENS QUERY.—MARK DRAPER says: "(1) I want a cheap lens to give a very wide angle of view on a whole plate. Would you kindly tell me if either combination of a quarter-plate R.R. (cheap) would do this with a moderate stop, say $f/22$? If a half-plate W.A. lens would cover to the edges? Stop down will not matter, as it is only for interiors and exteriors and not for groups, etc." In reply: (1) Something of the kind must necessarily depend upon the quality of the instrument. But supposing one of the combinations will cover a whole plate, the angle included will not be wide. (2) This can only be ascertained by a trial of the lens.

SOLAR ENLARGEMENTS.—"INQUIRER" says: "I should esteem it a favour if you could answer me the following: (1) Can solar enlargements be made with the same camera and in the same way as bromide? (2) Can they be made by artificial light such as bromides? (3) Could you give me the address of any one who does them for the trade?" In reply: (1) No; you require a condenser and the means of causing it to follow the sun as in the solar camera. (2) Yes, with the arc light and very long exposure. (3) So far as we are aware there are no firms in England that employ the solar camera. Sunlight can be depended upon here, the weather is too uncertain.

PORTABLE STUDIO.—"CARAVAN" asks: "Is there any legal limit as to the size of a portable studio on wheels? If so, what limit should such a studio as large as conveniently possible. What would be the best all-round size, length, width, and how much glass required in comparison to size of studio? A small studio would be required for dressing and dark rooms respectively. The camera would be worked from between the two rooms per sketch enclosed." In reply: We are not aware that there is any legal limit as to size. A convenient size for working about 25 ft. by 10 ft. or 11 ft. The end of the studio, as from the dark and dressing rooms, may be opaque for about 4 ft., and from there to the rooms may be glass.

SPECIMENS.—"P. W." writes as follows: "A photographer in my locality, whose work is of the 'cheap and nasty' order, has lately been taken to showing work in his window of which he is not the author, with the evident intention of deceiving the public. The idea that it is his own work. The work is of quite a high class West-end style, and the name on the mount has been carefully erased. He has now six framed direct whole plate and two enlargements of this kind, and I fear an injury to my business through this deception. Is there any redress means of putting a stop to this kind of dishonest practice?" In reply: So far as we are aware there is no law that will prevent your opponent doing as he is. The proceeding is certainly not creditable to him.

THE BRITISH JOURNAL OF PHOTOGRAPHY.

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EX CATHEDRA.

A New Photo-Chemical Change.

An addition to the list of photo-sensitive compounds is made by W. A. Kistjalkowsky before a recent meeting of the Russian Chemical Society in St. Petersburg. The author finds that a mixture of mercuric chloride and oxalic acid, which in the ordinary course is sensitive to light to a minute extent, becomes strongly sensitive on addition of a little manganese peroxide. A mixture of these substances is decomposed in sunlight at once, mercurous chloride (calomel) separating. In place of the peroxide a few drops of potassium permanganate solution can be used. The reaction suggests possibilities in the way of photographic applications. Calomel is a body entering into a number of chemical combinations, and it is possible that for purposes of intensification or printing the reaction may be of service.

* * *

Potassium Cyanide.

A new fact of some direct bearing on the use of potassium cyanide as a fixing agent is brought to light in a series of papers in the "Annales de Chimie et de Physique." The author, M. Berthelot, has investigated the slow absorption of oxygen which takes place when solution of potassium cyanide is confined with that gas for a considerable space of time. The gas combines with the liquid to a marked degree, and it cannot be supposed that it does not do so when the cyanide solution is exposed freely to the air although the oxygen then only forms the fifth of the gas in contact with the surface. M. Berthelot shows also that the absorption is much greater in a strong light than in the dark, and is greater also the warmer the solution of the cyanide. Although the poisonous properties of cyanide have almost banished it from the fixing tank, many a photographer working the wet-plate process still clings to it, and it may therefore not be out of place to point the moral of M. Berthelot's researches—which is that protection from air, light, and heat, will assist in preserving its activity.

* * *

Photographing A Parisian medical newspaper draws the Dead.

attention to a proposal of Bertillon's which adds much to the value of photographs for identification of the dead. Those who have seen the photograph of the corpse of some person they have known have doubtless been struck by the vast change in appearance in comparison with the remembrance of the living being. So great is it that the photograph is often unrecognisable. Bertillon's proposal is to inject three or four drops of glycerine into the eyes with a syringe. The effect is said to be astonishing. The lids open wide and remain so, and the body again assumes the appearance of life.

B

THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1905.

Edited by THOMAS BEDDING, F.R.P.S.

The forty-fourth annual issue of THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC will be published on December 1. This year's ALMANAC reached a total of 1,604 pages, and the entire edition of 25,000 copies was sold out before publication. Of no other photographic book ever issued can two such unique facts be recorded. The edition for 1905 will also consist of 25,000 copies.

The growth in popularity of the ALMANAC is evidenced by the remarkable rapidity of its sales.

The 1900 Edition (20,500 copies) was sold within three months after publication.

The 1901 Edition (20,500 copies) was sold a fortnight after publication.

The 1902 Edition (20,500 copies) was sold a fortnight before publication.

The 1903 Edition (25,000 copies) was completely ordered before publication.

The 1904 Edition (25,000 copies) was also completely ordered before publication.

* The frontispiece of the ALMANAC will consist of a portrait study specially taken by Mr. Furley Lewis (medallist of the Royal Photographic Society's Exhibition, 1903).

The dull appearance of the eyeballs is removed by dropping a few drops more glycerine upon the cornea, and the colour is restored to the lips with carmine. The transformation of appearance is then complete, and the photograph of the corpse will resemble that of the living person. These proposals were made to facilitate the identification of bodies for the ends of justice, but they may be of considerable value to the photographer. Many have a strong objection to submit themselves to the camera, and their relatives not unfrequently wish even for the photograph of the person's body after death. The means suggested by Bertillon would probably help to make such pictures less ghastly.

* * *

Colour Photography. Our French contemporary, "Le Moniteur de la Photographie," publishes a translation by M. Sabatière, of Mr. Henry Collen's outline of a scheme of trichromatic photography, which appeared in this newspaper on October 27, 1865. The editors of the "Moniteur" rightly point to it as an historic document, and although the views expressed in it by Mr. Collen are open to criticism, it shows the penetrative power of thought the writer had in this, besides other branches of photography. In the able lecture on "The Optics of Trichromatic Photography," which Mr. F. E. Ives delivered for the Trill Taylor Memorial, this speculative theory of Henry Collen's is also mentioned. According to Mr. Ives, it was the next published suggestion of a trichromatic process after the lecture of Professor James Clerk-Maxwell in 1861; but whilst Mr. Ives has good reasons for thinking the latter was scientifically correct, he offers the following criticism of the Collen process:—"There were three defects in this proposition, any one of which would have been fatal. First the wrong idea as to the primary colours. Second, the fact that prints in true red, yellow, and true blue cannot be made to even approximately reproduce all colours. Third, that the combination of two negatives doubles the opacity of all whites and greys, without altering the opacity of the records of the pure colours."

* * *

Photographic Post-cards. The "Moniteur" also draws the attention of its readers to the enterprise of a Parisian photographer in the printing of amateurs' negatives as post-cards. Nowadays the camera is found almost in every household with pretence to education. We take our cameras with us wherever we expect to find the beautiful or the interesting. What becomes of most of these negatives? After a few prints have been made they are laid aside, and, much as we may like them, they rarely come to light again. The post-card is in the height of fashion, and the quarter-plate camera lends itself admirably to the production of post-cards. The Parisian photographer has seized upon this idea and makes it known that he will make one hundred post-cards from an amateur's negative for the sum of 5 francs. The winter months bring hardship to many photographers, but we have here an idea which might help many to pull through the bad time and lead them to something better. An arrangement for quickly printing in bromide may be constructed at little expense, and a price should be obtainable which should give fair remuneration to the man of ordinary business ability. The supply of the amateur's other wants might follow.

* * *

Abuse of Untoned Proofs. At the last meeting of the Professional Photographers' Association reference was again made to the large number of untoned proofs submitted by photographers to their sitters, that were systematically taken to dealers and others to be toned and

mounted, and, of course, utilised by the customer to the loss of the photographer. It has been suggested that all proofs should be stamped across the front, near the face, with the name of the photographer issuing them. A better way, perhaps, would be to stamp them with the words "unfixed proof" or "unfixed proof to be returned." It occurs to us while writing that this method might be still further improved upon by a modification of the ink used with the endorsing stamp. Iron-gallate ink would be more indelible than that usually employed with rubber stamps. Or perhaps a reducing agent, such as a strong solution of hypo or pyrogallol acid, might be added to it. If this were done, it is very probable that in washing out the free silver, prior to toning the print would be so stained or blackened as to be useless, as would possibly others washed in the same water. If some such plan as this were adopted the photographer, even if he did not get his proofs back, would have the satisfaction of knowing that they would be useless to anyone else, and no offence could be taken by the customer. The reducing agent might be applied in a strong solution to the inking pad of the rubber stamp. We throw out this hint for what it is worth, because it is very desirable that this growing evil should be put a stop to in the interests of the profession.

* * *

Storing Apparatus During the Winter.

November is now with us, and not a few photographers will be relinquishing outdoor photography for some few months to come. Now upon the care bestowed upon the storage of the apparatus during the winter months will, in great measure, depend the condition in which it is found when next required for use. It is no unusual thing for the apparatus to be relegated to the lumber-room, which is frequently situated at the top of the house. Attics, as a rule, are exceedingly hot and dry during the summer months, and just the reverse during the winter ones, unless they occasionally have a fire in them. As a consequence when the things are unearthed in the spring they are often found to be in a quite unworkable state until some time has been expended upon them. This would be quite unnecessary if a few precautions were taken at the end of the season. In the first place, the apparatus should be stored in a perfectly dry place. Damp causes the woodwork to swell and the metal portions (open) to corrode, especially steel springs and the like, which sometimes, in bad cases, have to be renewed. Before the apparatus is put away it should be thoroughly cleansed and dusted, and if the bellows of the camera has shown any tendency to stick together when in use, it should be well rubbed over with French chalk before it is put away. The tension should always be taken off the shutter spring, as unless this is done the spring will, with the long tension upon it, become weakened, and the shutter will not work at the same speeds as it did originally. If the camera is not provided with a case it should be packed in paper to protect it from dust. Even if it has a case, it is a good plan to pack that in paper as a further protection against dust. When these few timely precautions are taken, and they do not involve much trouble, the apparatus will, when next required for use, be found in the same condition as when stored away. It will also be ready for immediate use in a case of emergency should one arise.

* * *

The Cost of a School for Photography.

The habit, which Englishmen have latterly acquired, of looking to Germany as a leader in the art of technical education, may cause them to make a leap in the dark, which they may bitterly regret when afterwards they are burdened with

the consequent expense. The glib answer so-called reformers give—that the State must pay—seems so satisfactory to the unthinking taxpayer that he believes that he is getting something for nothing, until the bill is tendered at the end of the year in the demand for additional taxes. A very instructive article on the cost of these technical schools in Germany appeared in a recent number of "Photographische Kunst," and the figures it gives for some of these establishments are very interesting. A Mr. Wandrowski has advocated the establishment of other schools of photography. His estimate is that the cost of the building for 100 students would be about £5,000 and the annual outlay £1,000. The primary cost should be met by photographers and other interested persons (by special taxation?) and the students should pay £15 per annum in fees. "Photographische Kunst" is the organ of the Munich Photographic School, and inexorably points out that Mr. Wandrowski's budget has been prepared by the aid of rose-tinted spectacles. The scheme, if carried out, would end in an annual loss of £1,300 per annum. Now we put it to the photographers—Is the result worth the cost? In this country the cost of the buildings would fall upon the State or the municipality. At 3 per cent. per annum this would be £150, and to this we must add the deficit of £1,300, which would make a total of £1,450 per annum for turning 100 men each year into an already overcrowded craft. It must also be borne in mind that this is independent of the outlay of the students in fees, board, lodging, etc., and that this calculation is the cost "made in Germany." If the profession is to attain a remunerative position and preserve it, no demands should be made for State or other subsidies, which would only attract further competitors to an already overcrowded means of livelihood. A further depression of prices would follow. Neither is it right that the taxpayers should be unnecessarily burdened with the cost of teaching young men their business, thus relieving masters of their duty to train their apprentices. No wonder so many German photographers find it difficult to keep body and soul together!

* * *

Picture Post-cards.

In our last issue we directed attention to a circular issued by the Postmaster-General calling the attention of producers of picture post-cards to the limits of sizes according to the postal regulations. Last week a reply which was sent by the Postmaster-General to Messrs. Raphael Tuck and Sons, the well-known publishers of picture post-cards, enclosing petitions from several other publishers, was published in the daily Press. In it the Postmaster-General says he is aware that considerable annoyance is caused to members of the public by the surcharges which have to be made upon the delivery of picture cards exceeding the prescribed limits of size—viz., 5½ in. in length and 3½ in. in width, but he does not consider it desirable to adopt the changes suggested, namely, the addition of the ¼ in. in the width allowed, since in that case the cards made the full size allowed for the inland post would be liable to be surcharged when sent abroad. He says, however, that in response to the representations made by them and other publishers he will give instructions that, for a period of six months, post-cards that exceed the prescribed dimensions by not more than 1-16 in., and are otherwise in conformity with the regulations, shall be allowed to pass without challenge. The Postmaster-General adds that in sanctioning this temporary concession he relies upon publishers to use their best endeavours to conform strictly to the prescribed dimensions with as little delay as possible. It will be noted that this concession of the sixteenth of an inch is only temporary, and is evidently made to enable publishers to

dispose of their present stocks, and we should advise photographers who print their own picture post-cards to make note of it, and if they have any on hand exceeding the regulation size to cut them down to it before selling them. The sixteenth or the eighth of an inch even will in most cases not make a material difference in the appearance of the picture. Anent postal regulations we mentioned in our previous issue that nothing must be attached to a post-card. We see the reply given by the Postmaster-General to a gentleman who complained that he had been surcharged threepence on a picture post-card he had received from Spain which was decorated with a slight amount of tinsel. The reply, in effect, was that under the regulations of the Postal Union nothing must be affixed to a post-card sent from one country to another. "In contravention of this regulation the enclosed card has been ornamented with tinsel, and it was therefore rightly taxed as an insufficiently paid letter."

* * *

An Emperor on Art.

When a King speaks, everyone is prepared to listen to him, and we may feel sure that the Kaiser's recent utterance on the subject of Art will not go unheeded. The Emperor of Germany busies himself about so many different things that he may be fairly called a Master of Arts, albeit an unkind critic might suggest that a jack of all trades is proverbially unfit to claim that distinction. But all will agree that Germany's present ruler is a most capable man, and proves by his speeches that he has an ample store of that uncommon quality which is misnamed "common sense." On the recent occasion of unveiling a statue to the memory of his revered father, he ventilated his opinions on Art generally, and as, contrary to his usual custom, he read from a manuscript, we may feel sure that his words had been carefully weighed beforehand. Germany, like most other countries, has her secessionists among the artists, men who are ever ready to break away from the old methods and traditions which have been handed down from one generation to another, and the Kaiser believes that they are following false roads, which are leading them far remote from true ideals of beauty. It was the study of the old masters, he said, which was the right introduction to the study of the problems of art, and he urged young artists to imitate the self-criticism, the modesty, and the respect for the work of others which characterised the masters of past times. He made no mention of photography, but we all know how the work of the modern photographer is influenced by that of the painter, and not always for the better. Impressionism in painting, which very often is an excuse for bad drawing, and always ignores detail, has its reflection in much of the modern so-called "pictorial work" of the photographer. We have no objection to impressionist pictures *per se*, and have often seen much in them to excite our admiration. And anyone who has any feeling for Art will take the keenest pleasure in looking through the half-finished sketches of a capable artist—just in the same way that a trained ear will listen with intense enjoyment to a musician who has the rare gift of improvisation. But the sketches should be kept for reference, and the improvisation confined to the practice room! When the artist comes before the public he should, in either case, only offer his finished work for approval. Many of the "pictorial" photographs now exhibited should be kept in a portfolio as experimental notes and curiosities, but to show them in public as specimens of what the exhibitor can do, is a grievous mistake. There are fashions, and tides of fashions, in all things, and very possibly the present craze for the vague and ill-defined will pass away in favour of some other fad. As we look through

a collection of old fashion plates we find many which raise a hearty laugh, but they were taken quite seriously when they were in vogue. It may be the same some day with the advanced school of pictorial photography.

* * *

Landscape Studies.

A great change has come over photographers in the kind of pictures which they send up for exhibition. Time was when any photographic show could easily be sorted into two main divisions—portraiture and landscape. The portraits are still with us, but landscape seems to be neglected. Photographers, like other mortals, are apt to imitate one another's works, and to run for a time in one groove. At one time landscape pure and simple was in vogue, and every one did landscape. Then cottage doors and cottagers came in for a time. Another period saw the mud flat, with cloudy sky, come into prominence, until it was thrust aside by ships and barges, with long straggling reflections in troubled waters. The fortunate man who started one of these types, and won a medal at some show, had hosts of imitators, and so a usage was established which, for a time, was run for all it was worth. We need say nothing about flower studies, kittens, puppies, and pet animals generally, for they, like the poor, are always with us. It is the disappearance of the simple landscape that we deplore; we mean the kind of subject which Turner, the painter, had he been a photographer would have gone for. We can easily imagine how the author of the "Liber Studiorum" would have delighted in an instrument which would secure effects in one second which cost him hours to express in sepia. In those pictures Turner showed what beauty there was in simple form and monochrome, and we may feel sure that he would have appreciated a method in which the form is faultless, and in which monochrome is a necessity. Photographers are naturally guided by the popular taste, and many of them, like other business men, are bound to be so. If they complain, as they might reasonably do, that the popular taste is a sorry guide for it is generally bad, and resolve to go a better way, they quickly find their occupation gone. The truth is that an appreciation of the beauties of pure landscape is a rare gift, and like a keen perception of colour, or a recognition of subtle harmonies in music, cannot be taught. It is like the appreciation of poetry, a birthday gift, and happy is its possessor. Still, we think that if some leading worker would come forward and show what can be done with simple landscape, and devote his attention to broad effects of hill and dale—and our country offers endless opportunities for such pictures—his work would attract notice. For it is a curious thing that the majority of people will take no note of a beautiful effect in Nature—say a sunset—but will at once admire a picture representing the same thing. Of course, the picture comes immeasurably short of Nature, but it compresses the scene within small limits, and minds of limited accommodation are able to take it in. We plead for a revival of pure landscape photography.

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The Lantern Season.

Although the lantern show is not so popular as it used to be before the cinematograph put its nose out of joint—to use a common phrase—it still holds its own for the more serious business of the lecture theatre, and will always be in evidence at meetings of photographic societies. And there are signs apparent in the catalogues of manufacturers and dealers that they at least are looking forward to a prosperous lantern season, although no one expects the boom in lanterns which came a few years back. Although there is no great change in the form of the instrument, several improvements are noticeable in details of construction, which tend

both to portability and convenience of working, and may say that further improvement is almost impossible with materials at present available. While the makers are thus doing their best to maintain the high position of the lantern as a means of demonstration, would it not be as well if the many lecturers who make use of it before the public were to endeavour to improve both their method of delivery and the arrangement of their subjects? There are men whom it is a pleasure to listen to, so well do they understand the art of public speaking, and such as do they devote to marshalling their facts, but it must be confessed that the majority of those who speak before societies cannot be thus described. And unless a lantern lecture is of really good quality it is a most deplorable thing to listen to. The art of speaking effectively to the public is only acquired by a small minority—and many who try hard to conquer its difficulties never succeed in doing so. We know several estimable men who, with the qualification of a few letters after their name, are not qualified to speak in public. But they go on lecturing time after time, and have no idea of the sufferings of the audiences. If they are methodical in the arrangement of their subject-matter it is some compensation, but too often they disdain any arrangement at all, and will often commence their remarks with an apology for not having had time to sort or number their slides. The best lantern in the world and the best slides will be of little good under such conditions, and although it would be bad taste to heckle a man who at some inconvenience to himself has volunteered to appear before a society as a lecturer, the audience does not fail to express its opinions in private on the lamentable performance. Such careless ones really do more harm than good, for the patient listeners are induced to register a vow that never again will they be tempted from their firesides to undergo such an ordeal. And so the meetings of our societies get sparse attendances, whereas if the lectures were of better quality, people would be anxious to come again and again. At the beginning of another lantern season we therefore express the hope that intending lecturers will do their best to take away this reproach, and that they will endeavour, by paying more attention to their matter and manner of delivery, to make their audiences wish to hear them again.

SUPPLEMENTARY LENSES.

II.

It has been suggested that, as in the use of the separate halves of a double lens, though constructed to be complementary, they may be considered as supplementary, might refer to them more fully than in our previous article under the above heading. As a matter of fact, such further remarks should not be required, as most optical properties possessed by the whole. Thus we have, first, the fact that, with a given stop, the exposure is quadrupled with the halves of symmetrical doublets, and proportionately more or less in unsymmetrical lenses as the respective foci vary. Next, we have the condition of the half combination, usually being of the ordinary "landscape lens" type, that is to say, with a curved field giving distorted marginal lines. There is, however, a type of lens on the market whose halves give a practically flat field. And with regard to marginal distortion of straight lines this is so small as to be almost imperceptible when a lens with a focus much exceeding the length of the negative

employed, the images occupying the centre of the field. This condition would almost always obtain in the case of an ordinary doublet. A 5 in. focus lens, for example, is a common minimum for quarter-plate pictures, and, taking the half to be approximately 10 in., we unhesitatingly say that a building might be taken so as to occupy the whole of the plate, and yet not give a distortion that could be measured on a print. Even with a lens whose components had foci in the proportion of 2 to 3, the shorter focus of the two might be used for architectural work without anxiety—even for interiors—if the axis of the lens passed through the centre of the plate. There is, however, one important point which is so rarely referred to in this connection that we feel it necessary to allude to it. We do not hear much of "flare spot" nowadays; but its possibility exists, and, indeed, we often see instances of it; that it is much less often seen in double than in landscape lenses may account for this, seeing that even cheap instruments have doublets of greater or less efficiency. But to return to this half-lens's possible defect. Flare arises through the diaphragm being wrongly placed; a few turns of the lens in its socket may suffice to put it right. Should that not be sufficient, a supplementary tube screwed to receive the half-lens should be carried so as to be able to lengthen the lens case sufficiently to avoid flare. We may dismiss this branch of the topic by saying that it is very unfortunate that in the case of a particular camera on the market which has one of the largest of sales the lens supplied cannot be used when thus halved owing to the bellows extension being insufficient.

This point brings us again to the true supplementary lens, and is just an example of its usefulness. It is true a long focus lens is obtainable for this particular camera. But it may be that its owner does not care to go to the expense its purchase would entail. Sixpence or less will buy a lens that will help. A supplementary lens of fairly long focus will so shorten the half-lens focus that the camera will be available. What the focal length of the supplementary should be is simply calculated. Take a 6 in. lens, whose half would be approximately 12 in., and a camera extension, say, of 11 in., an 11 in. focus would be required for distant objects, but would not answer for anything near. Let us decide upon a 9 in. focus. The question then is: What lens should be used with a 6 in. to make it into a 9 in.? If we take the reciprocals of the two numbers, 6 and 9, and subtract, we shall obtain a fraction containing the required information. Thus— $\frac{1}{6} - \frac{1}{9} = \frac{3}{18} - \frac{2}{18} = \frac{1}{18}$. This fraction is the reciprocal of 18, which is the required focus. Nothing could be simpler than this calculation, from which we have, to avoid complicated calculations, left out all considerations as to the distance between the two lenses, which in any case would only make a small fractional difference entirely negligible for such approximate foci as only need be considered. As to how the addition is to be applied each user will be a law to himself. We have seen a well-blackened pill-box with the supplementary attached to the bottom of the box, which had previously been cut out so as just to leave an annulus of cardboard sufficient to secure the glass to. (It would be possible to find a box which just fitted the lens; care should then be taken to see that the lens was put in square—that is to say, not tipped to an angle.) This pill-box could be used as a cap, or it might be of such size as to go inside the lens tube.

We have seen a studio portrait lens fitted with a supplementary for use in copying pictures. It often happens that some old faded "carte" or glass picture is brought to be copied to a certain size just beyond the camera extension's possibilities. A sixpenny lens will do all that is needed; it will make the field more curved, and limit its diameter;

but for the case in point this would be immaterial, as "stopping down" would bring about any needed amount of sharpness over the whole field, and would only entail a few added seconds of exposure. We have seen the plan carried out by the use of an old pasteboard plate-box. A piece first covered over with dead-black paper was cut out to fit closely in the lens-hood, and was kept in situ by another piece of the box bent to the shape of the hood, placed inside it to press the disc home. The disc was pierced in the centre with an aperture just smaller than the supplementary lens, which was pasted with stamp paper over it. In another instance a more elaborate arrangement was made use of. The lens, instead of being pasted in position, was slipped into grooves made of cardboard glued to the disc, a further strip being glued to prevent the lens dropping through the grooves. This arrangement was devised to enable a series of supplementary lenses to be employed.

We think we have now given sufficiently practical explanations to enable any one to see the advantage of, and to use in his practice, any necessary or desired lens as a "supplementary."

HAND CAMERA FAILURES.

At least once a year, and usually during that period technically known as the "silly season," publicity is given to the exploits of some enterprising possessor of a hand camera who is reported as having succeeded in obtaining a dozen "perfect" negatives from twelve consecutive exposures. It is true, corroborative evidence is seldom forthcoming, but this is a matter of little importance, seeing that those who pursue the science of photography, like those who practice the gentle art of angling, are proverbially above suspicion with respect to veracity. In any event, these interesting "takes" are altogether exceptional, inasmuch as the experience of our highest authorities agrees with that of the average amateur as to the frequency of failure that follows the use of the hand camera, in comparison, that is, with the number of successes which result when employing one supported on a stand. Writing on this subject, and referring only to advanced workers, Mr. Welford, in his well-known book, declares that "the majority of good results obtained are quite disproportionate to the number of hand cameras in use." How many good hand camera workers are there? Not many, I fear. To put it plainly, the purchaser of a hand camera does not, as a rule, succeed in pleasing either himself or anybody else.

If the foregoing expert opinion be true when applied to experts, we cannot be surprised if the amount of success achieved by the ordinary amateur be small indeed. And yet, in spite of this, it is instructive to note that hand cameras have literally rushed to the forefront in public favour, and, so far as numbers go, stand at the present time without a serious rival. And remembering this, and knowing that during each season, if the weather Fates be propitious, tens of thousands of enthusiastic men and women (not to mention boys and girls innumerable) devote a great deal of time, attention, and money to the practice of hand camera photography, it is passing strange that the causes operating against better success have not hitherto been more systematically studied. So far, indeed, this vitally important aspect of practical and popular photography has been largely ignored by our leaders in the Press and in our societies, who have preferred to centre their energies chiefly on the elucidation of the various problems affecting printing and development.

In the limits at my disposal it is, of course, quite impossible to go at all fully into the causes of, much less into the appropriate remedies for, hand camera failures. Instead of attempting this, I propose to refer only to the principal

points calling most urgently for inquiry, with the hope that general attention may be drawn to the subject, and that hand camera users will do what is possible to bring about a more satisfactory state of things in this direction than at present exists. In the first place, let us note what are the chief causes of failure. These may for convenience be divided into two categories, namely, those that are personal and depend upon the attributes of the individual, and those that owe their origin to defects in the instruments used.

1. Personal Causes.—The causes of failure inherent in the user of a hand camera may be summed up in a few words, although they are none the less of the highest importance, by saying that no one can hope ever to rise above the merest mediocrity who does not possess the "photographic faculty." The science of photography in each and all its branches can, of course, be acquired by diligent attention to the necessary instruction, but knowledge of the science without possession of the art of photography will not enable its possessor to produce sun pictures which shall be aught else save crude and wholly inadequate reproductions of the form of things. And if the "photographic faculty" be essential to the making of an artist who does his work by means of a stand camera, it is tenfold more requisite, because it has to be specialised to a high degree, for one who uses the far more complex and difficult hand camera apparatus. In the use of the latter, and in addition to the general requisites for producing satisfactory results, no one can ever succeed who is unable to take in the situation and perform the necessary manipulations, not only correctly, but with the maximum of speed. Indeed, to be able to *see* and to *make* a picture, as well as to *take* it without delay and without excitement, constitute the real and salient difficulty in the vast majority of hand camera subjects. To do this, you suppose the possession of mental and physical qualities in an individual that are not only essential, but are extremely rarely found. In a word, a good hand camera worker must be a scientific expert, a trained observer, and a thorough artist, in addition to which he must be able, as it were, to bring into action his characteristic qualities at the exact moment when their presence is required, and that too often with but an instant's warning. His faculties, like his lens, usually have to be focussed rapidly on moving or evanescent objects, and his decisions, like his exposures, have to be made at express speed.

2. Causes Dependent on Defective Apparatus.—At the outset of this second section, it must be admitted that the hand-camera worker is terribly handicapped owing to the extraordinarily inefficient and unskilful manner in which his apparatus is constructed. For not only is there no single hand-camera, as a whole, on the market that in itself represents the present high-water mark of our mechanical and optical knowledge, but practically every component portion is marked by some constructive defect which greatly militates against the production of good results.

In view of the great advance towards efficiency effected in recent years in almost all other industries, it is difficult to account for this lack of enterprise amongst the manufacturers of photographic apparatus, though, doubtless, the characteristic conservatism of our race, and the immense importation of photographic goods from abroad, of the cheap and nasty variety, have much to answer for. But, leaving this general indictment, let us briefly examine some of the more important parts composing a hand-camera with a view to discovering how and when defects in them hinder or prevent success.

Shutters.—During the past five years the output of various types of shutters, differing in make only in some slight degree, has been perfectly enormous. And yet it must be confessed that no reliable or appropriate pattern for hand-cameras has yet been devised. A very large percentage of those now in use are of foreign construction; they are unreliable with respect to speed rates, are unscientific as regards proportional lighting

values, are for the most part unreasonably expensive, and are exceedingly liable to get out of order. Of British-made forms very few are practical, because, though admirably suited to stand-cameras, they are not adequate to the needs of hand ones. To be efficient, a shutter for this latter instrument must be light, compact, and durable; its release must be effected by the slightest pressure, and that too without noise or vibration; its speeds must be regulated with mathematical exactitude, and, most important of all, it must be so constructed that the amount of actinic illumination of the sensitive film is in inverse proportion to that of the object to be photographed, in the manner that light is admitted by "foreground shutters. Indeed, it is a matter of perennial astonishment to expert photographers that the principles upon which a scientific shutter for hand cameras ought obviously to be constructed have been, and still are, so persistently ignored or neglected by all our home and foreign manufacturers. One practical result of this lamentable condition of inefficiency is that it is very seldom that an untouched print from an untouched negative of a land or seascape can be regarded otherwise than as a failure.

CHANGING APPLIANCES.

With respect to the various methods adopted for plate changing, it is stating but the barest fact to say that none yet devised is practical, durable, and always to be relied on. In the case of so-called "automatic" changers they frequently jam or otherwise refuse to work, or work so inaccurately that they have earned universal condemnation. In bag-magazines, which are fitted with a lifting arrangement, successful working is by no means invariably the rule. For some occult reason the only really reliable form of this contrivance, in which the front plate projects slightly above the rest and is easily and with certainty grasped by the fingers and moved to the back, has never come into general use. The favourite and highly inefficient method is to lift, or to attempt to lift, the back plate to the front by means of a fragile metal arm. Against this arrangement the objections are many and important, and its perpetuation is a very common cause of spoilt plates, chiefly through double exposure.

Of double backs, whether of the "book" form, or of the even more erroneously named "solid" variety, as of roll holders for films, it is unnecessary to speak. Their constructional sins are calculated to make the most delicately nurtured amateur user of language of a highly reprehensible character.

FOCUSSEING SCALES AND DIAPHRAGM STOPS.

That neither of these is seldom otherwise than incorrectly marked is but another instance of remediable inefficiency, and very fruitful sources of hand camera failure.

VIEW FINDERS.

When we consider that a very large proportion of pictures attempted to be taken by means of a hand camera can only be glanced at, and their limitations determined during the few seconds they are visible in the finder, and when we remember that this latter appliance is usually but a fraction of an inch in its longest diameter, and, further, when we note that the view seen in the finder and that cast on the plate are not identical, and, moreover, that the alteration in the nature of the picture caused by the use of the rising front is seldom shown, then it cannot be a matter for surprise that the construction of the ordinary finder is answerable for whole lists of failures.

LENSES.

With the making of modern lenses there is less legitimate reason to complain than with any other portion of the camera fittings, inasmuch as this is the one department of photographic manufacture that has steadily and ever rapidly progressed. A really good lens is an expensive luxury, and that it is still to expensive recent developments in the trade clearly indicate

With the cheaper makes of camera the far less efficient varieties of lenses are for the most part fitted, and of these a large proportion is imported from abroad, without even the guarantee of a maker's name. But where inefficiency most generally comes in is in the case of those lenses, of both British and foreign make, which can only be worked with a small aperture. Were the normal average light prevailing in these islands far more actinic than in reality it is, doubtless the usual aperture of $f/8$ or $f/11$ would amply suffice for ordinary purposes. Unfortunately, however, we have to deal with atmospheric conditions as they actually are, not as they used to prevail in the summers of long ago, and that being so, a hand camera which is fitted with a lens having a working width no larger than those just specified is quite inadequate if it is to be used otherwise than during those few bright weeks when the sunshine is at its best. So, also, much of the advice given in our text books and by our other authorities concerning the use of small stops is based upon the experience obtained either during the summer holidays at the seaside, or upon the remembrance of the old-fashioned summer days. Some even go further, and counsel the use of slow plates. Should the much-harassed amateur follow this advice, as perforce he often must, he is at once doomed to spoil probably the majority of the plates he exposes. As a matter of simple fact, about which there can be no question, the hand camera ought to be available throughout the whole year whenever there is a reasonably good actinic condition of the atmosphere, and would be so were lenses always employed having a maximum working aperture of $f/6$, and, moreover, were fast rather than slow plates invariably used.

GENERAL STRUCTURAL DEFECTS.

The wood used for the manufacture of most hand cameras being seldom thoroughly seasoned, properly selected, and skillfully put together, it is liable not only to warp, but also to break under slight provocation. Neither is it common to find waterproof glue is used for joining the wood or for affixing the bellows or the covering leather. For one or other of these reasons we owe the readiness with which magazines and double backs admit light and dust to their contents, and both light and dust are certain and frequent spoilers of negatives. Doubtless in time manufacturers will use only the best and most appropriate kinds of wood, or will employ as a substitute one or other of the extremely hard, light, and easily workable amalgams of aluminium which are now so largely used in other industries. Another, and a wholly remediable, source of dust, and therefore of failure, is often created by making the base-board in folding cameras slightly too small, with the result that a crevice is left along its edge when the instrument is closed. This not only admits dust freely to the surface of the bellows and other external parts, and from it to the interior, but also allows it to settle on the lens surface, thus leading to diminished rapidity, and consequently to lessening the chance of successful exposure. But it is quite needless to go more fully into the question of general constructional defects, inasmuch as it is obvious that, for the many, hand cameras are made to sell rather than to work and to last. Where we as a nation specially fall off in the making of hand cameras, as in many other goods, is in what is called "finish." And in this matter, if in no other, we might with advantage copy the methods usually prevailing in the United States, where "finish" has been brought to a pitch of perfection seldom seen elsewhere.

Such in briefest outline are some of the causes of hand-camera failure. As was shown, failure may be, and often is, due entirely to lack of knowledge, or the absence of the proper temperament on the part of the user of the instrument. It is, however, far oftener due, either directly or indirectly, to bad or inappropriate construction of the camera itself. During

late years there has been a general overhaul of our trade and business methods with a view to bring them abreast with the needs and the wants of the times in which we live, rather than to keep them in correspondence with those of our forefathers. Adverse and advisory criticisms have been many and loud, and the fierce light of publicity has been turned on dark corners innumerable, with the result that in many directions reforms of prime importance have been effected. But so far very little improvement has taken place in the manufacture of photographic materials, and the only strikingly loud voice that has been raised is that of the advertiser shouting the unmerited praises of his wares, and proclaiming each and all to be the "best" and the "most reliable." The fact, however, remains that in photographic materials, as in so many other matters, the purchasing public still demand the best, and that best cannot now be procured from our home markets, which are in an annually increasing ratio being flooded with duty-free goods of foreign manufacture. If in the near future we are to stem this highly undesirable invasion, and secure our lost trade, it is certain that our manufacturers must adopt more scientific and modern modes of production, must bring themselves into touch with the needs of their customers, and must, in a word, keep the banner of efficiency flying, and make it the hall mark of their wares. The world moves continually forward, and either we must move with it, or, if we neglect to do so, we most certainly will find ourselves, where many of our present patterns of hand cameras ought to be, on the national scrap heap.

F. GRENFELL BAKER.

THE OBJECTS OF A PHOTOGRAPHIC SOCIETY.

[Presidential Address to the Edinburgh Photographic Society.]

IN delivering inaugural addresses it is a common practice to make a survey of the present state of affairs and of the possible lines of advance, and in speaking to you on the present occasion I propose to do something of the kind, as being valuable in realising what our objects are, and as suggesting the directions in which we may usefully employ our energies.

With regard to the second point, especially in connection with our Society, it is essential to advance. A society cannot stand still; it can only slip back or step forward. And here I would like to call attention to the fact that the activity and usefulness of the Edinburgh Photographic Society is not to be measured by its mere numerical strength, or even by the prosperity of its treasury, though both these are good indications, but is rather to be judged by the amount of active work that its members carry out, not merely in photographing, but rather in developing photography, both from the scientific and artistic point of view. Better a dozen earnest workers meeting to discuss their struggles to push on than a society of five hundred whose ideal is the "snapshooting" of their friends, views, buildings, and the like, and who are content to meet as a society to hear a lecture on some subject more or less photographic, and then forget all about it. I do not think, however, that our Society is represented by either of these two imaginary bodies; it comes rather in between, and the more I can encourage the spirit of the former, which I am glad to say I believe animates most of its members already, and drive away the unenterprising attitude of the latter, the less I shall feel I have failed in my presidential duties.

The question then arises: How are we best to attain the desired end of carrying out our duties as a Society? which I consider consist, firstly, in putting our beginners in the right way and providing our more advanced workers with the materials and appliances not usually available to private individuals; and secondly, and of much more importance, the bringing of new ideas before each other, and by discussion and consideration weeding out the good from the bad, and fashioning them so as to be useful. This twofold aim, however, requires no little

sacrifice, which one and all must be prepared to make. We must be ready to find money, for I imagine that there is no one that considers that either our equipment or premises are satisfactory; but, what is more, we must be prepared to give more thought perhaps rather than time to the pursuit which is the occasion of our existence.

How the money is to be raised is a delicate question. Let me, however, make one suggestion. Would it not be better to rely on the sturdy self-sacrifice that has so nobly marked the Scottish character in the past, and provide it from within rather than look for it to drop from the hands of some princely benefactor without? If we do not work for it we shall in all probability neither value it nor benefit by it.

Leaving this matter in the hands of the Society—for in a democracy like ours it is for them to speak rather than the President or Council—let us now consider the directions in which we may profitably spend our efforts, and though perhaps none of my suggestions may be in any way new, they may lead some present into lines of work that may be fruitful.

For this purpose I shall look on photography from three aspects:—(1) As a means of simple representation; (2) as a vehicle for pictorial expression; and (3) as a field for scientific research; though I am aware that all three sections overlap to a very large extent.

As a means of representation, photography has its most common and obvious application, and I need only refer to its employment in portraiture, photo-micrography, star-mapping, and the like to show in what diverse directions it is utilised. For those who are contented to apply photography only as a means of representation I would suggest that they should concentrate their efforts as far as possible in some particular direction, and in this way there is much that is valuable to be done. Systematised survey work of an ever-changing town, as is now being carried out by our own Society in so satisfactory a manner, as the current "Transactions" point out and the forthcoming Exhibition will demonstrate, the study of a river from source to mouth, as suggested by Mr. Dibdin; the study of the agricultural peculiarities of a district; the following up of a style of architecture; the recording of meteorological or other natural phenomena, etc., are merely examples of the directions in which photography, as a representing art, can be made the basis of the means of preservation of, and of the addition to, much valuable knowledge. As to the means of representation, and in how far the representation is exact, is rather a question for the third or theoretical aspect of the subject, rather than the present; but I may add that beyond the simple photograph attempts may be made to represent the solidity of the object by stereo-photography, its colour by the various processes of colour photography, and its movement by the cinematograph, and in all these directions there is much that may be done; e.g., taking the use of the latter instrument alone, there are many manual operations being replaced by mechanical, so that their methods will be forgotten, and can only be adequately represented to future generations in such away; or, taking another case, as I saw recently exhibited in Cambridge, the gradual growth and motion of plants may be recorded, and can be exhibited in more rapid and convenient sequence than occurs in nature.

As regards photography as a means of pictorial expression, I will say but little, as I feel that there are those present who are much more capable than I of discussing the matter. However that may be, I think there can be no question in the mind of the dispassionate critic who is in any way acquainted with what is being done, that photography may be employed as a vehicle for the expression of an artist's ideas just as a brush, pen, or pencil, and with the exception of its being practically confined to monochrome, with almost as little restriction. The public, however, require education; there are many who still think that the essential feature of a photograph is that it should be what they call "clear," and here, I think, it is our positive

duty as a Society to hold our exhibition in a hall of greater suitability and accessibility than our present room, so that the "man in the street" may have a better chance of realising what good photographic pictorial work is like.

Coming to the third, and to me the most interesting, division of the subject—viz., the theoretical, I feel that there is so much that should be said that it is difficult to say anything without being brought to book for being one-sided and partial, whilst of what I might say there is not a little that is but imperfectly known and disputed that I run the risk of setting up a discussion beset with so many thorny points as to permanently endanger the peace of mind of the Society rather than stimulate its activity.

To the beginner studying scientific photography it seems an easy enough affair—some apparently straightforward optics and simple chemical reactions; but on a little further investigation, the difficulties in photography, as indeed in every other science, become apparent, and it is obvious how little has been done, and how much has to be accomplished before a thorough knowledge of what really happens every time "you press the button and we do the rest" occurs. How few care or think about it at all, but are simply content to accept the result?

To raise a few points, I should like to ask, in the first place, in how far are our photographic representations misrepresentations? Much has been done in perfecting plates and lenses to give the correct value of natural colours in monochrome, and a form and proportion of our print exactly depicting the objects photographed, but in how far do they really do it? For example, is the strictly rectilinear, sharply-focussed architectural photograph that is taken of a building at close quarters with the best lens and carefully-levelled camera really like the mosaic we build up in our minds of the numerous images formed by moving out very narrow-angle eyes, and do not what some people are pleased to call the "fuzzy-graphs" of certain pictorial workers give a truer picture? I am by no means sure. Looking in another direction, if we try and analyse the chemical and physical actions going on in even our simplest processes, we are in many cases face to face with similar difficulties, whilst in the fundamental process of all, though we may talk fluently about latent images, sub-haloids, and the like, how much is but purely speculation!

However, the position is far from hopeless; earnest workers in all directions are piecing the various puzzles together, and I feel sure that all can lend a helping hand. Shall not members of our Society now, as in the past, place a few fragments in position?

Besides the fundamental problems, there are many side issues, and amongst these I would first mention colour photography. Much has been done in this field, but I feel that in spite of the extraordinary ingenuity that has been expended in devising processes, that the main efforts now being made can only result in compromises that are more of interest as scientific curiosities than of real value from the point of view of perfect accuracy of representation or pictorial work. However, it may be that one of the many processes of colour photography so freely heralded by the daily papers, may turn out to be all that can be required. In this connection I may mention that no little progress has been made by Professor R. W. Wood in perfecting his diffraction process, which he has also adapted to the Joly method, thus substituting invariable diffraction colours for the fugitive aniline dyes previously employed. But though the results exhibited at the British Association were beautiful, the application is cumbersome, and far removed from the ideal colour photograph some people hope some day to be able to hold in their hands.

Another line of work that I would like to suggest to our workers is the study of the photographic action of what one may call invisible light, and of chemical reagents. For instance, X-rays produced under different conditions are differently active, and

again from radium rays in their photographic effect. Dr. Russell showed some years ago that the photographic action of printed paper, metals, etc., was due to hydrogen peroxide. Does this compound play any part in the other cases when an image is produced on a plate?

Finally, have we reached perfection in our processes or manipulative skill? I think not, and I feel that much might still be done by working in an intelligent way, as some are doing, to render the practice of photography more simple, and its results more permanent and beautiful.

In conclusion, if I may have stimulated any of our members to start work in one or other of the many directions I have indicated, or have encouraged others to persevere in the studies they are already engaged in, I feel that I have spoken in vain, and that when another session commences I shall be able to record not only that the Society has stepped forward in every direction, but also that, what is, after all, our object, the Science and Art we love so well shall have been advanced by some of our efforts.

J. TUDOR CUNDALL, B.Sc.

NOTES AND QUERIES.

By THE AMATEUR OPTICIAN.

What is a fair charge to make for a small set of negatives required for picture post-cards? I was asked a few weeks ago to take ten negatives of various parts of the City, and the price offered was the munificent (*sic*) sum of 3s. 6d. each, this being less than the value I set upon my time and qualifications. The offer was declined with thanks. The commission was eventually taken by an amateur, and executed satisfactorily, though at some cost in time and material. I think, on the whole, a photographer may be fairly termed "expert" whose percentage of failures averages no more than one in twelve; and certainly a man who can go round a district and take a set of negatives of good quality, and without undue loss in time and material, deserves to have his labours more amply remunerated.

Some time ago a request came in for a price for a set of twenty stereoscopic prints and the same number of stereo-transparencies; there were twenty negatives to be taken within a radius of, say, forty miles. The pictures were wanted by a successful Colonist and resident in New Zealand, who wanted these as mementoes of his early life and environment. Now, I ask, what is a fair price for such work—twenty negatives, and the same number of good prints and transparencies? After making a rough estimate I concluded that twenty shillings per set would pay me, and quoted that amount. I heard subsequently that the successful Colonist had abandoned the idea of having them made; probably other quotations had been received, and all had to be, from the buyer's point of view, too costly. If the Professional Photographers' Association has not fully considered the matter, I believe a schedule of charges for various actual and hypothetical commissions would be of value to the trade and profession generally. I do not think there would be much in the way of "cutting" either by professionals or amateurs, a fair estimate being understood. The average amateur, if capable, is, in my experience, a person who has a fair notion of prices; he does not often under-estimate the value of his work.

I had a curious, and not very agreeable, experience some years ago. I was doing a certain class of work in an important centre, and a very great friend was similarly engaged in a town about ten miles away, the work being all kinds of outdoor and indoor photography in the shipyards and engineering establishments. A rather particular piece of work was to be done—one of those awkward jobs where there is a wide space to be covered, and a difficulty in getting a point of sight; as a fact, I believe the only wide-angle lens in the district capable of doing the trick

was in my outfit. Well, I quoted my usual price of 31s. 6d. for a 15 by 12 and proof, and got no reply. A week or two after my friend turned up to consult me as to the best method of taking this particular photograph, and to borrow my camera and lens—the lens! His estimate was 50s., so that, apart from the intrinsic value of one's work, there is a danger in *under-quoting*. I felt a bit sore at first, but my friend was a splendid fellow and first-rate operator—now, alas! gone to his account—but the feeling soon passed off, for, after all, the work could not have been in better hands. Many times in the past twenty years I have been puzzled as to a fair and reasonable charge, and have often wished for a "standard" rate; the difficulty has not been a personal one entirely, because the matter has been discussed with professionals in a variety of districts with the same result—viz., no uniform rate.

No matter what may be the grounds, real or imaginary, the penny-a-liner always scores over every rumour relative to the discovery of photography in natural colours. From the scientific point of view, natural-colour photography as an accomplished fact would be a grand achievement; but, pictorially, I cannot see that it would be so satisfactory as many people would have us believe. Take our public streets and buildings, for instance; is it not clear that, speaking generally, these are best treated and most leniently dealt with when reproduced photographically in modest subdued and "subfusc" hues. Every town and city contains, unfortunately, some philistine, not to say barbarous, property owner whose taste in the matter of colour and decoration never reaches above the level of yellow paint. What about the dirt and squalor? We can at the present decently represent all this in black and white, or monochrome, which is something to be thankful for. Just think, too, what a change there will be in our studios! I strongly recommend the P.P.A. not to entirely overlook the matter, and to add certain queries to their recently published schedule referring to the "Operators' and Assistants'" certificate, e.g.:—

Has he a fine artistic eye for the arrangement of colours?

Can he apply "grease paint" and make up well?

Is he able to distinguish between a "mole" and a "pimple," and what notion has he of treating these scientifically, and obliterating an undue preponderance of freckles?

And so on. We must be prepared for all these contingencies.

THE TESTING OF ORTHOCHROMATIC PLATES.

II.

I PROPOSE now to attack the spectrogram, and to prove to you, if possible, that it can be totally misleading.

In the first place, you must recognise that there are two distinct types of spectroscopes—the one in which light is split up by a series of prisms, and the other in which a diffraction grating is used. Whichever you elect as correct can be proved wrong, and, if you admit both right within their limits, both can be proved to be wrong.

Dealing first with the prismatic spectrum, a totally erroneous reading may be made, because the more refrangible rays, the yellow, orange, and red, are so humped together that the density obtained in these regions is misleading. The diffraction grating, on the other hand, spreads these rays out normally, so that faint action may be overlooked. It is, of course, easy to translate the one into the other, for it is well known that the intensity of the colours is inversely proportional to the space they occupy.

Freiherr von Hübl has given a very instructive diagram of the prismatic and diffraction spectroscopic curves, which I now show, and he says in his work, "Theory and Practice of Three-colour Printing," an English translation of which has just been published by Messrs. Penrose: "We obtain with a

diffraction grating a correct statement as to the colour sensitiveness of a plate, but such spectra are of poor luminosity, and the minor action of the less refrangible rays, which are the most interesting to us, may be completely overlooked.

"If we expose, for instance, the red sensitive plate of commerce to the diffraction spectrum, we miss the red sensitiveness entirely, leading us almost to believe that the plate is not orthochromatised, and still this plate may, if light filters are used and sufficiently long exposures are given, render red pigments sufficiently light.

"For this reason, it is better to employ the prismatic spectrum, and to correct the results for the normal spectrum.

"To obtain accurate results, we must further measure the densities of the band on different plates, and the Martens

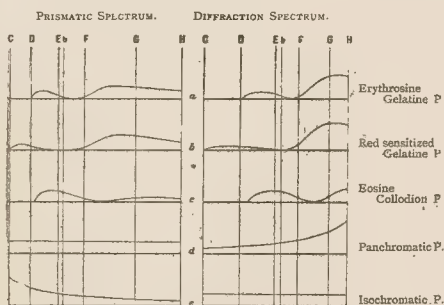


Fig. 1.

polarisation photometer of the firm of Schmidt and Haensch as a very convenient instrument for this purpose.

"How very different are the results if the prismatic or the diffraction spectrum is used we shall demonstrate in a few examples.

"Curve A represents a gelatine plate sensitised with erythrosine. According to the prismatic spectrum, we expect the same sensitiveness for yellow, green, and blue, whereas the normal spectrum shows a curve of very limited sensitiveness for yellow-green rays.

"Curve B shows a gelatine plate of apparent greater red sensitiveness if exposed to the prismatic spectrum. The normal spectrum shows a very small sensitiveness for red, and this plate, if used without a filter, on a coloured original will actually exhibit no red sensitiveness.

"The eosine silver collodion plate, C, if judged by the results obtained with the prismatic spectrum, shows only sensitiveness for yellow-green, whereas this plate does not render yellow-green pigments lighter than the blue, which corresponds to its behaviour towards the normal spectrum.

"A plate, D, showing in the prismatic spectrum equal sensitiveness for all rays, would be, according to the curve of the normal spectrum so little sensitive for the less refrangible rays that red objects would be rendered black.

"If all equally pure and saturated colours are to be rendered equally light, the normal spectrum must correspond to a curve which is practically a straight line. In the prismatic spectrum the plates would have to show a sensitiveness represented in Curve E."

I have stated that, whichever spectrogram you elected to consider as correct, I would prove that it was wrong, and I would particularly commend a careful consideration of the above extract from Freiherr von Hübl; and I would also, in this connection, requote the concluding sentence of Mr. Dyer's remarks: "Nature's colours are apparently not so spectroscopically pure."

It is an axiom that all objects illuminated by white light reflect their own particular colour plus white light; the spectrum is composed of pure colours only, therefore I argue that you cannot judge from the action of pure colours the action of impure. Some of you are probably acquainted with chemistry, and I would ask you whether it would be fair to estimate from the action of an absolutely pure chemical the action of an impure sample. To bring this closer home to all here, I would ask, Is it fair to judge of the developing action of an old pyro solution that is absolutely black by oxidation from the action of a freshly-prepared solution?

Because, then, in nature all objects illuminated by white light reflect white light, should we condemn the use of a chart, a group of flowers, or a landscape as a test for an ortho plate? Surely, for "the man in the street"—the man who buys plate to expose in the camera and not in the spectroscope—a chart is a better test if he is going to copy pictures, a group of flowers is a better test if he is to copy flowers, and a landscape is a better test if he is going to do general outdoor work—better in all cases, because the tests approximate the more nearly to the conditions of every-day work.

I agree with Mr. Dyer that we are led to expect a great deal too much from spectrographic tests, and but little difference is to be seen without the use of a yellow filter.

And why do we see such slight differences?

If we examine this subject a little more closely, and put into tabular form what little we do know, we may arrive at a clearer understanding. The following table is drawn up from various published estimations by Abney, Eder, and others, and, while I do not give the actual dates of the papers from whence the table is calculated, you will, I hope, accept my word that I have put no lead in the scale, and it represents, so far as I can gather, a correct statement.

In the first column is the colour, and, to define it more correctly, is the Fraunhofer line marked by a letter and the usual sign λ (lambda), meaning wave length; in the second is the visual luminosity of these colours, marked V.L.; in the third is the sensitiveness of the plate—that is, the ordinary plate luminosity—marked P.L.; in the fourth column is the orthochromatic plate sensitiveness or luminosity, marked I.P.L.

I have further divided this table and added the luminosity together, so that one part should approximately represent the sensitiveness of the ordinary, and the other the ortho sensitiveness, and a slight examination will show why a chart or other natural object is unsatisfactory when compared to our notion preconceived from the spectrogram.

Colour.		V.L.	P.L.	I.P.L.
Orange	λ C	10	0	0
Yellow	λ D	80	0	10
Yellow-Green	λ D $\frac{1}{2}$ E	100	0.1	40
Green	λ E	30	0.5	10
Blue	λ F	10	80	30
Blue-Violet	λ G	5	100	100
Violet	λ H	1	80	80

Now, it is obvious from this that, if we consider that the numbers represent chemical action or density, although we have increased the iso plate luminosity for the less refrangible rays, yet the blue and violet sensitiveness remains constant, and, unless we use a yellow filter to cut this down, the result must be unsatisfactory.

There is one point in this last paragraph which leads me to another subject. I stated that the blue and violet sensitiveness remained constant. I would guard myself against possible attack by stating that this is not a necessity of ortho plate-making. The manufacturer can, and does in some cases, n

only isochromatise his plate, but reduce his blue sensitiveness by introducing an excess of dye, or purposely adding a colour inert dye so as to stain the gelatine, which will naturally, to some extent, obviate the use of the yellow screen. Hence we get statements that certain plates can be used without a screen. This is perfectly true of every iso plate; whether, however, the ideal result is attainable by these means is another question altogether.

The ideal method would be to keep the blue sensitiveness constant and increase the speed for the ortho half of the spectrum. The result would be, if we take the visual luminosity as a guide, a blue sensitiveness of 1, and a yellow sensitiveness of practically 15, which means that a plate would have an H. and D. speed of 300 for blue, and 4,500 for yellow.

I dream sometimes, both in and out of bed, but in my wildest dreams I have never attained this height of plate manufacture, though, of course, it may come.

Summing up, it seems to me that the greatest cause of error lies in the fact that too many do not recognise that the spectrum is absolutely pure light, and that no other object gives us this—that every natural object or pigment reflects, not only its own particular colour, but also white light when it is illuminated by white light.

Further, the importance of the character of the illuminant has not yet been taken into account by the average worker, for it is a fact, and a well known fact—at least, so well known on the Continent, at any rate, that the illuminant plays no inconsiderable part in the correct rendering of colours, that some of the best reproductive studios there have a revolving platform, so that the pictures or other subject can be revolved so as to be illuminated by direct sunlight, which is, of course, the richest in all colours.

It seems to me to be absurd for the maker of an ortho plate to object to the use of a chart on the plea that it reflects white light, because it must always reflect white light, and has not the intelligence to suppress this reflection for the ordinary and extra for the ortho; and, therefore, if the ortho plate is colour sensitive, the white light reflected from the chart must merely add to the effect of the coloured light. It certainly cannot extinguish or reduce the photographic effect, and therefore, if our blues are correctly rendered—or, rather, rendered alike in both cases—and the greens and yellows show but little difference, it is, I think, but fair to argue that the ortho sensitiveness of the plate is low compared to the blue, or the luminosity of the pigments or natural objects is low.

E. J. WALL, F.R.P.S.

DITCH-WATER PHOTOGRAPHY.

DITCH-WATER has long been a synonym for all that is dull and uninteresting, but even ditch-water has its charms, and it has proved particularly attractive to naturalists. One of these, Mr. Martin Duncan, makes a practice of fishing in dirty waters, much to the disgust, apparently, of some of his neighbours, who when they see him emerging from his residence with landing-net and bottles come to the conclusion that he is after sticklebacks. This confession he made as an introduction to his lecture to the members of the Camera Club recently—a lecture which bore the title "Ditch-water Photography." And the pastime has its sorrows as well as its joys. The fisher may feel huge delight at the unexpected capture of some rare organism with a long name, and he may always feel gratification at the acquirement of increased knowledge. But it is not all gay, this dabbling in muddy depths. On one occasion Mr. Duncan had to swarm up a tree for refuge from a herd of cattle which charged down on him, and had to witness the terrible tragedy of his precious camera being tossed into the water. Another time a rollicking he-goat caught him unawares, and sent him head over heels among the lowly inhabitants of the pond over which he was at the moment stretching to secure a prize. The catcher was caught himself by the agency of that jocular billy-goat.

Mr. Duncan always carries a camera with him when upon one of these piscatorial excursions. We say piscatorial, because it seems to be the right word to apply to an occupation which needs a net and a rod, but the beasties caught are not to be numbered among the pisces. Nor are they insects. Some of them, indeed, seem to be like animals with regard to movement, and to belong to the vegetable world in other respects. However, we are quite safe in taking refuge behind the convenient term organisms.

The naturalist does not hunt these creatures from any impulse of the sporting instinct, nor does he want them for food. He requires them as specimens, and either preserves them as such, so far as they are capable of being preserved, or he nurses them up, feeds them, and watches their progress through his microscope. This is what Mr. Duncan does, and by means of the microscope he has made a number of new observations, while with the assistance of his camera he has taken photographs of the greatly magnified objects so that others can take advantage of his labours. These photographs illustrated his discourse the other night, and very wonderful some of them were. Let us cite one case in which a careful study of the habits of one of these lowly organisms has proved of incalculable benefit to mankind, and as the case is a comparatively recent one it is all the more likely to appeal to the sympathies of our readers.

It is now a matter of common knowledge that the disease known as malaria, which slayed its thousands annually, and rendered large portions of tropical countries uninhabitable, is carried from victim to victim by the bite of a species of gnat—commonly called the mosquito. Now, the larva of the gnat lives below water in ponds, ditches, and marshy places generally. It is a curious-looking creature, somewhat like a small caterpillar, with a breathing apparatus near its tail, and it comes up to the surface of the water every now and then for a fresh supply of air. But if the water be treated with a little paraffin oil, so that a film spreads over the surface, the gnats' breathing arrangements are frustrated, and it soon dies for want of oxygen. So the remedy for getting rid of the mosquito is to dose the water where the larva is found with paraffin oil, and the creature is killed before it assumes the dangerous form. In this way a study, which unthinking persons might regard as puerile, has been of immense service to the world at large.

Another most interesting point in the lecture dealt with the photography of those much more minute organisms which come under the common term bacteria. These rod-like bodies are already familiar enough to most of us through the medium of photography, and they have an abiding interest, seeing that so many human diseases are traceable to their presence. But Mr. Duncan contends that the usual method by which bacteria are prepared for microscopic examination is all wrong, and he described how they were first subjected to heat and then treated with an aniline dye which was near the boiling point. "You might as well take a sheep," says he, "roast it, dip it in boiling dye, and then exhibit it as a correct likeness of the animal that browses on the hillsides." And to show the better way he exhibited a photograph of living bacteria. They were no longer like bits of black sealing-wax, but tubular bodies with aggregations of white protoplasm within the transparent membranous envelope. This was the first time such a photograph had been publicly exhibited, and it won deserved applause from those present. We regret that we cannot afford space for more than a mere résumé of a most interesting lecture.

THE first portfolio of photographs from works by old masters, published for use of members of the Arundel Club, is in preparation, and will be issued at latest by December 1. These photographs, which are to be of pictures and other works of art (often difficult of access) in private collections and elsewhere, of which in no case can reproductions be obtained in the ordinary course, will be issued only to the members of the Arundel Club. The present series consists of fifteen photographs in a neat case; but it is hoped that the club may be able to enlarge the scope of its activity to a considerable extent in the future, though this must, of course, depend on the amount of support received. The annual subscription is one guinea. Those who wish to join, or desire to receive further information as to the society's aims and methods, are invited to communicate with Mr. Robert Ross, 10, Sheffield Gardens, Kensington, W.

PHOTOGRAPHY AS APPLIED TO ARCHITECTURE.

A PAPER on this subject was read by Mr. E. Dockree before the Architectural Association last month. It was illustrated by a large series of admirable photographs of buildings hung on the walls of the meeting-room, and by nearly 170 lantern slides. In his introductory remarks the author disclaimed any intention of raising that wearisome and unprofitable controversy over the respective merits of sketching and photography as a means of depicting buildings. Architectural photography had its field. The late John Ruskin, no enthusiast concerning photography in general, said "it was the foremost means of translation or reproduction in a graphic form of architecture." By this utterance the great art critic did not exclude all other methods of depiction; his own exquisite drawings of architecture would at once dispel such a claim. But Ruskin recognised the supreme claim of the architectural photograph—its impersonality. A drawing, added the lecturer, must necessarily be tinged with the individuality and perception, or want of perception, of its author; in short, you do not receive an impression of the building through your own eyes, but through the eyes of the artist—nay, it is but an impression of his impression. Some medium is therefore required for affording an impersonal depiction of a building from which each beholder can draw his own deductions and impressions. Indeed, efforts are being made by some of the leading architects to obtain a revision of the Royal Academy rules with regard to architectural exhibits; a revision that would permit architects to show their work by means of photographs, geometrical drawings, and models, as well as or instead of perspective drawings, to which they are at present practically restricted.

Mr. Dockree went on to say:—"My claim for the photograph as the best means of exhibiting a building will doubtless be met by two objections:—(1) That the photographs can be 'faked.' (2) That buildings seen in photographs are frequently distorted, and are not truly represented. Both these objections must be admitted; in regard to the first I might rest contented to say, So can drawings. One has only to study perspectives at the Royal Academy for this fact to be self-evident. But if absolutely sharp, clear detail be insisted upon in a photograph, it will be exceedingly difficult, if not impossible, to fake it without detection. Only fuzziness to impressionism will disguise the effects of manipulation. And architectural photographs in general cannot be too sharp. In regard to the second objection, the fault lies entirely with the operator; if you see a distorted building or one in impossible perspective, blame not the science but the photographer.

"The most common causes of failure are: (1) The architect desires to get too much in one plate; he wants 'to look over his head' or 'round a corner'; in short, tries to achieve the impossible, in which amiable endeavour the photographer collaborates. Occasionally, for a special purpose, it may be necessary to take a somewhat distorted view; but in general the photographer should resist a request for such a view. (2) The operator receives instructions to do 'the best he can'; and with some operators the best does not amount to much. In this case the photographer goes blindly to work, never pointing out drawbacks or defects (from a photographic standpoint) in the views suggested or offering a workable alternative. A third reason is a want of knowledge on the part of the operator of either the science of optics or the laws of perspective, or both.

"Concerning size; the larger the photograph of an architectural subject can be made, the better in every respect; the details and the proportions of the structure are shown to a greater advantage. A small picture may be a gem of photography in its way, but you instinctively feel you would like to see it done larger. The resulting picture lacks that 'quality' and 'vim' only to be obtained by working direct. Again, small plates are 'small' in price and tend to carelessness and slipshod work; whereas a large plate and its after manipulations compel you to walk round and study your subject—consider every standpoint—the final one being selected only after mature deliberation.

"For architectural work artificial light should never be resorted to if it can be avoided. Though an interior may appear absolutely dark to the naked eye, there are always rays sufficient to act upon a sensitive plate if time be given. Prolonged exposures are not always possible, and one is frequently forced to employ some sort of artificial aid. Though I have never employed it, I believe acetylene gaslight is the best for photographic purposes, as the spectrum of

this light most closely approximates to that of the sun. I have invariably used electric arc lamps when photographing the auditoriums, of theatres and other dark interiors. One light I warn you not to use for architectural purposes, and that is the one most commonly resorted to—flashlight, magnesium. Its use results in a white glare over the objects nearest the camera, and the elimination of detail in the background, so that delicate under-cut carving looks as flat and formless as a stencil pattern on a wall.

"Unfailing patience and effort are required to obtain success in architectural photography. One must be prepared to work at it at all hours of the day and night. I have secured excellent negatives by exposing plates in the subdued light between 3 a.m. and 7 a.m.

"I would recommend nothing less than a whole plate or a 10 by 8, personally, I use a 12 by 10, and would a 15 by 12 if I could get about with it and all its appurtenances in a comfortable manner. The camera should possess double extension; that is, the 'front' and 'back' should be capable of being adjusted by means of a pinion and rack-work, the bellows slightly tapering; and the 'front' carrying the lens should have a 'rising movement' and, better still, a sliding movement in addition. All up-to-date cameras have a 'swing-back' capable of two movements, 'to' and 'from' the lens, and a 'reversing-back' to carry the dark slide, so that oblong and upright pictures can be obtained. Some workers find fault with the 'turntable'; they assert 'focussing' is a difficulty in a dark interior—what light there is coming up through the same from the ground or floor and detracting from the visibility of the image on the 'focussing screen.' The turntable has advantages over the solid base board; it reduces the weight of the camera, it facilitates your movements in finding the desired view, and gives rigidity to the whole apparatus, the latter a most important feature when working with lenses of long foci and in exposed positions. The tripod stand, or tripod used with the turntable, should be folding, with a sliding leg—two or threefold, if of the right weight, is immaterial. The camera and tripod when set up for use should not exceed 5 ft. 6 in. to 5 ft. 10 in. in height, thus being an average sight-line. A slow-moving spirit-level, circular in shape, should be fixed on the 'base-board' of the camera just at the side of the front. On the front itself, at the top of the side, a 'plumb index' should be placed, and another one on the side of the 'swing-back.' These three working together accurately place beyond dispute the absolute verticality of the resulting photograph.

"The next thing to be considered, and certainly the most important one concerning architecture, is the lens or lenses. One lens will not do everything required of it; and before deciding what to get I would strongly urge the enthusiast to consult some one well versed in the matter, and, if the pocket will allow, to purchase the best make possible. Then, should your results not be satisfactory, blame yourself and not the lens. Whatever make is selected, let it be a lens giving no wider angle than 65 deg. for an interior subject, whereas 60 deg to 65 deg. is a very pleasing range for exteriors of buildings. Lenses for architectural work must be of the rectilinear type and possess great covering power and marginal definition. Those of the genuine 'anastigmatic' series are absolutely the finest procurable for the purpose. Where the purse will allow, I strongly recommend the earnest worker to procure a 'battery' of lenses for his use. For instance, for a whole-plate camera a 6½ in., 9 in., and 12 in. focal lengths; for a 10 by 8 camera an 8 in., 11 in., and 14 in. focal lengths; and for a 12 by 10 camera a 10 in., 13 in., and 16 in. focal lengths. And to the last-named I would add an 8½ in. lens.

"The apparatus complete, the first operation after the selection of your view is the focussing. The screen upon which this is effected should be ruled into small squares, say, of an inch; this will facilitate the worker in composing his picture. In focussing, get your subject as sharp as you can—roughly so at first; see your vertical lines are vertical, and not, as one sometimes sees, converging to meet at some point. Your 'uprights' not being true, the camera must be generally 'levelled' and the 'swing-back' manipulated until the said lines are vertical, the levels all working true to each other; your picture should then be dead 'upright.' Now refocus, fixing upon some object midway between the camera and the middle of your subject. Note the appearance of the same at the top, bottom, and sides of your screen, using the lens stops to bring the whole view into general sharpness.

"The knowledge of the exposure to be given is only gained by experience; there is no fixed rule, subjects, light, and shade varying to an enormous degree. But bear this in mind: always give plenty—

after the shadows, the 'high lights' will look after themselves. After 'over-exposure' than 'under-exposure.'

Those plates having a medium rapidity will be found the most serviceable, satisfactory, and easy to work. Every plate used must be 'backed.' The difference in the resulting picture obtained from a backed and an unbacked plate is most marked; in fact, in some cases, especially where windows assert themselves in an interior, a backed plate is an absolute necessity, otherwise halation, the bugbear of photography, will be so evident as to quite mar the picture, though everything else is quite satisfactory.

A developer composed of pyro, in combination with potash or soda as the accelerator, is the best for the class of work under consideration. It yields, if properly adjusted in its components, a negative soft but vigorous, the class best suited for printing in either 'silver' or 'platinum.' In development the watch-words should be: 'Detail first, density afterwards,' not the reverse. To obtain the correct gradation keep your pyro down to a minimum, to start with; it can easily be increased as development proceeds.

A print to give the finest block for reproduction is the 'silver print.' By that I mean that done on one of the various P.O.P. papers and toned with gold. I prefer that 'toning' which includes 'sulphocyanide of ammonium'; the range of tones and the latitude of colour is excellent. The 'process worker'—by that I mean the 'block maker'—likes a good plucky 'blue-black' print full of 'vim' and 'contrast.' It yields a block far superior to any other class of print. In bad or dull weather one of the numerous 'gas-light papers' must be employed. For framing and keeping for show purposes there is no process equal to the 'carbon' or 'platinum,' but suitable negatives are required to give the finest results."

AN ANTITHESIS OF PHOTOGRAPHY.

When we see those clearly-defined charts of the heavens, showing gradations of stars that are invisible to the naked eye, and the various phases of nebulae depicted with truthful accuracy, we can form some idea what service photography renders to astronomy. Many recently-discovered planets have first been detected and their courses recorded on the photographic plate, and in other branches of science photography has given its aid in solving Nature's problems; and we may say, without fear of contradiction, that it has become the handmaid of science.

If we look at photography from another aspect, the business point of view, it seems to have taken a retrograde movement, and, however much we regret the fact, we must admit that it has somewhat lost its status, so to speak, as a profession, owing to the revolution that has taken place in its processes since the advent of dry plates. Its formulae are simple and its principles easily acquired, and small capital needed to set up in a small way accounts for the large number that have taken it up of late years and joined the professional ranks.

It has become an entirely universal hobby in every land, with amateurs in every class—of both sexes, too, we find. Are we surprised, then, that photographs have lost their charm, and fail to interest us when we see them scattered about—broadcast, as it were, good, bad, and indifferent? We become satiated and sickened of their ever-increasing abundance; it wears the faculty of appreciation, and tends to keep us apathetic, for familiarity makes millions of us all.

To hold our own it behoves us who are professionals now to make fresh efforts, and produce a better class of work than we have hitherto shown, that will appeal to the public and gain its sympathy. Technique alone will not lead to the goal of success; we must possess other qualities, a certain amount of art culture and individuality, that will raise our work above mediocrity and attain this end. "The education of the eye is the true foundation of all graphic arts, and without this we are only building on a foundation of sand." How, then, we to acquire this art culture, and where is it to be obtained? We have art schools in abundance open during the winter evenings, and the fees are quite nominal, or very small; but the benefits to be derived from these institutions are, as a rule, not appreciated by photographic assistants. They aim at reaching the goal of success by a royal road—a short cut, without preliminary toil and drudgery. In these schools we can learn the elements and canons of art, the principles of light and shade, gradation of tone, the laws governing

composition, true harmony of colour, and see the beauty of form depicted in those classic ideals shown there in casts and statuary. A knowledge of these principles is essential, and would prevent us making those errors that often mar our work. The more we think over the matter, the more we are convinced that art and photography should go hand in hand. The canons and fundamental principles pertaining to art apply equally to our profession. To do artistic and conscientious work we must possess a certain amount of art culture, and, lacking this quality, we shall find ourselves handicapped in the future, and it will take years for us to find out and correct those errors we have passed over unnoticed in the past. TRIPON.

THE CITY AND GUILDS EXAMINATION IN PHOTOGRAPHY.

The following is extracted from the report of the work of the department for the session 1903-4:—

PHOTOGRAPHY.—SECTION A.

In the Honours Grade, every candidate passed; but, on the other hand, only two did well enough to gain a first class, and only one obtained sufficient marks to qualify for a prize. In the Practical Examination the work done showed a distinct advance on previous years, but the specimen work sent in was not up to the standard of last year. Candidates should be advised to take more trouble over their specimen work.

Most of the papers left much to be desired as regards a satisfactory real understanding of the why and the wherefore of the various processes, and none of them gave any evidence of a satisfactory knowledge of photographic optics.

In the Ordinary Grade the percentage of failures is lower than in previous years, and as a rule a very fair all-round knowledge of processes was shown. Some candidates would have done better if they had more clearly grasped what is necessary in answering a question. For example, when one is asked to describe a process in the fullest possible detail, it is not sufficient to say "develop, fix, and wash in the usual way." Teachers should impress on candidates that examiners cannot be expected to assume that they know a thing unless their knowledge is actually set out in their answers. Furthermore, in several of the answers, writing "at large" took the place of a concise and exact description of the process referred to.

Not a single candidate gave a really satisfactory answer as to the effects of stops on the efficiency of lenses and it would seem that too little attention is still paid even to the most important parts of elementary photographic optics.

The least satisfactory feature in both grades is the small proportion of candidates who gain a first class. Much useful teaching is being done, but it may be doubted whether the students, or possibly even the teachers, fully recognise that if technical training is to be of real service to a profession and those who follow it, such training must combine thoroughness as regards knowledge of principles with accuracy as regards knowledge of working details.

SECTION B.

It is a matter for regret that a large number of students do not take advantage of these examinations. The average of technical knowledge shown in the papers placed before me is higher and more general than I have hitherto observed, and I feel sure it would be an advantage if a greater proportion of those studying "process" photography were induced to enter for these examinations and tests.

THE THORNTON-PICKARD PRIZE COMPETITION, 1904.

The following is the list of prize-winners in the competition:—

Class I. (Six Prizes of £5 Each).—For pictures taken with any of the Thornton-Pickard Cameras, fitted with any pattern of Thornton-Pickard Shutters, except "Focal Plane" and Stereoscopic.—Miss Sybil Aird, Eastbourne; Mrs. G. A. Barton, Four Oaks, Birmingham; Mr. O. P. Topham, Bristol; Mr. W. Bratherton, Barrow-in-Furness; Miss Agnes Tomlinson, Chichester; Mr. Duncan Robertson, Camera Club, London.

Class II. (Five Prizes of £5 Each).—For pictures taken with either pattern of the Thornton-Pickard "Focal Plane" Shutters.—Mr. A. H. Hawke, Helston; Mr. Maurice Brown, Belfast; Mr. A. W.

Sargent, Cardiff; Mr. Ettore Merli, Torre Annunziata, Italy; Mr. H. A. Game, London.

Class III. (Six Classes of £5 Each).—For pictures taken with any of the various patterns of the Thornton-Pickard Shutters, except "Focal Plane" and Stereoscopic.—Mr. Oscar Hardee, Chislehurst; Mr. F. Morland Andrew, Abingdon-on-Thames; Mr. Oscar Hardee, Chislehurst; Mr. J. Shaw, Manchester; Mr. Albert Durn, Wotton-under-Edge; Mr. F. A. Hargreaves, Waiapu Bay, New Zealand.

Class IV. (Three Prizes of £5 Each).—For stereoscopic pictures taken with the Thornton-Pickard Stereoscopic Shutter.—Mr. R. Fortune, Bowling, N.B.; Mr. W. Wilkinson, Derby; Mr. W. P. Thomson, Whalley Range, Manchester.

SUBJECT AND DESIGN.

"WHAT are the real elements of pleasure in a picture?" is the pertinent question asked by a writer in the "County Gentleman." One thing we may say for certain; that is, that they are different to different observers. To take two cases, the man who is pleased with design is probably very different from the man who delights in subject. If a given space is decorated with a good pattern, it becomes more pleasing to the eye; and it is this fact that lies at the root of all composition. The harmony of sweeping lines, the balance of masses, the contrasts of colour, all go together to make up a good pattern. But all these elements of design have another function as well—they are intended to represent, or rather to suggest, some subject. It is the trained and educated mind that appreciates design, but subject can be grasped far more easily. We all know of the farmer at the Royal Academy who is rejoiced to recognise a fine field of beans, or a group of cattle; yet he is horrified at discovering that the value of the picture exceeds that of the cattle themselves. It is quite true, however, that to a very large number of people their pleasure in looking at a picture is represented by their power of recognising the subject. I do not mean merely that they know whose portrait they are looking at, but that, on looking at the picture, they recognise that the effect suggested by the artist is a part of their own experience.

They have seen the waters of the lake reflecting the hills in just that very way; they have been delighted one winter's morning at seeing the sparkle of the sunlight on driven snow contrasting with long pale shadows that reflect the blue light of the open sky; and they are intensely pleased to find an artist has noticed just that very thing, and made a picture of it.

"Yes; how true to nature! I have seen that very effect myself," is far more often the ground of appreciation than is any insight into the technical powers that enable the artist to embody his idea.

This is one reason for the great popularity of domestic scenes. A photographer or painter who can satisfy his own artistic feelings through the instrumentality of familiar scenes and objects is sure of a wide acceptance. But, after all, the picture is good or bad—a work of art or a mere triviality—just according to its treatment, and not because of its subject.

It is here that the painter of a picture of this kind has so great an advantage over the photographer—he can more easily avoid being commonplace. Many photographic pictures of familiar scenes fail because they give the trivial details with such insistence. This is recognised by pictorial photographers, who with increasing skill try to eliminate what they wish to reject by after work on the negative and print. Their very skill leads them into pitfalls. It cannot be too strongly insisted upon that all such tampering with the actual image brings with it a deterioration of quality of surface, and too often a falsification of tone which more than outweighs the gain in breadth of effect.

THE premises of Mr. Wheeler, photographer, 106, High Street, Oxford, were the scene of a fire on Saturday evening last. The call was received by the Brigade at five minutes to nine through the police telephone, and the hose truck was soon on the spot. A length of hose was run up at the back of the house to the top room, where the fire broke out. It was quickly extinguished. The top landing was seriously damaged by the water and smoke, whilst the room was quite burnt out. The property belongs to Oriel College.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Nov.	Name of Society.	Subject.
7.....	South London Photo. Society...	<i>A Ramble Round the Tower</i> London. Mr. A. Bedding.
7.....	Luton Camera Club	<i>Colour Photography.</i> Illustrat Messrs. Ranger Shepherd & Co.
7.....	Bowes Pk. and Dis. Ph. Soc. ...	<i>Observations Upon Picture Maki</i> Mr. F. C. Tilney.
7.....	Southampton Camera Club	<i>Lantern Slide Making.</i> Illustrat Mr. J. A. Hodges, F.R.P.S.
8.....	Birmingham Photo. Society ...	<i>Demonstration of Oer and Und</i> <i>Exposed Negatives.</i> Mr. A. Tucker, F.G.S.
8.....	Nelson Photographic Society ...	<i>Animated Photography.</i> Mr. Alb Wilkinson.
8.....	Architectural Asso. Cam. Club	<i>Colour Photography for Architec</i> Mr. Chas. B. Howdill, A.R.I.B.A.
8.....	Glasgow Southern Photo. Assn	<i>Behind the Scenes; or, the Camera</i> the Wild West. Mr. J. W. Eadie.
9.....	North Middlesex Photo. Society	Exhibition of R.P.S. Competition Pri The Uses to Advantage of Ori chromatic Plates. Mr. T. The
9.....	Boro' Poly. Photo. Society	Baker.
9.....	Crick'wood Photo. Society.....	<i>Beginners' Night.</i>
9.....	G.E.R. Mechanics' Institution	<i>Pictorial Photography.</i>
10.....	Batley and Dis. Photo. Soc. ...	<i>Bromide Enlarging.</i> Demonstrat Mr. S. Swinden.
10.....	Watford Camera Club.....	<i>The X Rays.</i> Mr. E. H. Jacks <i>Pictorial Photography.</i> Mr. Linsley. <i>Stereoscopic Photograp</i> Mr. Hodgkins.
10.....	Rugby Photographic Society ...	<i>Hints on the Photography of Archi</i> ture. Rev. W. H. Payne-Smith. M.
10.....	Hull Photographic Society	<i>English Ecclesiastical Architectu</i> Mr. C. B. Howdill, A.R.I.B.A.
10.....	Gateshead Camera Club	<i>Development of Plates, and the</i> <i>Improvement of Faulty Negativ</i> Demonstrated. Mr. A. B. Gardiner.
10.....	Rodley and Dis. Photo. Soc. ...	<i>Re-touching.</i> Mr. J. Wav.
10.....	Richmond Camera Club.....	<i>Colour Photography.</i> Demonstrat Messrs. Sam. r Shepherd & Co.
10.....	London and Prov. Photo. Assn	<i>Open Night.</i>
10.....	Liverpool Amateur Ph. Assn.	<i>Talks on Picture Making.</i> Discussi Mr. Fred Burridge, R.E.
11.....	Watford Photographic Society	<i>Lectures by Members.</i>
11.....	Wakefield Photo. Society	<i>Carbon Process.</i> Demonstrated. R. Stockdale, M.A.
11.....	Boro' Poly. Photo. Society	<i>Lantern Slide Making.</i> Mr. W. Pa Lectures, illustrated by Enlar ment, Messrs. W. H. Carr and Walker.
11.....	West London Photo. Society ...	

CAMERA CLUB.

ON the 27th ult. Professor Flinders Petrie, the eminent Egyptologist who is by no means a stranger to the Camera Club, gave a most interesting lecture upon "The Genesis of Art in the Land of the Pharaohs." There is something stimulating in the word "art" connection with photographic meetings, and a very large audience assembled to hear the account of some of Professor Petrie's latest discoveries. He spoke of things which happened no less than nine thousand years ago, a remote period which, until the land of Egypt gave up its secrets, was generally supposed to belong to prehistoric times. But the labours of the Professor and of some few others have put the clock back a bit, and we now know that, when Europe was overrun by savage hordes but little removed in intelligence from the beasts which they hunted, Egypt was far advanced in the arts of civilisation.

It was to these arts that the lecturer directed attention, and when we add that he is quite an expert photographer, and can illustrate his remarks by lantern slides taken of the objects which he describes, many of which were first exposed to the light of day by his own hands after their sleep of many thousand years, it can be imagined that his lecture was full of interest, and was listened to with open ears.

If this early people had not expressed their artistic ideas upon such an imperishable material as baked clay, we should have known but little of their capabilities, and here we see how they ornamented the most elegant form with the sculptured representations of animals, and later on, of human beings. Then they knew many other arts, that of weaving, for instance. Professor Petrie showed on one slide the fragment of a piece of mummy cloth, contrasted with a piece of the finest of present-day cambric, and so far as excellence of manufacture went, there was nothing to choose between the two. Possibly the seventy-century example was the better of the two, for the Egyptians had not learned the art of sophistication; the weighting cloth by the use of earths had not occurred to them.

Then there was the jewellery—the oldest jewellery known, discovered on the mummied arm of an Egyptian princess. To this jewellery the lecturer assigned the date 4700 B.C., and it is in as good condition to-day as it was when first made. One of the bracelets is of beads, and a more elaborate one is composed of flat links, made alternately of gold and turquoise, and what is very remarkable is that the metal is soldered, and is of most excellent workmanship.

An ivory statue, excellently carved, of one of the first kings of Egypt was another valuable find, and we were told how this little image was so fragile with age that it had to be cleaned with nothing harder than a camel-hair brush. Its photograph showed that it was of high artistic merit, and as the name of the king it represents is upon it there is no doubt as to whom it is meant for.

Professor Petrie aroused much interest by his explanation of the kind of photographic apparatus which he employs. He has a long extension camera, with a front so made that it can be made to occupy any position. For most of his work he uses an old style Ross R.R. lens, supplemented with a telephoto lens for work difficult of near approach. Below the camera he has a receptacle holding a hundred films, and these he changes in daylight—one by one—by means of an attached sleeve. He showed a large number of photographs of difficult subjects taken with this camera, not only in Egypt, but in other countries. The lecture was listened to with great attention, and Sir H. Treman Wood occupied the chair.

CROYDON CAMERA CLUB.

NOVEMBER 26.—A large attendance gathered to hear Mr. F. W. Hicks give a practical demonstration on the making of positive transparencies intended for the subsequent production of enlarged negatives. An expert worker, and without the superfluity of "talk," which on occasions distinguishes some pictorial exponents of the camera, all he had to say was instructive, to the point, and was listened to with attention. If the original gradations of the small negative were to be preserved in the enlarged one, then an intervening carbon transparency, he thought, was almost compulsory. Trouble might, and frequently did, occur with reticulations of the film, but these, as a rule, did not record themselves, provided a daylight enlarging apparatus was employed. With artificial light and a condenser, the opposite frequently prevailed. In most cases it was, however, of no moment whatever if the relative gradations were altered. Such alteration might, as a fact, be an improvement. Under these conditions he invariably used a slow plate with a fine grain, such as "Wratten's Ordinary," and preferred metal as a developer, owing to its slight tendency to clog the shadows. A softly modelled transparency, free from fog or veil, and not too contrasty, should be aimed at, and the worker should not mind wasting several plates until the desired result was obtained. Several excellent transparencies were exposed, developed, and fixed, and passed round for inspection during the evening, and the various methods of printing in skies were explained and illustrated.

In the discussion which followed Mr. Sellors drew attention to the grain of the plate often obtruding itself most unpleasantly in the enlarged negative. In order to minimise this tendency he slightly enlarged the transparency. Mr. Hicks, in reply, said he did not think the results compensated for the extra trouble involved. It was not a case of the grain of the transparency showing so much as that of the original negative, which was generally a fast one, and possessed a far coarser deposit. If hand work was required to be done on the transparency then, of course, the case was different.

CAMBRIDGE PHOTOGRAPHIC CLUB.

UNDER the chairmanship of Mr. F. J. Stoakley, vice-president, a meeting of the Cambridge and District Photographic Club was held at the Prince of Wales Hotel on Tuesday evening last week, when the medals secured by competitors in the recent exhibition at the Bournemouth Exchange were distributed by Mrs. McKenny Hughes. Previous to the presentations there was an animated discussion on subjects of interest to members, and several promises of addresses and demonstrations in the coming winter were made.

Mr. W. B. Redfern introduced Mrs. Hughes with the remark that she took great interest in photography, being herself an artist of no mean ability.

Mrs. McKenny Hughes, having presented the medals, expressed the great pleasure with which she attended the meeting, and remarked upon the delights experienced by all who took up photography as a hobby. The art gave scope for the exercise of individuality in no slight degree, and the possibilities of stamping individuality upon one's work were numerous. Though the camera could never take the place of the brush, it could be used to seize some passing effect, some combination of light and shade, some characteristic mood of a person, so as to produce in their mind the sensations that inspired the artist. This power of artistic interpretation was the highest form of art. Mrs. Hughes also referred to photography as an auxiliary of natural history work, and hoped that those beautiful pictures of animate life might take the place of collections of dead creatures.

The cup that was presented by Mr. A. W. Smith for the best picture in the local classes, became the personal property of the Rev. H. R. Campion, who has won it on three successive occasions.

Mr. Redfern proposed a vote of thanks to Mrs. Hughes, and made an emphatic reference to the utter unsuitability of the room in which the exhibition was held. Entrance to the room was gained by passing up stone steps, which always made him feel that he would find a warder waiting at the top, and he was sure that the nature of the approach debarred many from visiting the exhibition. Then it was quite impossible to light the room properly, for there was no daylight, and electric light was unsuitable during the day. He strongly urged the club to do their utmost to obtain another room from the Horticultural Society, for the present one was quite unworthy of the time and trouble spent in putting up the pictures, for it failed to do them justice. (Hear, hear.)

Mr. A. C. Haddon spoke respecting the Photographic Survey of Cambridgeshire which was being taken in hand by the Antiquarian Society, and urged all members of the club to join them in this work. The opportunities in this connection were practically unlimited, and it was work which every member ought to take up. He trusted that they would do all that they could to further the scheme, the success of which they could very materially affect.

The Secretary stated that the Council had the matter in hand and would very shortly issue to the members the appeal which the Antiquarian Society had sent. Steps were being taken to interest members in the survey.

Prof. McKenny Hughes, in a racy speech, impressed upon the members the very great help they could give in the matter of records. He pointed out that in many of the out-of-the-way villages in the county there were distinctive types of people which ought to be recorded in this way, and spoke of the great help that could be thus given to the Anthropologists such as Dr. Haddon. Referring to this one particular science, he instanced how on many occasions material help would have been found if he could have had some of his "finds" photographed as soon as discovered. Those who unearthed these early remains and curious earthworks were very seldom photographed, and he looked to members of that club to give their assistance in helping to put on permanent record the interesting and valuable discoveries which were continually being made in the county.

Dr. Bansall proposed a hearty vote of thanks to Prof. and Mrs. Hughes, which was carried by acclamation.

FORTHCOMING EXHIBITIONS.

November 2, 3, 4, 5.—Newark Photographic Exhibition. Secretary, L. C. B. Appleby, Barnbygate House, Newark.

November 2-23.—Plymouth. Hon. Sec. Photographic Section, Chas. R. Rowe, 2, Walnut Villas, Cockington, Torquay.

November 3, 4, 5.—Motherwell Y.M.I. Camera Club. Hon. Sec., James Dunlop, Myrtlebank, Motherwell.

November 9.—Hackney Photographic Society. Hon. Secretary, Walter Selfe, 70, Paragon Road, Hackney, London, N.E.

November 15-19.—Sunderland Camera Club. Hon. Sec., Selby-Ord, 52, Frederick Street, Sunderland.

November 17-18.—Braintree and Bocking Camera Club. Hon. Sec. W. H. Tilston, 81, High Street, Braintree, Essex.

November 17-19.—Darwen Photographic Association. Hon. Sec., J. G. Thomas.

November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.

November 22-23.—Ipswich Camera Club. Hon. Secretary, R. H. Sutton, 37, Henley Road, Ipswich.

November 23-26.—Hove Camera Club. Hon. Secretary, A. R. Sargeant, 55, The Drive, Hove.

November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., G. W. Simmers, Aberdeen House, Ramsgate.

November 25-26.—Ilford and District Photographic Society. Hon. Sec., W. N. Beal, 155, Thorold Road, Ilford.

November 26-December 3.—Glasgow Eastern Amateur Photographic Association. Secretaries, John Brough, 68, Dalmarock Street, Park Head, Glasgow; and Geo. R. Johnstone, 591, Alexandra Parade, Dennistoun, Glasgow.

December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.

December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104, West 101st Street, New York.

December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.

December 12-17.—Sefton Park Photographic Society, Liverpool. Hon. Secretary, H. E. Cubley, 3, Langdale Road, Sefton Park, Liverpool.

December 13-20.—Southampton Camera Club. Hon. Secretary, S. G. Kimber, Oakdene, Highfield, Southampton.

December 28-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 138, Glasgow Road, Wishaw.

January 12-14, 1905. Boston Camera Club. Hon. Sec., H. M. Hames, 65, West Street, Boston.

January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

January 20-21, 1905.—South Essex Camera Club. Hon. Secretary, T. Michell, 180, Browning Road, Manor Road, E.

January 28-February 12, 1905.—Photographic Society of Marseilles. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.

February 6-11, 1905.—Blairgowrie and District Photographic Association. Hon. Secretary, Wm. D. M. Falconer, James Street Cottage, Blairgowrie.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

March 4-11, 1905.—South London Photographic Society. Hon. Sec., H. Creighton Beckett, 44, Edith Road, Peckham, S.E.

March 20-25, 1905.—The Cripplegate Photographic Society. Hon. Sec. John B. Parnham.

June, 1905.—Northern Photographic Exhibition. Secretary, F. G. Issot, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

December 31.—Barnet. Nineteen classes. Prizes valued at £500 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

March 31, 1905.—Ilford. £750 in cash prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

WOODFORD Photographic Society.—This Society held its annual general meeting on Wednesday, October 19. The election of officers for the session 1904-5 resulted as follows:—President, Mr. H. Wilmer. Vice-presidents, Messrs. A. Ziegele and A. Horsley Hinton. R.P.S. Affiliation Delegates, Messrs. E. Marriage and E. C. Winney. Council, Messrs. W. L. F. Wastel, G. H. Grimsell, E. H. Carpenter, and W. Ormel. Lanternist, Mr. Reginald A. Malby. Hon. Secretary, Mr. F. G. Emiler. Assistant Hon. Secretary, Mr. E. H. R. Hillsworth. It was announced that the photographic survey of Woodford, which this Society undertook, was now nearing completion, and a Committee was chosen to finish the work.

Commercial & Legal Intelligence

SPEIGHT, LTD. (Photographers, London).—Issue on October 17 £2,550 debentures, part of a series created June 25, 1904, to secure £10,000, charged on the company's property, present and future, including uncalled capital (if any). No trustees. Total amount previously issued of same series, £7,450.

BERNARD COOPER, LTD.—Capital, £2,000 in £1 shares (500 preferred). Object: to carry on the business of photographers, fine art and photographic dealers, picture-frame makers, dealers in photographic apparatus and accessories, plates, papers, mounts, chemicals, etc. No initial public issue. B. Cooper is the managing director. Qualification, £25. Remuneration as fixed by the company.

THE statutory meeting of the creditors interested under the failure of Charles Hicks Evkyn, of 49, Eaton Terrace, Eaton Square, was held at the London Bankruptcy Court on Friday last before Mr. Bowyer. Debtor estimated his liabilities at £1,000, and his assets at £90. The debtor stated that in 1892 he received £10,000 under the will of his grandfather, but he lost about £3,000 of it in business in Algiers, and he had also lost large sums in connection with various companies. He was at present a partner in the Division Photogravure Company, of 21, Farringdon Avenue. He put £2,000 into the business, and now acted as the business manager. The bankruptcy proceedings did not relate to that business as a whole but only to himself personally. He alleged his present position had been caused through the failure of a printing company and an advertising agency. The estate was left in the hands of the official receiver for summary administration in the usual manner.

Re William John Le Couteur, photographer, 16, Brook Street, Hanover Square, and 312, Regent Street, W. The first meeting of the creditors concerned under this failure took place at the London Bankruptcy Court on Monday last before Mr. Chapman. It appeared that the debtor was at present without any occupation. About five years ago a company was formed to take over his business called The Photographic Association, at 16, Brook Street, W., and he became managing director at a salary of £6 per week. In November 1899, he was made bankrupt, on the petition of a Mr. Scott, in respect of a debt contracted by him on behalf of the company. In November, 1902, further debentures were issued by the company to Captain Henry Connop and Captain Richardson, directors of the company, and debtor was then induced to sign another agreement with regard to his services as manager, under which his employment was to cease upon the company going into liquidation, the business being sold, and that he was to be free to work apart from the company. Under that agreement he worked until June 1903, when the debenture holders foreclosed, and carried on the business until the liquidation of the company in November, 1903. Debtor acted as manager for the receiver for four or five months when he was dismissed. The company's business was afterwards sold to the petitioning creditor. Upon the expiration of the company's lease at 16, Brook Street the company removed, and a Mr. Whitehead took the premises on behalf of the debtor's wife, who still carried on business there as a photographer. Debtor assisted his wife in the business, no arrangement having been made for his remuneration. About April last the purchaser of the business from the company made an application to the Court for an injunction restraining debtor from practising as a photographer under the first agreement with the company. Debtor defended the action, on the ground that the first agreement was null and void and that the company had gone into liquidation, but upon a technicality he lost the action, with the result that he had to pay £130 in respect of costs. A bankruptcy notice was served upon him for that amount, and the receiving order was afterwards made. Income had amounted to about £300 a year for the last five or six years. He was made bankrupt in the High Court in 1899, and dividend had been paid to the creditors under the bankruptcy. He attributed his present position to the costs incurred in the action by the petitioning creditor. After some discussion it was decided to adjourn the meeting.

News and Notes.

NOTTINGHAM Camera Club.—At last week's meeting of the Nottingham Camera Club (Mechanic's Institution), Mr. E. H. Aitken delivered a practical address on "Printing, Developing, and Toning Bromide Papers," the most interesting portion of which was a demonstration of the newer method of toning with sodium sulphide.

LONDON and Provincial Photographic Association.—On Thursday last Mr. Freshwater showed Prof. W. R. Woods' new pictures of colour photography by diffraction; he also explained the method by which they were produced. The members present were much interested in the process, and considered the colours produced to be very pure.

NORTH Middlesex Photographic Society.—At Hanley Hall, Crouch Hill, on October 26, Mr. F. J. Mortimer lectured before the above Society on "Scillonian Pictures." His many visits to this semi-tropical region enabled him to illustrate his lecture with over two hundred slides, but the most interesting were, perhaps, those which represented the subject of wave studies and seascapes.

LIVERPOOL Amateur Photographic Association.—A meeting of this association was held on Thursday evening last in the club rooms, Thorne Street. Mr. A. W. Beer delivered a lecture, entitled, "Mosses from some Old English Stones." The address, which was illustrated by lantern slides, dealt specially with Stonehenge, Hampton Court, the New Forest, and Warwick Castle.

LAST week there was delivered in the rooms of the Dundee and East of Scotland Photographic Association the first of a series of lectures to beginners. The lecturer was Mr. Peter Feathers, and he took for his subject "The Camera and Lens," giving an interesting description of the mechanism and working of the photographic apparatus.

CAPTAIN SCOTT, R.N., and the officers of the "Discovery" Antarctic Expedition will be present at the opening of the Antarctic exhibition of water-colours, photographs, and other articles of interest used in the South Polar regions during their recent expedition, which will take place at the Bruton Galleries, Bond Street, Friday (Friday). Sir Clements Markham, President of the Royal Geographical Society, will open the exhibition at three o'clock.

FACEING THE CAMERA.—When William Watson and Robert Bentley, of Leeds, were brought before the Stipendiary Magistrate last week, on a charge of manufacturing counterfeit coin, the Deputy-Chief Constable, Mr. Dalton, asked that an order should be made for the photographing of Bentley, who objected to face the camera. Bentley refused because he said the police had already a photograph of him in their possession, and whether it was a young or old one they would not get another. Watson supported his fellow-prisoner's objection by stating, with much emphasis, that the man could not be photographed before trial. "That was the law in 1895, but it has been altered since then," remarked the Stipendiary. "Oh! of course, you are sure to alter it," retorted Watson. The Stipendiary: "You haven't seen the regulations made in 1896." "Then read 'em out, read 'em out like a gentleman," exclaimed the old man, excitedly; adding that they wanted to photograph him simply to aggravate him. The men were remanded for a week, when the committal to the Assizes will take place.

"The Three-Colour Process, as Applied to Letterpress Printing," was the subject of a lecture by Mr. Charles W. Gamble, of the Manchester Technological Institute, at the Technical Schools, Leicester, on Friday last. Mr. Gamble, in his preliminary observations, pointed out that the desire to render pictures in colour was not in any sense a new one. Ruskin had told them that wherever men were noble and free they love bright colour, and wherever a picture was produced there had always been the desire to give a reasonable transcript of the colours. About 100 years had now elapsed since Josiah Wedgwood made his experiments, which constituted a record of light upon sensitive substances. In sketching the history of photographic processes, the lecturer described the principle of three-colour photography expounded by James Clerk Maxwell in 1861, and which is the basis of all photography in natural colours. Mr. Gamble also explained at great length the three-colour process as applied to letterpress printing, his remarks being made exceedingly interesting by lantern slides, and a large number of examples in monochrome and colour.

Correspondence.

*** Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given*

*** We do not undertake responsibility for the opinions expressed by our correspondents.*

TREATING THE SURFACES OF PLATINUM PRINTS.

To the Editors.

Gentlemen,—I have lately tried the effect of rubbing the surfaces of platinum prints with encaustic cerate and find this greatly improves the brilliancy of the print, so much so that I am inclined to treat all my platinotypes in this way. Can you, or any of your readers, say if prints treated in this manner would be likely to lose the purity of the whites in time? There appears to be no loss so far.—Yours truly,

F. S.

November 1, 1904.

[Our correspondent will probably find that the whites of his prints will go yellow in time.—Eds. B.J.P.]

A PROBLEM.

To the Editors.

Gentlemen,—As a constant reader of your paper you bear with me in writing you in confidence. I am a Baptist minister. Unfortunately, for some time I have been out of a pastorate through no fault of my own, but through the weakness of our denominational system. I am also a competent photographer in all its branches, and have been for sixteen years.

Being without a pastorate I have resorted to my business among private friends. I feel it is only honourable so to act rather than be in any way dependent upon charity.

I write you for your advice, which I trust you will give me, and for which I shall be grateful.

Do you know of a good opening where I could start business without incurring much expense? I have all needful apparatus to work with. Should prefer the South Coast, or do you know of any opening to manage a business? I need not say I am capable as a business man.

If in my anxious position you can assist me I shall esteem it a great favour.

You will understand me when I say I am not anxious for a mere journeyman's position, but one of trust, and in which I could merit respect. I have been well known and respected for many years. I have a wife and one daughter, both acquainted with the business, and will be a valuable help.

Kindly forgive this lengthy letter, and oblige me, should you know of anything suitable, or a small business.—Faithfully yours, C.

November 1, 1904.

[Why does not our correspondent advertise in the outer columns of this JOURNAL? We are sorry we cannot further help him in the matter.—Eds. B.J.P.]

ANOTHER PROBLEM.

To the Editors.

Gentlemen,—Your article, "A Press Side Line," in the B.J.P. of October 14, has interested me very much, and I am taking the liberty of writing you for a few hints on the subject. Owing to dullness in the photogravure line and other reasons over which I had no control I find myself out of a situation, and things in that line seem to be at a very low ebb.

I have had nearly four years' experience in negative making for photogravure and half-tone, and my work has been of a varied character, including neg. making up to 40in. by 30in. (direct ortho) from paintings, etc., copying coloured originals, specimens of the arts and crafts in hammered copper, etc.; laces and coloured fabrics; and for catalogue illustration for some of the leading drapery establishments. Previous to this I had several years' experience in general professional portrait photography in and out of doors, and I have not neglected this latter branch during the past four years.

Of course, as you hint in your article, other qualities are necessary to make a success of this branch.

A dark-room and work-room in the City would be a necessity, would it not?

If you will kindly favour me with your advice I will esteem it a great kindness.—I am, yours, etc.,
"E. N."

November 1, 1904.

[Our advice is simple. Either advertise, or call on the editors of the illustrated papers with specimens of your work.—Eds. B.J.P.]

SPURIOUS SPECIMENS.

To the Editors.

Gentlemen,—Re your correspondent "P. W."—I have a similar thing here. An amateur, who for some time had been snapping people in spare time, opening a studio directly opposite me, and filling his window with absolutely the finest carbons it would be possible to obtain. Of course, they are not his work—some of the children's faces he has in have taken prizes. Out of the whole show, three, or possibly four, are people he has taken, printed, etc., away.

Photography is far too easy. It is not difficult now-a-days to guess the right exposure and get a negative. Then, like my opposition, it is sent away to be retouched, printed, mounted, and worked up, and is then quite equal to, if not better than the ordinary professional work. Nobody can blame an amateur for wishing to get on, but when it is done by false specimens, etc., etc., you can almost wonder if it is not equal to "obtaining money under false pretences," for, as in this case, the work cannot always be good, even if it fails in the posing, etc.—Faithfully,
November 1. 1904.

TEN BY EIGHT.

NOTHING LIKE BUTTONS.

To the Editors.

Gentlemen,—We believe matter published in the Press is invariably regarded as fair material for comment, and in alluding ambiguously to a case which we recollect reading in the photographic journals we must disclaim the least idea of hurting the feelings of anyone, our intention being solely to give force to a "point" in our argument.

Assuming that your correspondent "E. T. Vanderbilt" correctly states the case in which he was fined, he appears to have been hardly treated in this particular instance.

This gentleman's letter displays great animus, and, as usual with most people when writing in the heat of temper, he becomes illogical, and, consequently, amusing, as while congratulating himself on never having "descended to our level," and charging us with what he is pleased to call "mud-throwing," he endeavours to the utmost of his ability to bespatter us with this detectable compound, and indiscriminately mixes a few stones with it.

Making allowance therefore for your correspondent's evident state of irritation, we propose only to seriously notice those assertions which in their present crude form are calculated to create erroneous impressions.

Re "Giving away Enlargements."—Some years since there were three firms in Bold Street, (one was Barraud's) presenting opals or enlargements with each dozen cabinets. Now the public are keenly watchful for any "bargain," and finding many of our clients taking advantage of these offers, we deemed it necessary for the protection of our own interests to do something of the kind, so we included with every 25s. order, a boudoir-size bromide. This we did for a limited period only, and when we considered our object attained, we withdrew these pictures. Liverpool is not like Dublin, or the West-End of London; the commercial spirit is strong here and must be reckoned with.

In our first letter to your paper we remarked that certain "high-art" photographers write continually to the best people here (chiefly ladies) offering sittings. So far, we have never done this, but your correspondent's statement would lead readers to a different conclusion. The "free invitations by the hundreds" are those issued annually to the children attending the Lord Mayor's fancy dress ball. This invitation scheme was originated by a late Bold Street firm, and we, in common with all the principal photographers here, were compelled in self-defence to follow suit, or see hundreds of our clients go elsewhere. Beyond this, and occasional requests for sittings to Church dignitaries, Lord Mayors and professional celebrities for publication purposes (perfectly legitimate business, and the custom of photographers everywhere), we have as yet offered no free sittings. We say "as yet," because we shall probably soon be forced to "move

with the times" and meet this insidious form of competition in the only possible way.

These photographers are not of your correspondent's class, and they do not appeal to his clients he can afford to view their methods with equanimity, or, as he politely puts it, he need not "descend to their level."

We submit, therefore, that "Mr. Vanderbilt" is not qualified to judge, or appreciate, our position in this matter.

In concluding this correspondence—as far as we are concerned may we add that about seven years ago we proposed to several of the leading Liverpool photographers what we considered might prove an effective means of preventing local photography from drifting into its present condition, viz., a scheme of amalgamation. It was rejected by them, and its revival here is impossible now, but we venture to think there are still cities where powerful combinations might do much to redeem the present position of affairs and to establish (at all events locally) the status of "photography as a profession."

With our best thanks to you, gentlemen,—We are, yours faithfully,
MEDINGTON'S, LIMITED

29, Bold Street, Liverpool.

THE "STEADMAN" EXPOSURE SYSTEM.

To the Editors.

Gentlemen,—A good judge is said to "never give his reasons," and Mr. Steadman in giving the reasons for his elaborate subject classification reveals the unsoundness of its basis.

He starts by acknowledging the possibility of correctly rendering on one plate a subject having foreground, middle distance, and bird's-eye plane (I adopt his own peculiar phrase to avoid confusion), then he is to say the feeble contrast in the bird's-eye plane is correctly rendered on the plate as it is seen. He now presumes that if this bird's-eye view is photographed on a plate without middle distance or foreground, the rendering which was correct before is now incorrect, and that it is necessary to secure more contrast between tones than appear to the eye, in order to "cover some considerable part of the natural scale of tones." It is this presumption which is unsound. The delicate lights and shades on a snow-drift may be perfectly and correctly rendered on a plate, and yet only a small part of the "natural scale of tones" utilised. And even assuming that the increase in contrast between the tones is desirable, Mr. Steadman lets out that he secures it by "forcing the greatest effect up to the desired point of density by longer development or intensification." He does not seem to be aware that it is the length of development and not the length of exposure (or subject classification) which gives the power to spread the tones out to a greater or a less range, and that his elaborate classification is useless for this particular end.

The only need in exposure is to bring the greater part of the tones of the subject within the "correct exposure" range of the plate, and any subject classification which does more than secure this is unnecessary. When photographing distance alone it may be well to lessen the exposure (say one half) to secure this desired end. Any variation in contrast of tones is a matter to be treated in development, not in exposure.

It is a little difficult for plain men, who (to use an architectural simile) are more used to Early English than to Flamboyant style, to follow Mr. Steadman in all his flights. But perhaps he will explain his image of "the brightest professor of physics" with "no unit of actinism," wondering whether the light is strong enough or not, to make a snap shot; and how this image can exist side by side with "any child of school age with any good meter or sensitive paper learning in an hour or less to expose correctly."

What does he mean by saying there is no uniform system of opacities measurements? Any photometer maker could have told him differently.

What does he mean by saying we have no uniform system of diaphragm markings, when all English makers use the standard of the Royal Photographic Society? Even in plate-speed markings (uniformity in which is yet open to improvement) no one would suspect from Mr. Steadman's assertions that nearly half the English makers mark their boxes by the most advanced system—that of Hurter and Driffield.

I certainly say "amen" to the plea for greater uniformity in phot

graphic standards, but why shut our eyes to the advances already attained in that direction?—Yours truly,
ALFRED WATKINS.
Hereford.

October 31, 1904.

SOME PECULIARITIES OF DYES WHICH PRODUCE TOTAL SPECTRUM SENSITIVENESS.

To the Editors.

Gentlemen,—I am sorry to encroach once more on your valuable space in reference to my article on dyes which produce total spectrum sensitiveness, and would not do so had not further experiments gone to substantiate the data laid by me before your readers. Of these I trust you will receive an account in due course. Mr. Wall's omission to notice or explain the fact which I pointed out, that his letter only corroborated my statements instead of contradicting them, is so weak as to want no comment on my part.—I am, yours faithfully,
T. THORNE BAKER.

16, Rutland Park Mansions, Willesden Green, N.W.

October 28, 1904.

[This correspondence must now cease.—Eds. B.J.P.]

DRYING NEGATIVES.

To the Editors.

Gentlemen,—Re your paragraph "Drying Negatives Quickly" under "News and Notes." As you invite discussion of the subject and go so far as to say you would "be much obliged" to receive remarks on the matter, I, for one, cannot resist the temptation to add to your editorial happiness by sending you a few results of actual experience. It is so general for writers of books and articles, who, perhaps, have not really practised what they are writing about, to say "so and so may be done." This is particularly noticeable, by the way, in lantern slide books, and I think the writer, who speaks of drying-off negatives by soaking in methylated spirit for two minutes, is wise to qualify his statement by the subjunctive clause, "if the spirit is strong enough." I have heard something about a seafaring tale which would have been longer if a certain bowl had been stronger.

And now with regard to methylated spirit. It can usually be purchased up to a strength of 64 deg. overproof, at least, I always made a point of selling that strength myself, but I do not suppose the kind sold at oilshops would stand that test, and, moreover, one always runs the risk there of having it measured out in a dirty measure, perhaps previously used for some oily substance.

Owing to our teetotal friends in introducing prohibition on Sundays, we are compelled now to have methylated spirit which is totally unfit for use in many of the more delicate arts and manufactures. It was formerly (some years ago) rendered unpotable by the addition of wood naphtha, which, not being of an oily nature, did not detract from the usefulness of the spirit. It was found by the Excise that a taste was acquired for this as a convivial beverage, especially in those prohibition towns in the North where the indulgence in their favourite whiskey was barred to them on Sundays. To prevent this great loss to the revenue (about 15s. a gallon) the Excise then ordered it to be mixed with mineral naphtha, a most nauseous, but, unfortunately, also an oily substance, and for this reason very objectionable for drying off plates and prints. By making proper application the old form can still be obtained, but the person applying, must, I think, satisfy the Excise that he wants it bona fide for scientific and not bibulous purposes. No doubt some of the greasiness might be precipitated by the addition of water and redistilling, but this would be one of the blackest crimes against Statute Law, and the penalties would debar the culprit (if caught) from any further practice of photography as a hobby.

Sometimes when, inadvertently, standing near Scotch gentlemen whilst they are indulging in their national beverage, I have thought, especially when the diluent was warm water, which, of course, brings off more aroma, that I could detect something more than a soupçon of naphtha. But then one is now and again startled at reading in our technical papers that some eminent distiller has been fined several thousand pounds for redistilling methylated spirit in his cellars. Rather too bad when he pleads ignorance of the law, besides, it deprives us of such a lot of whiskey.

To dry a plate in methylated spirit it should be washed quite free from hypo, preferably given a bath in saturated solution of chrome

alum, rocking the plate for about ten minutes. Then wash out the alum and dry off superfluous drops of water on both sides of the plate with corners of blotting paper, or absorbent cotton wool. The plate should then be rocked for at least ten minutes in methylated spirit, then moved rapidly in the air with a pendulum-like action of the arm, placed in a metal rack over a gentle warmth or in current of air. With regard to the latter, I think centrifugal motion would be good, and I can conceive nothing better in theory, I have not tried it, than fixing the plate on the fans of a ventilator such as are worked by electric motors.

With regard to dust, I think flics are more injurious to plates which are drying, and in the summer and autumn it is desirable to place the rack in a muslin safe such as is used for meat, etc.—Yours faithfully,
ALGERNON BROOKER.

Lewes.

October 28, 1904.

[We are obliged to Mr. Brooker for his interesting letter. The remarks on drying negatives to which he refers were quoted from the "Westminster Gazette."—Eds. B.J.P.]

STALE PLATES.

To the Editors.

Gentlemen,—In your issue of the B.J.P. for September 9, a letter appears signed "Enquirer," on the above subject, and I quite sympathise with him and with anyone who has the misfortune to purchase old and stale plates whilst unsuspectingly believing they are getting fresh.

Would not a good remedy for this be for the makers to mark every box of plates with the date of issue of its particular batch? This plan might appear to have its drawbacks to dealers, and certainly a few might have to suffer a little at first, but the thing would very soon right itself and work out better for all parties concerned. I feel sure that the plate-makers who are bold enough to adopt this plan, and draw attention to it, will score by it, and so will everybody else in the long run. At any rate if this plan could be adopted, purchasers would only have themselves to blame for buying "stale plates."—I am, gentlemen, yours faithfully,

LESLIE W. FORD.

Queenstown, Cape Colony.

October 10, 1904.

PLYMOUTH Photographic Society's winter session was inaugurated at the Athenæum on Friday evening last, with a presidential address and a lantern slide display. Mr. J. T. Johnson marked his election to the presidency by entertaining the committee at dinner at Little Efford on Saturday, and during the evening, Mr. Wilfred Grist was presented with a silver cigarette case, engraved with his monogram, as a souvenir of his honorary secretaryship during the last four years. An interesting programme for the session, with an exhibition of members' work, was announced.

CHRONIC X-ray Dermatitis.—Our esteemed contemporary, "The Medical Press," has a few words to say on this subject which may go far to allay the recently-raised fears of X-ray operators. It remarks:—"Certain daily newspapers have raised the ghost of a well-known malady—as is their wont—and have done their best to make the blood of the public turn to water with their turnip-headed wonder. The fact that workers with the Röntgen rays are subject to an extremely chronic, distressing, and incurable inflammation of the hands has at length penetrated the recesses of Fleet Street. The further fact that several cases of cancer have developed in connection with chronic X-ray injury seems to have inexpressibly inflamed the editorial imagination; the yellow press of the kingdom has been accordingly flooded with startling headlines, pictures, interviews, and bristling columns horrid with fact and fancy. Among the interviews we regret to see one with a Midland worker in the X-rays, who has apparently so far forgotten the unwritten rules of the medical profession as to furnish his experiences to a reporter to be published under his own name. The views of a London specialist have been quoted copiously in relation to a book, for which notice he is obviously not answerable. As a matter of fact the chronic dermatitis of Röntgen-ray workers has been known for a long time, and was described fully some six or seven years ago in the book which is the standard English authority on the Röntgen rays in medical work."

Answers to Correspondents.

- *** All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.
- *** Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.
- *** Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.
- *** For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

- E. J. Fuller, Mount Street, Batle, Sussex. Photograph of Carter's "Northern Star" Potatoes.
- F. Eulton, 1, Bond Street, Bristol. Photograph of Grove Cottage, Frenchay, Nr. Bristol.
- W. Lander, Regent's Studio, Regent's Street, Shanklin, I.W. Photograph of the Interior of Saint Saviour's Church, Shanklin, I.W.
- J. Harris, 36, Cromwell Road, Montpellier, Bristol. Photograph of the Bristol Rugby Football Team.
- A. F. Osborne, 41, Waterloo Street, Camberwell, London, S.E. Photograph of the Rev. A. F. Robson.

J. STEELE.—Better address Mr. E. Howard Farmer at the Polytechnic, 309, Regent Street, London, W. We do not undertake to answer letters by post.

W. B.—We think the work the reverse of refined, and are not surprised at the caricatured person feeling aggrieved. Our advice is to climb down handsomely and forbear that sort of joke in future.

COPYRIGHT.—A READER for 45 years writes:—"I have a 12 in. by 10 in. view of our old town-hall, which is copyright. I have now copied it for postcard. Will you kindly say in your very interesting paper whether it is necessary to register the copy in order to protect it?" In reply: If the 12 in. by 10 in. is registered in our correspondent's name no further registration is necessary.

REDUCING PLATINOTYPES.—F. V. HOWELL says: "I should be glad if you could give me a formula for reducing over-exposed platinotype prints." In reply: We know of no very successful method of reducing over-printed platinum prints without impairing their original quality. The simplest thing is to make fresh prints, and it is the cheapest in the end if time is of any value. This is the course we should advise you to adopt.

FOCUSsing HOOD.—"FOCUS" says: "I want something that would take the place of a focussing cloth (for 1/1 camera; a screen or hood; of course it would have to fit on to back of camera? Could you give me the names and addresses of a few firms most likely to make it for me?" In reply: Mr. F. Berresford, 14, Bridge Road West, Battersea, S.W., make a speciality of focussing hoods. Better write him for prospectus.

STUDIO QUERY.—"NEMO" says:—"On the other side I send sketch of two rooms I am thinking of taking for a studio, and shall be glad of your opinion as to the proposed arrangements and size for cabinets, full lengths, and heads and shoulders, and large heads 12 in. by 10 in.; also whether one or two —'s lights would be sufficient for exposures of, say, two seconds f./6.8." In reply: So far as dimensions are concerned, it seems that the rooms can be utilised. As we have had no experience with the light named we cannot say how many lights will be required for the proposed exposures.

BI-SULPHATE REDUCER.—"CONTRASTING" asks: "Would you kindly give me the formulæ and working instructions for reducing negatives, so as to give soft prints, with persulphate of ammonium, as I have some negatives which, though perfect in quality for plat., are too strong for C.C., which latter paper I am using; consequently they are at present useless for the purpose I have in view. Also, could you give an idea of cost of persulphate of ammonium?" In reply: Simply immerse

the negatives in a 5 per cent. solution of the persulphate until they are sufficiently reduced, then well wash. The price of the salt is about 3s. 6d. per pound.

LENS QUERIES.—"J. E. R." says: "I have one or two questions to ask. I have just ordered a studio these dimensions: 20ft. by 11ft., by 9ft. to eaves, 15ft. to ridge; 12ft. of glass top and side ground. The dark-room is 4ft. wide, extending to width of the studio, leaving me the space of 16ft. for operating. (1) Is the length suitable for cabinet portraits, full length, with a 13in. focus lens? (2) What focus lens would suit me best under these conditions? (3) Have I made a great mistake by not having 5ft. longer?" In reply: (1) No, it is not. To take full length cabinet portraits with a 13in. focus lens requires 20ft. between sitter and camera. (2) You will require a lens of about 9in. focus, but with that you must not expect pleasing perspective. (3) Yes.

RIGHT TO PUBLISH.—"PUBLISHER" says:—"Some time ago a lady called to have her photograph taken. After taking same to her order, I asked if I could take some extra for my own use. To this she willingly consented, and I exposed several plates. When shown the proofs of all she was so pleased with them, that she asked if she could order from any of them. This allowed her to do without charging for the extra position, and I also gave her two extra finished proofs. As I considered that those taken at my expense were my property, I allowed a gentleman to have the use of one for a book illustration. The book was duly published, and the lady now writes to the publisher threatening proceedings against him for publishing her photograph." In reply: It seems to us that when the lady gave you the extra sittings you gave her to understand that the portraits were for your own use, as, say, for specimens. She probably had no idea that the portraits were to be used as book illustrations or would not have sat. It is possible she has ground for action.

Patent News.

The following applications for Patents were made between October 17 and October 22, 1904:—

- Cameras.—No. 22,318. "Improvements relating to photographic cameras" (Benjamin Joseph Edwards.)
- Shutter.—No. 22,324. "Improved roller blind shutter for photographic cameras." (Adolph Richard Lange.)
- Developing Cabinet.—No. 22,370. "Developing cabinet." (W. Wood.)
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The British Journal of Photography

The Oldest Photographic Journal in the World.

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THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1905.

Edited by THOMAS BEDDING, F.R.P.S.

THE forty-fourth annual issue of THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC will be published on December 1. This year's ALMANAC reached a total of 1,604 pages, and the entire edition of 25,000 copies was sold out before publication. Of no other photographic book ever issued can two such unique facts be recorded. The edition for 1905 will also consist of 25,000 copies, and will number 1,612 pages, thus constituting the volume the largest yet published.

The following are some of the important features of the forthcoming volume:—

1. The frontispiece will be a portrait study specially produced for the Almanac by Mr. Furley Lewis (Medallist at the Royal Photographic Society's Exhibition, 1903).
2. The first editorial article, which deals with "The Present and Future Position of Photography," discusses the probable growth and expansion of all branches of modern Photography.
3. The second editorial article supplies a succinct illustrated history of the BRITISH JOURNAL OF PHOTOGRAPHY and its Almanac ever since their foundation.
4. Important articles and papers by the following, amongst many other well-known photographic writers, are included in the volume:—

Abney, Sir W. de W., C.B.	Dormer, J.	Hartmann, Dr. J.	Nelson, E. M.	Salisbury, J. W.
Baker, T. Thorne.	Duncan, F. Martin.	Henderson, A. L.	Neuhaus, Dr.	Salmon, P. R., F.R.P.S.
Baldock, J. H., F.C.S.	Dunmore, Edward.	Hepworth, T. C.	"Ons."	Selby, H.
Barker, J.	Dunmore, G. H.	Hett, Charles Louis.	Payne, A., F.C.S., FRPS	Slater, P. J.
Beasley, B. F., M.A., F.L.S.	Everitt, Philip.	Hodges, John A., F.R.P.S.	Perkins, Rev. T. M.A.	Smith, J. H.
Bird, J. J. S., B.A.	Foxlee, E. W.	Joly, Dr. J., F.R.S.	Pike, J.	Sutton, C. T.
Blaesbroek, G. Van.	Gamble, William.	Jourdain, Philip E. B.	Piper, C. Welborne.	Tilfor, J.
Bolas, Thomas, F.I.C., F.C.S.	Goodchild, Rupert.	King, Horatio Nelson.	Procella.	Wall, E. J., F.R.P.S.
Brosig, P.	Gower, H. D.	Leisk, J.	Rheinberg, Julius.	Wallace, Robert James.
Brown, G. E., F.I.C., F.C.S.	Graves, Frederick.	Lockett, A.	Richards, T. W.	Walsley, W. H.
Channon, H. J.	Hackett, J. T.	Mills, Edmund J., D.Sc., F.R.S.	Rohr, Dr. Moritz von, D.Phil.	Watkins, Alfred.
Clifton, Edgar, F.R.P.S.	Harris, Geo. T., F.R.P.S.			Valenta, E.

5. Numerous illustrations, including Portraits of many Celebrities in the Photographic World.
6. An exhaustive Review of recently introduced Photographic Apparatus.
7. Sections devoted to Practical Points; Epitome of Progress during 1904; Formulæ; and a great mass of Miscellaneous Information.

EX CATHEDRA.

"Instantaneous" Photography. The "Photo Gazette" for October 25 reproduces some very interesting instantaneous photographs of an exhibition of the "looping the loop" description, now being given at the theatre Folies-Bergère at Paris. A lady performer, in a car of the automobile pattern, takes a flight down a path inclined 45 deg.; the impetus is so great that when the car leaves the path in an inverted position, it takes a leap of about forty feet in the air, to a continuation, and there, in closing its journey, is brought again into its normal position upon reaching the ground.

* * *

A New Lens.

We see that the Rathenow Optical Company has registered in Germany a pattern for a lens with spherical and chromatic correction. The specification describes it as symmetrical, or nearly so, and that both halves are formed of a biconvex cemented to a biconcave element. We should like to know wherein the novelty consists. Similar lenses have been used in the past. As proof of this we may refer to the late J. Traill Taylor's book, "The Optics of Photography," wherein, on page 89, the sketch is given of such a combination, which was used by him in conjunction with a set of negative lenses to obtain a range of foci. We do not suppose the Rathenow Optical Company would make such registration without some definite end in view, but at present we fail to see what that end may be.

* * *

Packing Plates.

The material by which sensitive dry-plates are separated from each other is a matter of much moment to the maker, and a variety of methods of packing exist, for all of which there is something to be said on theoretical or practical grounds. Probably nobody is free from action on the emulsion as a surface of that emulsion itself, and the method adopted by some makers of sending out plates with the glass cut through but the unseparated film of emulsion turned over on itself is its own justification. Other innocuous materials are paraffined paper and paper which has soaked in solution of potassium bichromate, washed, exposed to light and again washed and dried. The latter is obviously uncommercial, and the former is expensive. Dr. Miethe now suggests paper saturated with a solution of shellac in borax, which, it is claimed, effectually obviates any chemical action of chlorine, hydrogen peroxides or acids in the paper. The solution of the shellac can be applied with a brush by machinery.

* * *

Packing Roll Films.

Herr Schulze, of Dresden, draws attention in "Appolo" to a very exceptional experience he has had with some roll films sent to him from South America. To preserve them from the damp and the deleterious action of the atmosphere they were sorted into series, packed in tin cases, and soldered down. Upon opening the first case the lid was blown off, with a loud report, across the room, and the roll of films which was enclosed caught fire. This parcel of films was of course spoilt. The explanation seems to be that the celluloid, upon which the emulsion was spread, generated fumes by the heat applied to the box when it was soldered down. These could not escape, and when the box was opened the friction ignited the gas and caused an explosion, because of the smallness of the hole through which the gas escaped into contact with the air. From this it appears that the boxes in which films are packed should not be soldered, and that it is preferable to enclose them in a second outer case, which may then be soldered down in the usual manner.

The New Ortho-The chemical changes which can be run on the cyanin dyes and their compound promise to supply the maker of orthochromatic plates with more sensitizers than he can find time to examine. The latest of the new dyes to appear is one from the Aktien Gesellschaft für Anilin Fabrikation, the firm associated with goods of the trade-mark "Agfa." According to the "Chemiker Zeitung," the dye is produced by a process of mild oxidation. The starting-point is an iodide or other salt of a chinolin in which a methyl group has been introduced into the pyridin nucleus. This, either alone or in admixture with the unaltered compound, is treated with potassium ferricyanide (or persulphate) in alkaline solution. For example, 20 gms. of chinaldin alkyl iodide is dissolved in 500 ccs. of water, and 25 gms. of potassium ferricyanide added with 50 ccs. of strong caustic alkaline solution. The product of the reaction separates in lustrous plates, and is freed from impurities by extraction with ether. This leaves a dye which dissolves in alcohol to a blue colour or in dilute alcohol to a blue-violet. It exhibits an absorption band in the orange, another in the yellow and a third weaker one in the green. It is claimed for the new dye that it sensitises further into the red other cyanin colouring matters.

* * *

A Hint to Advertisers.

An advertisement, which should be of great use to the consumer, is to be found in "Photographische Industrie" for October 26. The Aktien Gesellschaft Aristophot gives graphic curves showing the time of development and the dilution of the developer which should be used for obtaining specified tones with their slow-printing gas-light paper. The tones are given in a column at the side, and the curve which runs obliquely from top to bottom carries a number of perpendiculars which, on the top line, indicate the time of development in minutes. In another table, by the side of the one we have just described, a diagonal line runs from bottom to top and carries perpendiculars indicating of the top line the concentration of the developer, sold by the company, to obtain the tones indicated in the table as already mentioned. These tables are of great simplicity and show at a glance how to obtain the desired colour of image. A given standard of density is of course assumed and the photographer must find out this for himself. There should be little difficulty in regard to it, as a print may be made cut in strips and developed with a solution to which additions of concentrated developer are made according to the table. If the figures, which are given for the standard tone obtained, are then taken as units, the other colours should be obtainable by as simple calculation. Tables of this kind may be made for many purposes in photography, and we think manufacturers would find them very useful as a means of exposition.

* * *

Viewing Stereoscopic Pictures without a Stereoscope.

Some little fillip may be given to this still little adopted but most attractive branch of pure photography by a paper recently read at the Paris Academy of Sciences by M. J. Violle. The accounts to hand are but brief, not to say imperfect; but we learn that a twin lens camera is made use of. Directly in front of the plate M. Violle places a grating ruled with black lines, at the rate of one hundred to the inch. The negative then consists of the two pictures, across each of which is seen a set of fine bands. Prints are taken and mounted in the usual manner, and when they are looked at through a similarly ruled plate it is stated that an image with the usual stereoscopic effect is seen. Failing the possession of fuller in-

formation, it is difficult to see why such relief should be seen under any position of the grating; but no doubt fuller particulars will soon be to hand. If anyone should wish to make the experiment, we do not see why the grating should not be made by photographic reduction to a suitable size of a series of ruled lines on a larger scale. It is scarcely probable that diffraction difficulties would intervene when it is considered how readily process-block prints can be reproduced by photography, showing the dots perfectly on a smaller scale than this. Anyone in possession of a singly-ruled screen for block purposes could try to make such a view without further apparatus being needed, and a single-lens camera used in a suitable manner should be all that is necessary for producing the views.

* * *

The Manipulation of Celluloid.

The many uses to which celluloid is put in photographic work would render any instructions for working it very useful, and quite recently, in the pages of the "Scientific American," full details were given as to how to soften and cement this useful substance. If it be merely required to bend it, it will suffice to place the celluloid in boiling water. If, however, it be steamed at a temperature of about 150 deg. Fahrenheit, it becomes so soft as to be able to be kneaded like dough; and so enable wood, metal, or other material to be embedded in it. When scraped fine and mixed with 90 per cent. of alcohol it assumes the character of a cement, suitable for joining pieces of celluloid together. If it be required to make a solution suitable for varnish, etc., a choice may be made of the following formulæ:—(1) Five grams of celluloid, with sixteen grams each of amyl acetate, acetone, and sulphuric ether; (2) celluloid ten grams, camphor four grams, sulphuric ether, acetone, and amyl acetate thirty grams each; (3) five grams each of celluloid and camphor and fifty of alcohol; (4) five grams celluloid in the same quantity of amyl acetate; (5) five grams celluloid and twenty-five grams each of amyl acetate and acetone. If celluloid be dipped in water just about as hot as the hand can bear, it will soften sufficiently to enable it to be hammered without injury. We may note that we have seen a recommendation to dissolve celluloid in acetone alone to form a varnish: it is perfectly soluble in that menstruum, but, with all the samples of acetone we have tried, the result has been useless, as the varnish so made dries "papery" or white, just like collodion made with pyroxyline from too weak acids.

* * *

A Camera with Quartz Lenses.

As is well known, lenses of glass arrest the ultra-violet rays to a large extent, and for experimental work in that region are almost valueless. Where special investigations are being made in that region quartz lenses become a necessity. Some articles are now appearing in "Nature" describing a series of photographs of stars taken to ascertain their chemistry by temperature, and in last week's issue an interesting illustration is given of a camera fitted with a quartz lens of $2\frac{1}{2}$ in. diameter and 18 in. focal length, in front of which is placed a 2 in. 30 deg. prism of calcite (the well-known Iceland spar is the purest form of calcite). This prism is cut so that its first face is perpendicular to the optic axis of the crystal, and is so arranged that the incident rays are normal to this face; all the rays, therefore, pass through the crystal parallel to the optic axis, and there is consequently no double refraction. By this means it became possible to utilise not only the length of spectrum in the violet, but the relative brightness of the various parts to a different degree than before. The design in using this arrangement, it may here be noted, is found in a quotation from Sir George Stokes, the substance of which has been fully borne out by

more recent work: "When a solid body such as platinum wire, traversed by an electric current, is heated to incandescence we know that as the temperature increases, not only does the radiation of each particular refrangibility absolutely increase, but the proportions of the radiations of the different refrangibilities is changed, the proportion of the higher to the lower increasing with the temperature." Obviously, failing the employment of some such arrangement as just described, no photographs of definite value could be obtained owing to the absorption of the rays of the region under examination by a glass lens. For the same reason a platinum wire is a better source of light of high intensity than the filament of an incandescent electric lamp, as the glass of the bulb would also absorb the violet rays to a large extent.

* * *

British Trade Abroad.

Dealers in photographic apparatus would do well to keep their eye upon "The Board of Trade Journal," which is published weekly at the small price of one penny, for from it they can pick up many hints as to export trade and foreign requirements, which are not likely to reach them from other sources. We learn, for example, from the issue of October 27 that Austria is sending photographic printing paper to Poland, and as this country alone is mentioned, it may be presumed that it has secured the whole of the trade. It is expressly stated by the French Consul-General at Warsaw that all the photographic materials used in Poland come from abroad, mainly from Germany, but the United Kingdom has "a small share in this trade." On another page, with regard to China, it is stated that the only way to secure contracts in that country is by personal canvassing, and the same principles apply in the case of firms wishing to get into touch with Government establishments there, particularly in the case of any articles which require technical knowledge or skill. The Chinese Government prefer to deal direct with manufacturers, local firms having no facilities for bringing such goods to the immediate notice of the authorities. The importance of personal persuasion and judicious advertisement is insisted upon, and incidentally the methods adopted by the sellers of an American sewing machine, and by the representatives of an American tobacco company, are held up as examples of "push" worthy of imitation. The sewing-machine people have their machines working in the open shops in the native suburbs of the Treaty ports, while not long ago the tobacco people made a demonstration up one of the rivers in gaily be-decked house-boats, distributing samples and placards as they went along. This procedure could hardly be recommended for photographic goods, but the lesson may be taken to heart that business will not ensue unless personal energy is expended in the efforts to obtain it.

* * *

The Permanence of Silver Prints.

The keeping quality of so-called gas-light papers is rather important and in these days of struggle for colour effect, the following remarks by Dr. R. E. Liesegang, which have appeared in several German photographic newspapers deserve attention: "Baceland asserts as a result of the examination of the toning action of a mixture of hyposulphite of soda and alum, that such prints are very unstable, when they are produced upon chloride, or chloro-bromide of silver (without an excess of silver nitrate) by over-exposure and a weak developer. According to my experience, this conclusion, which Baceland has deduced from his studies of Velox paper should not be taken as of general application. Emulsions of unripened silver haloids may be made, which give prints of exceptional permanence. The difference can be partly explained

physically. If papers of the Velox kind (Velox, Lenta, St. Lukas, Tula, etc.) are developed with hydroquinone-soda, well restrained with bromide of potassium, the prints will be red to yellow, whereas with metol-hydroquinone or edinol, the colour will be a very deep black. Their strength is not even approximately comparable with that of the black prints. It is evident that the permanence of the former under the same conditions, must be inferior to that of the black. If we are able to increase the strength of the image, the keeping quality must also increase. This is impossible with the papers of the Velox class, which we have named, as the purity of the colour is sacrificed at the same time. The addition of a more active reducer to the developing solution (metol, edinol, etc.) introduces a certain amount of black. On the other hand, prints of pure colour, having great depth, may easily be produced with chloride emulsion papers differing chiefly in their preparation from so-called pan paper. Prints on this paper, which theoretically should be the most unstable, on account of the fineness of the particles of silver, have not shown the slightest change, although they have been kept six years. The exceptional significance the depth of the print has for its permanence, may be inferred from the following. Before gold-toning was used, the photographs produced upon silver by printing out, or physical development, were almost all treated with a freshly acidified fixing bath, for toning purposes. There is some inclination to surprise at the excellent colour of these prints, which were made forty or more years ago, because of the sulphur toning to which they were doubtless submitted. The pictures are from negatives made by the wet collodion process. Prints from negatives of the much thinner gelatino-bromide description could not be treated in this way, without fear of fading within a short time."

CARBON TRANSPARENCIES AND RETICULATION.

At the last meeting of the Croydon Camera Club the subject dealt with was the making of positive transparencies for the subsequent production of enlarged negatives. In the course of his remarks the lecturer pointed out that if the gradations of the original small negative were to be preserved in the enlarged one, then an intervening carbon transparency, he thought, was almost compulsory. There is very little question that, so far as the gradations in the negative are concerned, they are better represented by using a carbon transparency than one by any other process, because here we save the image not only composed of a colour but by varying thicknesses of it—the carbon image being, in fact, a picture in more or less relief according to its gradations. If practical evidence were wanted to prove that carbon transparencies are the best for producing enlarged negatives from, it is supplied by the fact that they are the ones used by all the large firms that make a speciality of enlargements by way of enlarged negatives.

There is one passage in the report we gave last week to which we will call special attention—indeed it is the sole object of this article. The lecturer said that "trouble might, and frequently did, occur with reticulations of the film, but these, as a rule, did not record themselves, provided a daylight enlarging apparatus was employed. With artificial light and a condenser, the opposite frequently prevailed." But many carbon slides are used for the lantern, when, of course, the same conditions obtain as in the enlarging lantern, and it is manifest that what would be fatal in the one case would be equally so, and in an exalted degree, in the other. Now there is no reason

whatever why there should be any reticulation at all, if the process is worked as it should be for the production of transparencies.

As at the present time many will be making carbon transparencies for the lantern, as well as for enlarging from, we shall here give a few practical hints on the working—specially with regard to the avoidance of the trouble which it seems is sometimes met with by novices—and referred to at the Croydon Camera Club. We shall at once assume that our readers are familiar with the working of the carbon process. In the first place the glass to be used must be coated with a substratum of insoluble gelatine, and the omission of this is the basis of all the trouble met with of the reticulation of the film. The best substratum for the purpose is a weak solution of gelatine—say, one ounce to a pint of water—with sufficient of a solution of bichromate of potash added to give just a pale sherry colour. A stock solution of this will keep good, if kept in the dark, for some time, and will only need to be warmed when required for use. It is easy of application; all one has to do is, after the glass is cleaned, to pour a little of it on, drain off, and allow to dry in full daylight. The solution may be applied to the dry glass, or it may be poured over, once or twice, while the plate is still wet. This will perhaps be the least trouble to many. Those who supply carbon printing materials now, we believe, supply plates ready substratumed for the purpose at quite a nominal cost. This will prove a convenience to those who do not like trouble.

After the tissue has been exposed it should be coated with plain collodion. This is a very simple operation. The tissue is slightly bent up round the edges to form a kind of tray, and the collodion flowed over and drained off at one corner and allowed to rest, in the dark of course, until the solvents have evaporated. The picture is then dealt with after the ordinary manner of carbon printing. We are quite aware that successful carbon transparencies are often made without either the substratum or the collodionising, but the fact remains that the larger firms, whose speciality is making carbon transparencies for enlarging from, universally employ this system. If professional workers, with whom time is money, find it worth their while to incur this little extra trouble, it may fairly be assumed that they find it advantageous, in producing the finest work, in their daily practice. With a substratumed plate, and collodionised tissue, even boiling water may be used in the development, if necessary, without the slightest fear of reticulation or frilling at the edges of the picture.

With regard to the exposure for transparencies for enlargement, it may be mentioned that it should be very full—quite three-times that required for paper prints from the same negative will be none too much, even a little more is sometimes better. For lantern slides less will be sufficient—indeed is imperative—say, double or a little less. The appearance of the finished transparency for the two purposes should be quite different. That for enlargement, when laid on white paper, should show no clear glass, except, perhaps, in the supreme lights, and even then will be none the worse for a slight tint or veil if strong and vigorous negatives are desired. Those to be used as lantern slides, when similarly laid on white paper, should have the high lights of quite clear glass, yet with perfect gradation through the half-tones. A suitable transparency for the lantern is useless for enlarging from, while the one suitable for that purpose is worthless for the lantern. It is often recommended to alum carbon transparencies for either purpose, but it should always be avoided, as it is harmful rather than otherwise. Transparencies made on special transparency tissues, containing much colour,

frequently show peculiar surface markings, sometimes called "damp marks." They show only by reflected light, and not at all by transmitted light. They are of no actual moment, but, however, they may be entirely got rid of by simply coating the picture with plain collodion; they then disappear at once.

ON THINGS IN GENERAL.

An interesting article, containing much useful matter and food for thought, that appeared in the last number of this journal over the signature of F. Grenfell Baker is likely to elicit some amount of protest. Mr. Baker writes:—"In photographic materials . . . the purchasing public still demand the best, and that best cannot now be procured from our home markets." Now, as this is written it can only bear the meaning that a better camera is purchasable abroad than is made in this country. Surely he is referring to the cheaper class of instrument, and if so, he may probably be inclined to make a correction in that direction, for, though it is true that a cheap foreign-made camera may out-class an English-built one at the same price, I am sure every one conversant with British workmanship as applied to cameras will agree that it is still the case that a first-class British camera surpasses every camera in the world. It is true that such a camera is likely to be costly; but that is not the point. It is, however, a question whether instruments of the highest character are not priced at such a prohibitive rate as virtually to restrict their sale to small proportions. When, by the aid of plenty of capital, a firm can sink sufficient money in the purchase of machinery for producing the various parts of a camera at a low rate, it is obvious that such manufacturer can turn out a good instrument at a low price; but that is quite a different affair from a question as to "Where are the best cameras made?" No; the reputation built up by a past generation of camera-makers for cameras made in this country is, happily, still deserved by their successors. A camera-maker who, when on his death-bed, insisted upon every instrument turned out of his shops being brought to him and carefully examined before being sent out—and it is not so many years since such a one died in the heart of London—is a fit representative of the highest class of cabinet and optical work which has long been peculiar to this country, and he has his successors.

In the pages of the same number appears a paper by a writer whose articles are always instructive or interesting, which appears to need a little elucidation. Speaking of the cutting prices that are so unfortunately common, he narrates two personal experiences, which may be briefly put as follows: He was offered two guineas for taking a set of a dozen photographs, but declined the commission. In the next paragraph he tells how he offered to take twenty stereo negatives, and print therefrom forty sets of prints (on paper and glass)—that means eighty prints altogether. His action in regard to these prices, is so contradictory that possibly the "Amateur Optician" will explain the discrepant quotations.

There has been a good deal written lately about the quick drying of negatives, especially as regards the use of methylated spirit for the purpose. Now, in careful hands it is incontestable that the process is of great value, though it is liable to a very grave drawback in the form of the production of a white deposit between film and glass, which entirely ruins the negative if not removable. The trouble of the matter is that these markings do not always make their appearance, but if the plate, to expedite the drying, be warmed, and to a point only that is still bearable with the hand, the chances are ten to

one that the deposit will be seen. Those who have met with such a *contretemps* should know that it is not irremediable (though the original efforts for despatch are then frustrated), for if the negative be placed in water for a minute or two the stain will disappear, and will not be seen when the negative is dried in the ordinary fashion. The annoying thing is that the time lost over the operation just occurs when it can be least afforded. I have never yet tried the plan of preceding the "spiriting" by a preliminary bath of formalin solution, though I think it would solve the difficulty, seeing that the negatives could, after the formalin, be dipped in hot water, which would effectually eliminate the last traces of hypo which in all probability are the cause of the trouble. It has been stated that negatives, after the formalin treatment alone, can be dipped in hot water and then dried by the fire in a couple of minutes, a statement that is all nonsense. It takes several couples of minutes before a negative will dry at the fire, and even then there is a risk of spoiling it if made too hot, as, though it may not melt, the outlines of the features and other parts give way in a peculiar manner, the texture becomes coarse, and strangely enough the density increases to a considerable extent.

Some reference was recently made to photographers making "spec pictures" and offering them to their sitters as one way of increasing business. At one time this was largely done by photographers, but one hears less of it now than a few years ago, possibly from its too great resemblance to the "free sitting" system. I know of a case where a photographer tried the plan with a beautiful negative he had of a lady sitter, and he got such a rap over the knuckles as made him vow never to attempt it again. The lady, instead of buying the picture, returned it with such an indignant letter that his ears burned for an hour after.

The abstract of the pamphlet issued by the British Weights and Measures Association forms instructive reading, and advances very grave reasons why the metric system should not be adopted in this country, but their case is weakened by the putting forward the objection that such an immense loss and expense would be brought about by the change. They lose sight of the fact that this objection would apply to any change whatever, oblivious of the fact that if it were admitted, for the sake of argument, that the change were advisable *per se*, such considerations would have to give way. When the present "imperial" system was introduced the same argument applied, but it was adopted and the loss was suffered. Their strong argument is the greater practicability of the present system and the entirely unserviceable nature of the metric system for domestic and general use compared with the imperial system, and its very practicable units and multiples. The crucial point is that the metre is not a useful unit, while the foot and the inch are ideally practicable measures. The only point really worth considering is—Would the change, if made, or would it not, tend to increase our foreign business? For the purposes of everyday life our own system is about as useful as it well could be. The decimal system is, in a sense, a craze for a theoretical perfection of principle, which has been carried out to an almost absurd length. Thus, the Fahrenheit system of thermometer marking is very illogical and the Centigrade, with its freezing point made zero, is excellent in theory; but a Centigrade degree is too large, and the minus degrees are liable to create confusion. Of course, there are minus degrees in the Fahrenheit system, but they do not occur with any considerable frequency, even in cold countries.

I was much struck by the editorial remarks on the "old masters," examples of whose work turn up in such unexpected places. I believe, however, that if any one sells a valuable

work of art—such, for example, as an oil painting—in ignorance of its value, at a very low price, he can recover from the buyer a fair proportion of its value. It is, however, in an opposite direction, very amusing to see the veneration which some worthless daub receives from an ignorant owner. I was once asked to photograph a painting “by Vandyke,” of Tim Bobbin, a well-known Lancashire character, who was born and flourished long after that artist’s death!

As the lantern season is upon us, I may take the opportunity of drawing attention to a detail of practice too often lost sight of, even when once known. Everyone is familiar with the nauseous smell given off by lanterns with an oil illuminant. There are two main causes of the odour, each being remediable. First, the oil ascends the wick by capillary attraction, and if the latter be left above the level of the enclosing metal work, it slowly diffuses out of the wick, and gradually spreads by reason of its thinness, over the whole of the interior. When the lamp is lighted and made hot this oil vapourises, and contaminates the atmosphere of the whole room. The remedy is, when putting the lamp away, to rack the wick well below the level of the metallic part, so as to give no opportunity for the oil to ooze outside; there will then be none to evaporate. The second cause is still simpler. One is so used to turning down the light in a gas burner that there is a natural tendency to do the same thing with the wick of a petroleum oil lamp. But this will not do at all. Such a lamp is constructed to burn with the light turned on full, and the length of chimney, and the amount of air supply, are arranged in accordance. If the light be turned down, the air supply is abnormal, the combustion is imperfect, and gradually there is given off that peculiar penetrating emanation which has such an irritating effect on the organ of smell. When the lamp is of a small simple pattern with a narrow circular chimney, we have seen the air supply lessened by placing a penny part way over the chimney top, thus lessening the draught to an extent that permitted the turning down of the flame.

The remarks upon half-tone blocks also are very timely. This is a branch of business which photographers might well push to advantage. If they would get the subject well up they might often get orders for blocks from their customers, especially if they were able to give the printers a tip or two. But it must be confessed that printers are very like photographers—they know everything. I scarcely ever met a photographer who, when in the course of a friendly conversation I gave a useful tip of my own, did not reply, “Oh, yes, that is a capital plan,” as though he had known it for years. So it is with printers; a man who never had a process block in his fingers will with a light heart undertake to give you a number of perfect prints, though he has no idea of the interdependence of and the need for close selection of ink and paper for the purpose, and has no acquaintance of the mysteries of underlay and overlay as regards such a block, and will, when he has obtained something of a sort from the blocks, no doubt before putting the blocks away, clean the ink off with the same caustic alkali that he uses for stereos and type! I know those printers.

The P.P.A. deserve every praise for the labour they have expended over the excellent syllabus of questions, etc., as to competence of assistants—a burning question to many masters who have been at times almost beside themselves in consequence of the employment of unskilled hands, whose demands and effrontery have been in inverse ratio to their knowledge and experience. The suggestion that “constructive criticism” is the kind that is wanted is neat. It is so very easy to pull a

thing to pieces; it is so much more difficult to mend than to end, to plagiarise a well-known political saying. One little thing occurred to me. When an employer is asked about an assistant’s optical knowledge, one immediately thinks of some photographers one has known who know as much about optics and the powers of a lens as a hippopotamus does of the Greek digamma. What is the value of their opinion to an assistant who knows a good deal more about “that rot,” as it would be termed, than they do themselves? All the same, my individual thanks are offered to the Committee of the P.P.A. for the labour they have already given to what, I am afraid, will prove an utterly thankless task. Such is human nature!

FREE LANCE.

THE SCOTTISH PHOTOGRAPHIC FEDERATION.

SCOTLAND has been known but slightly to the photographic world as the residence of good photographers. Although such names as J. Craig Annan, William Crooke, Archibald Cochrane, J. M. Whitehead, and several others are household words in photographic circles, still these are rather considered as examples of the *rara avis* than as inherent parts of the body photographic in Scotland. The general body of Scottish photographers and the class of work executed by them were comparatively unknown to British photographers until the Scottish National Salon, held at Perth this year, burst on the photographic world, and proclaimed the fact that Scotland was an entity to be considered, and proved that, relying wholly on native talent, it was possible to hold an exhibition that was creditable to the nation, and quite fit to rank alongside the established London shows.

The Scottish Photographic Federation, the body to which the National Salon is due, is a plant of recent growth, strong and healthy. The support accorded to it is such that it can now without any undue assumption, claim to be the representative photographic body in Scotland. A body that can attain this distinction in so short a time may well merit the attention of the readers of the *BRITISH JOURNAL*, and this article is written with the view of telling the story of its birth and growth, with some notes on its aims and objects.

The movement really originated in a proposal, made by the Brechin Society, to form a local federation—confined to the societies in North-Eastern Scotland. The Dundee and East of Scotland Association, as the senior society in the district, at the request of their Brechin confrères, convened a meeting in Dundee to consider the project. At that meeting it was agreed, on the motion of the Blairgowrie and District delegates, to give the Scottish societies an opportunity of making the movement national, and Mr. John B. MacLachlan, Blairgowrie, was instructed to make the initial arrangements for a meeting of representatives of the Scottish photographic societies at Perth.

All the societies of which the *pro tem.* secretary had any knowledge were written to, with the result that on January 17, 1903, twenty-seven delegates from fourteen societies in different parts of Scotland met at Perth, under the chairmanship of Mr. Henry Coates, President of the Photographic Section of the Perthshire Society of Natural Science. After a free interchange of opinion, Mr. James M. Maclean, secretary of the Glasgow Southern Photographic Association, moved: “That this meeting is of opinion that a Federation of Scottish Photographic Societies should be instituted, and hereby resolves to do so.” Mr. Vanessa C. Baird, secretary of the Dundee and East of Scotland Photographic Association, seconded. Although no amendment was proposed, the chairman decided to take a vote on the proposal, when twenty-one delegates voted in favour of the motion; six declined to vote, but some of these explained that they could not vote before consulting their societies. The motion then became the finding of the meeting.

Messrs. Maclachlan, Blairgowrie and District; Kirk, Brechin; Horn, Glasgow Southern; and Burns, Edinburgh (the latter to be elected if his council permits), were appointed to prepare draft rules, and send them to the societies for consideration before the next meeting. The delegates were then entertained to tea by the chairman. At that function Sir Robert Pullar attended, and congratulated them on the initiation of a work that was bound to be beneficial to Scotland.

At the next meeting, held at Perth on March 21, the draft rules were considered, and, after several amendments had been made—the result of a thorough discussion—were approved of. It was intimated that sixteen societies had definitely decided to join the Federation, which was officially baptised "The Scottish Photographic Federation." Office-bearers were elected, the next annual meeting was arranged for, and the work of the Federation really set in motion.

At the first meeting of Council, held on May 2, it was agreed to have a lantern slide competition open to the federated societies and associates, and to prevent any drain on the funds of the Federation at this early stage of the proceedings, the president, Mr. Coates, Messrs. Eadie (Monklands), Stewart (Kirkcaldy), and Macdougald (Dundee and East of Scotland) promised to give the prizes. A list of judges for the exhibitions and competitions of federated societies was drawn up, and the secretary instructed to write and ask their consent. It was also agreed to promote an exhibition at Perth, opening on the day of the annual general meeting, and a committee was appointed to make the necessary arrangements. At this meeting the first non-society associate was elected. It will be seen from the amount of business done at this meeting that the Council was thoroughly in earnest, and determined to so set to work that the Federation would justify its existence, and become a real power in the betterment of Scottish photography.

At the next meeting of Council the secretary reported as to the response of the societies to the request of the Council for lecturers, etc., available for federated societies. Considering the short notice given, the response was a hearty one, and resulted in the issue of a list comprising thirty-three items. The exhibition germ had now matured into a National Photographic Salon, confined to Scots at home and abroad—no entry fees and no prizes.

The lantern slide competition was well supported, 268 slides being entered. Messrs. Keighley, Bingley, and Clough, of the Yorkshire Union, kindly acted as judges. The president's prize—a solid silver shield—for the society competition, was won by Glasgow Eastern Amateur Association; Dundee and East of Scotland being second, and Paisley third. The associate competition resulted in Mr. W. S. Crocket, of the Glasgow Eastern, being first; Mr. Archibald Campbell, Dundee and East of Scotland, second and third, but as the rules precluded one competitor gaining two awards, Mr. John B. Maclachlan, Blairgowrie and District, gained third prize. The prize slides were formed into a circulating set, and proved a valued feature on the syllabuses of many of the federated societies.

The first Scottish National Salon had about 350 entries; from these the Council of the Federation—officiating as the selection committee—selected 207 pictures for exhibition. These were tastefully displayed on a specially arranged background, showing a frieze with a design embodying the Scottish lion rampant and the Scots thistle, in the Art Gallery of the Sandeman Free Library, Perth. Mr. Percy Lewis, Bristol, sent a characteristic exhibit of his work, as representing England, while a happy thought of the committee included in the Salon an admirable exhibit of the work of D. O. Hill, that great exponent of artistic photography, in a series of prints kindly lent by Messrs. J. Craig Annan, Glasgow; and Andrew Elliott, Edinburgh.

Mr. Coates, president of the Federation, opened the Salon in

presence of a large number of associates, and also a representative body of the municipal and social luminaries of Perth.

At the annual meeting, which was held afterwards, more work was initiated. It was agreed to have an excursion to Callander, and it might be remarked, right here, that that excursion was duly held on June 11, when between fifty and sixty associates, blessed with splendid weather, enjoyed the magnificent scenery around that favourite summer resort, as well as the cheerful good-fellowship that prevailed.

A portfolio was also initiated, and at the time of writing gives every promise of being a success.

A year-book was another innovation, and "The Blue Book," as it was decided to call it, has met with a most hearty reception. "The Blue Book," besides rules, etc., contains a list of "experts" willing to help associates in any difficulty in the various phases of photography of which they have made a special study. It also contains a list of exhibitions promoted by federated societies, and in that list it may be noted that the movement initiated in the beginning of this year, of having classes confined to associates, has been heartily taken up, quite a number of societies having made that a feature of their exhibitions. There is also a gazetteer, which it is to be hoped will be extended in next issue, giving brief details of different centres, dark rooms, and "reporters." These "reporters" are a decidedly useful novelty; their mission is to give full information respecting the districts under which their names appear to any intending visitor.

It was agreed to hold the next Salon in Glasgow. The 1905 Salon is to be held in the Galleries of the Royal Art Institute in Glasgow, opening on January 14. The selection of pictures has been delegated to a board of jurors—Messrs. Archibald Cochrane, Barrhead; J. Craig Annan, Glasgow; and Wm. Crooke, Edinburgh—instead of being performed, as on the previous occasion, by the Council. As far as can be judged at present, there is every prospect of the Glasgow Salon rivalling the success of the first one at Perth. The Salon committee are displaying praiseworthy energy in their work. They have already secured for the special "foreign" exhibits promises of representative collections from Mr. Alexander Keighley, Keighley, Yorks, and Mr. Alfred Enke, Stuttgart. It might here be mentioned, *inter alia*, that one of the features of the Salon is to invite an exhibit from one or more prominent men outwith Scotland, so that an opportunity may be thus given of comparing home work with the best from other countries. The home workers, it is needless to say, will be fully represented. The Lord Provost of Glasgow, Sir John Ure Primrose, Bart., himself an enthusiastic and successful photographer, has agreed to perform the opening ceremony.

Since May of this year, with the view of keeping the associates—widely scattered throughout Scotland—fully informed of the work of the Federation, the Council has published a monthly journal known as "The Secretary's Letter." The list of judges, lecturers, etc., has also this year been much extended, the present list comprising seventy-six entries.

The sixteen societies which formed the Federation at its institution had at the close of its first year's work grown to twenty-three; that number has again expanded, until at the present moment the Federation consists of thirty-three societies, all banded together to work for the good of Scottish photography and Scottish photographers.

This all too brief narration tends to prove that the Federation was wanted to join together the scattered forces of photography in Scotland, and the success attending its efforts proves that that labour has not been in vain.

Already there are visions of further accessions to its ranks in 1905, and it is to be hoped that the time is not far distant when all Scottish societies and photographers will join the Federation as a matter of course.

ALLAN BLAIR.

THE TESTING OF ORTHOCHROMATIC PLATES.

III.

I AGAIN take the liberty to quote Dr. Eder, and he says, in his "Spectralanalytische Studien über Photographischen Dreifarbendruck," read in July, 1902: "The spectrum experiments for the purpose of three-colour photography must be supplemented by tests on pigmentary colours. The ratio between the distribution of the luminosity of the solar spectrum and the light reflected from pigments has been determined for special cases, and several statements have been made. Yellow, at the Fraunhofer line D, in the solar spectrum has been estimated by various observers as from 9 to 31 times optically brighter than the spectrum blue at F $\frac{2}{3}$ G, and from 21 to 87 times brighter than the darker spectrum blue at G, whilst pigmentary yellow appears from 6 to 14 times brighter than blue; and yellow in the spectrum is from 19 to 40 times brighter than red between B and C, whilst pigments it appears, however, only from 3 to 7 times brighter. Again, as the relative distribution of the luminosity differs in the diffraction and prismatic spectra, the result is that all these experiments cannot give results which are immediately comparable as to the photographic value of colours."

Having thus far simply found fault, you may well ask whether I have not some remedy for the existing state of things to suggest. And I have. Now, you may well ask why, if this is the case, I do not show you results proving that the method is satisfactory. My only answer is that, whilst I early recognised what I thought was a satisfactory method, I could find no light which was, in the first place, approximately daylight and constant, and, secondly, that I have lived long enough to learn that the first duty of man is to earn rent for his landlord; his next duty is to earn boots and shoes and food for those dependent upon him; when he has done this and found a crust for himself, he can then find money for experimental work which does not bring in any of the above results. So far, I am glad to say, I have been able to discharge the first three duties, but I have not been able to find the extra pence for experimental work — or, rather, the necessary apparatus.

If Sir Wm. Abney's admirable plan of instituting an R.P.S. laboratory were carried through, such work as I have outlined could be done by private individuals and amateurs.

The chief difficulty I met with was the constant light source of the same colour composition as daylight; but, since the first part of my paper was drafted, Messrs. Kenneth Mees and S. G. Sheppard read a paper before the R.P.S., in which they stated that they had adopted a special form of acetylene generator as a light source, and described also an arrangement by which practically daylight is obtained. Their actual words are: "In working at commercial speed-finding, the box is fitted with a light blue screen, so that the spectral composition of the acetylene light used is reduced to be almost exactly the same as daylight, in order that orthochromatic plates may give numbers which, in regard to ordinary plates, represent fairly their behaviour to midday cloud light. Most orthochromatic plates give much too high speed numbers when these numbers are found in the ordinary way."

Again, during the discussion Mr. Mees stated that, "with regard to the standard light, as he was contemplating the sensitometer and its application to commercial work, he found it necessary to get rid of the difficulty caused by the fact that, it being impossible to use daylight for sensitometric purposes, the spectral composition of the light used for testing differed from that used in practice, and, consequently, the relative speeds of ordinary and colour-sensitive plates would be quite different in practice to those measured in the sensitometer."

Given this light, all that I would suggest is Dr. Eder's method of determining the relative blue and yellow sensitiveness of a

plate. The principle involved is merely the use of a sensitometric system such as Hurter and Driffield, and the division of the light by fluid cells into blue and yellow. This is the rough idea.

Dr. Eder uses a sensitometric method analogous to H. and D., and between his light source and rotating sector he places first a cell of known internal measurement, containing first water. The speed of a plate is then read, and this determines the absorption—or, rather, speed-reducing power—of the cell and solvent. Then the same cell—and this is important—is filled with ammoniacal solution of sulphate of copper, made by dissolving 20 g. of pure crystallised cupric sulphate in some water, adding sufficient solution of ammonia to make a clear solution, and making the total bulk up to 1,000 c.c.

The absorption of this filter is shown in the following diagram, and, as you will see, it extends from the red to 6½ F. In fact,

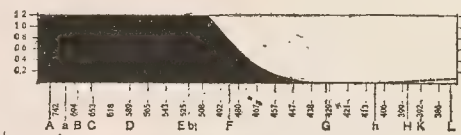


Fig. 2.

this blue filter practically passes nothing but blue and violet; what little blue-green passes is so weak as to exert but a negligible action.

Having thus determined what I call the ordinary or non-colour sensitiveness of a plate, we want to determine its ortho property, and this is done by filling the same cell, and proceeding in the same way, with a solution of 40 g. of neutral potassium

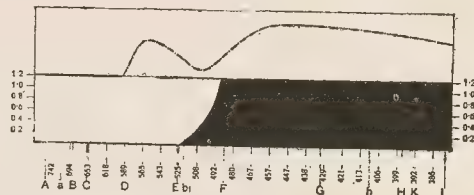


Fig. 3.

chromate in sufficient water to make 1,000 c.c. The absorption of this is shown in the accompanying diagram, and it will be seen that it extends nearly to F, whilst above is the curve of the sensitiveness of a normal ortho plate.

Thus far my suggestions have been merely those of Dr. Eder, but I would go further than he does, and I would again fill the cell with a solution of Tolan red, in the proportion of 1 : 4,000,

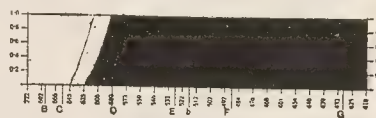


Fig. 4.

which absorbs all the more refrangible rays up to the D line, passing only orange and red, and I would again determine the H. and D. speed of the plate.

The result of an examination of the commercial plates conducted on these lines would be that we should know, not only the speed of an ortho plate compared to an ordinary, but we should also know its relative ortho speed in the same terms, and, if it possessed any red sensitiveness, we should know this in the same way.

A tabular statement of this kind drawn up by an independent worker would enable the user of an ortho plate to learn more than all the literature that has yet been published on the subject, because it would give reliable data. It would give also, not only the relative speeds to blue and yellow, but it would determine the characteristic curve of the plate when used as an ordinary and as an ortho plate, and it would enable one to just a yellow screen so as to obtain any given effect.

I hope that no one will misunderstand the purpose of my paper. It is not to decry the spectrum as an authority, but merely as a standard when camera exposures are subsequently made on the object. Considering that for over twelve years I have been playing with the spectrum, there is no one more likely to recognize its value as the first tribunal; and, if I may borrow an everyday simile, the spectrum is the magisterial trial which decides that there is a possible case, but the final tribunal must be Quarter Sessions in the shape of practical work.

In chemistry, when a suspected substance is sought for, the most delicate test is applied. This must be the case in photography, but having, by the extremely delicate test of the spectrum, found that a dye does orthochromatise, we must test its practical value, and, if it does not answer to this, then we can reject it or modify our opinion.

It is curious that a discussion should have arisen in "Photography" on this very subject within the last few weeks. I do not intend to summarise all that has been said *pro* and *con*, but it showed that there is a strong feeling in favour of a reliable system of ortho plate-testing, and against the hyperbolic claims made for them.

I would ask you to consider that until we get some system of orthochromatic plate-testing, which will give us definite, reliable data from a particular standpoint, and that a commonly accepted one, any rhapsodies in defence of or against the ortho plate from the point of view of "pictorial effect" are simply individual mental impressions. Colour is a non-existent substance; it is not the property of a substance, but the function of our eyes, and hence differs to an extent, possibly almost unappreciable, with each observer.

There will always be trouble in connection with this subject because it is complicated by the question of colour contrast and visual luminosity, the two being by no means synonymous. What I mean is, that whilst a particular colour may have a given visual luminosity under certain conditions, under others it may seem to be intensified or reduced. For instance, take the orange of a given brightness, and, in juxtaposition with a yellow of equal luminosity, it will look dull; but place it against its complementary blue-green of equal luminosity, and it looks far more vivid. This, if right, raises an important question as to whether we can ever render colour correctly, but it means considerable argument, more work, and experiments to prove the right or wrong. In any case, we cannot be worse off by having a commonly accepted and fairly scientific system of ortho plate speed measurement, and one which shall replace the glorious haphazard method of to-day.

I would also ask you to remember that, from some considerable experience in plate-using, I personally would never use anything else than an ortho plate. There is a difference, but at times a very subtle one, and I am convinced, to use the words of an old and respected member of the L. and P., that an ortho plate will do all that an ordinary will, and at times a great deal more.

I have no complaint against the ortho plate; it is merely against the extravagant statements made in its favour, and against the utterly unscientific and totally misleading method of testing it at present in vogue, that my notes to-night are directed.

Now, Mr. Chairman and gentlemen, I have come to the conclusion of my notes. I know they are incomplete. They are, at least, honest, and I make this claim in the face of the

fact that I am commercially interested in the manufacture of ortho plates; but, if anyone can find that I have put a bit of lead in the scale, I am here to be shot at. If I have done nothing else, I hope I have given you a topic for discussion for one evening, and, at least, not bored you.

E. J. WALL, F.R.P.S.

MINIATURES.

RECENTLY—or say for a little over twelve months—there has been a greatly increased demand on the part of the public for photographic miniatures, varying from the humble P.O.P. prints to expensive coloured work on ivory. Whilst this rush is on the question presents itself, "Are photographers making the most of what almost amounts to a boom?" We think in many cases the answer is no, and not from the professional underrating the profit to be made in this branch, but chiefly from the lack of business initiative from which the profession seems so prone to suffer. This should not be the case, for not only is the trade likely to be diverted from your hands if you are not wide awake, but the craze is spoiling trade in larger and more important work.

The miniature proper is, or should be, a complete picture in itself, and on account of its size, which allows the eye to take in every detail at once, the demands it makes on the photographer's skill is more insistent than that felt when making larger work. This view of a miniature—a thing apart—is not, however, the view taken by many professionals, and we will glance at a few of the many applications of portraits which are classed generally under the heading of miniatures.

Apart from the usual portrait known as a miniature, which may be used for table or be large enough for wall decoration and is also finished for keeping in a pocket case, they may be small enough to be used for the adornment of charms, brooches, pendants, and watch cases, etc. The actual process is of no great moment so long as it is capable of fulfilling the task imposed upon it. Frequently enough the so-called miniature, far from being a portrait specially taken with a view to this use, and with lines and masses arranged to compose well in the space it is required to fill, it is merely a copy of a larger photograph. In this case of course the photographer's hands are tied, and the best must be done with the original one happens to have. The actual copying is of course as usual, and being to a smaller size so much care is not required to prevent the grain of the original paper support showing, but it is not advisable to use a very small stop. This class of work, however, does not bring much grist to the mill, though unfortunately it is the more usual way of securing a small photograph.

The miniature proper is at present occupying the minds of the better photographers, and if you have the requisite skill and artistic taste you cannot do better than make a speciality of this line. Of course, on account of the extra skill required, a corresponding price should be charged. They may be finished as with an ordinary print or by any process according to price charged, but the photographer will be wise to use only the best processes for this work. Carbon on paper, ivory, or opal, smooth platinum-type, or sepia ditto, are the best for the work. The albumen process, on account of its rendering of the fine details so necessary for these pictures, is very suitable, and as we know from the specimens found in old albums, if properly made albumen prints are fairly permanent. These miniatures may be framed in the usual rims which are supplied in many patterns or may be mounted in the usual way. In this case the mount should be large and of very delicate lines, which preferably harmonise with colours of the print. The modern paper mounts give a very refined appearance to these miniatures, especially the vellums for sepia prints, which is altogether in keeping with the pictures.

To revert to the miniatures for charms, carbons on ivory are very effective. Ceramic enamels sell well and their appearance is especially suitable for charms and pendants. Although somewhat expensive in good businesses they go well. Although not such a good line as at one time, coloured miniatures on ivory are feeling the increased business now being done in small work. They should, however, be painted by a good firm if they are to be a credit to your establishment. No one wants to see a return of the crude efforts of some ten years or so ago. For this reason the tinted photographs, that is a water-colour wash on a bromide or platinum print, very different, by the way, from the coloured ivory with carbon base, should be eschewed or only accepted when very exceptionally done. The new semi-tints, i.e., usually sepia plat., with flesh and dress tinted, are much better, and with a deep rich background make fine pictures.

The small reduced photographs for personal adornment are of course made by nearly all photographers, but we are sure, and would impress it upon pushing business men, that there is a future before photo-miniatures if they are made by a man with artistic perception who has enough knowledge to fix into a small space the necessary essentials for a successful miniature. You may think they differ but slightly from an ordinary photograph, but a man who can make a perfect miniature must be very near the top of the professional tree.

To those who are thinking of taking up this line a few words on what we think constitutes a miniature, and the difficulties of its production, may be of use. As before mentioned, the difficulties arise chiefly from the fact that the picture is so small that the eye takes in every detail, and therefore sees the beauties and defects at once, differing from other photographic work in that one does not miss the defects on account of the good points. Therefore there must be no or at least very few and minor defects. This means that every line must be correct, detail must be delicate and present in full force, modelling, massing of light and shade both of figure and background must all be perfect and in harmony with the subject. All this you must admit is a tall order, and none but the cleverest can undertake the work with success. But is it not worth striving and working for? The trouble, care, and study which will be necessary cannot but improve your ordinary work, and surely in these times of keen competition this is heartily to be desired.

W. FOSTER BRIGHAM.

THE ST. LOUIS EXHIBITION AWARDS.

The following is a list of the awards in Group 16.—Photography.—Grand Prize.—(1) Captain Sir W. de W. Abney, K.C.B., F.R.S., (2) Walter Bennington, (3) A. Horsley Hinton, (4) Alex. Keighley, (5) the Royal Observatory, Greenwich, (6) the Royal Photographic Society, (7) the Solar Physics Observatory, (8) Sir Benjamin Stone, M.P. Gold Medal.—Ernest R. Ashton, Arthur C. Banfield, B. H. Bentley, Carine Cadby, Archibald Cochrane, Dr. Copeland, Reginald Craigie, the Cretan Exploration Fund, George Davison, Frederick H. Evans, W. T. Greatbatch, Karl Greger, Professor W. N. Hartley, Frederick Hollyer, Charles Job, the Geological Photographs Committee of the British Association, G. Lindsay Johnson, M.D., F.R.C.S., R. B. Lodge, Charles Moss, A. J. Newton, Newton and Co., Albert Norman, L.R.C.P., L.R.C.S., Dr. T. K. Rose, Edgar Senior, the Rev. Walter S. J. Sidgreaves, Dr. E. J. Spitta, J. E. Stead, F.R.S., the Survey of India, W. E. Wilson. Silver Medal.—Harold Baker, Mrs. G. A. Barton, David Blount, Will Cadby, J. H. Gear, F.R.P.S., Miss Constance Ellis, Charles F. Grindrod, the Viscount Maitland, F. J. Mortimer, J. C. S. Mummery, Ralph W. Robinson, Frank M. Sutcliffe, W. Thomas, T. Wright, Tempest Anderson, M.D., T. E. Freshwater, F.R.M.S., Douglas English, Dr. Vaughan

Cornish, F. W. Harbord and Alfred Campion, Captain D. Wile Barker. Bronze Medal.—John Henry Anderson, W. Smed Aston, Arthur Burchett, Eustace Calland, Lieutenant-Colonel J. Gale, John H. Gash, Bernard Moore, Ward Muir, William Rawlings, J. Cruwys Richards, James A. Sinclair, John Warburg, J. B. Wellington, Bagot Molesworth, F.R.P., J. W. Gifford, Great Eastern Railway, J. Hort Player, H. C. Carpenter, E. F. Law, the Photolinol Company, J. C. Coultas.

LUNAR PHOTOGRAPHY.

[Presidential Address to the British Astronomical Association.]

THE subject I have chosen for my address this afternoon is the history of lunar photography, to which I have added a few words the uses to which the photographs may be put. The discovery of the Daguerreotype process was announced in January, 1839, and the details were made public in the following August. In the following March Dr. J. W. Draper succeeded in obtaining a series of Daguerreotypes about an inch in diameter showing the principal formations. In 1850 W. C. Bond, with the assistance of Mr. J. A. Whipple, obtained a series of photographs about 2 in. in diameter with the Harvard 15 in. Merz refractor. These were shown at the Great Exhibition of 1851 and elsewhere, and a prize medal was awarded Mr. Whipple. The use of collodion was suggested by Legay in 1839 and from that time until 1876 the wet-plate process was almost exclusively employed. The first to apply it successfully in England to photographing the moon was Mr. Dancer, of Manchester. It was followed by Professor Phillips and Mr. Bates in 1853. The next year Dr. Edwardes, with the assistance of Mr. Forrest, and under the direction of Mr. Hartnup, commenced a series of experiments with the 8 in. refractor of the Liverpool Observatory. These were continued during the two following years by Mr. (now Sir William) Crookes. Several other English astronomers took up the work; but the most successful of all was Mr. De la Rue, who, as early as 1839, had obtained good collodion photographs. In 1857 Mr. De la Rue removed his telescope from Canonbury, where his first attempts had been made, to Cranford, and, having furnished it with clockwork, was able to secure much better results. Many enlargements from his negatives are still in existence, whilst the telescope itself and number of his negatives are preserved in the University Observatory, Oxford. All who had photographed with refractors had noticed that the best focus for the actinic rays was further from the object-glass than the visual focus; but it was Lewis Rutherford who constructed the first object-glass specially corrected for these rays. Rutherford commenced his experiments in 1858, and, although his results compared well with the best obtained previously, they were not good enough to satisfy him, and he speedily convinced himself that the fault lay in the correction for achromatism. He tried first the effect on a correcting-lens before the object-glass, then separated the two lenses of a visual object-glass. Neither of the methods giving satisfactory results, he experimented with a reflector, but this was soon abandoned in consequence of the tremors of the city and the rapid tarnishing of the mirror. In 1863 he undertook the construction of a photographic object-glass; this was completed by December, 1864, and in the following March he secured two photographs of the moon, which were at once seen to be far superior to anything previously accomplished. The amount of detail shown would cause them to take high rank even amongst photographs of the present day. The work of Henry Draper, so far as it applies to lunar photography, was almost contemporary with that of Rutherford. In the course of a visit to Europe in 1858 he was so much struck with Lord Rosse's 6 ft. reflector that, on his return to New York, he set to work in the intervals of his professional labour, to construct a mirror for himself. In the course of this work he ground and polished no fewer than one hundred mirrors of various sizes, the one finally selected was of great excellence, and 15½ in. in diameter. With this he obtained photographs superior to any other except, perhaps, those of Rutherford—some would not admit even this exception. From 1869 to 1871 he was occupied in the construction of a 28 in. mirror, with which a few very fine photographs of the moon were obtained; but from this time Draper devoted himself chiefly to the work of photographing stellar spectra, with which

this name will always be associated. In 1870 good photographs were taken by Mr. Ellery with the Melbourne 4 ft. reflector; Dr. Gould, at Condob, and Dr. Common, at Ealing, also got very fine pictures; but it is impossible to notice all who had done good work in this direction, and attention must be confined to those observatories which have given special attention to lunar photography, and have done most to make their work accessible to astronomers in general. Foremost among these is the Lick Observatory, which in 1896 commenced the publication of a photographic atlas of the moon consisting of enlargements from negatives taken with the 36 in. refractor between August, 1895, and April, 1897. These were made on a scale of 38.36 in. to the moon's diameter, this being the scale of Beer and Midler's map. Nineteen sheets have appeared, and the atlas is a most convenient one; but it is so long since the last sheet was issued that there is reason to fear that their publication has been stopped. The next great observatory to take up the work was that of Paris, where for the last ten years the great equatorial coudé has, under the direction of Messrs. Loewy and Puiseux, been almost entirely devoted to it. Many hundreds of negatives have been taken, but only the best are selected for enlargement. These are reproduced by heliogravure on a scale which varies from 1.19m. to 2.72m. to the moon's diameter. The sheets are large for frequent use, but are of great value for occasional reference. A much cheaper edition on a scale two-fifths that of the original is being published by the Société Astronomique de Belge, and forms the most convenient atlas for frequent use with which I am acquainted. A large number of photographs had been taken at Harvard with the 13 in. Boyden telescope; but whereas those taken at Lick and those taken with the equatorial coudé have been taken in the primary focus of the telescope at Harvard, it is usual to photograph through a 2 in. positive eye-piece, which enlarges the image about four times. This method has also been adopted by MM. Paul and Prosper Henry at Paris. With regard to the relative advantages of the two methods, it may be noted that to obtain a good negative it is desirable that the exposure be as short as possible, in order to diminish the defects arising from atmospheric disturbance and from imperfect following; this condition is secured by placing the plate in the primary focus of the object-glass where the light is most intense. But the image here is small, and must be considerably enlarged to bring out as much detail as possible in a reproduction. This enlargement is carried to such a scale that the grain of the plate becomes a prominent feature, and this is the more serious because, in order to render the time of exposure as short as possible, it is necessary to use the most rapid plates, and these have invariably a large grain—a grain so large as to be comparable with the images of the smallest objects the telescope will show. If the image is enlarged before it falls upon the sensitive plate the grain of the plate becomes much less conspicuous, and small objects can be more certainly detected; but a longer exposure is necessary, and the difficulty of obtaining a good negative is increased. An effort to overcome the difficulties has been made at Harvard by increasing the focal length of the object-glass. A telescope with a 12 in. photographic object-glass of 135 ft. 4 in. focal length was set up by Professor W. H. Pickering at Mandeville, Jamaica, and a set of negatives obtained with it in accordance with a scheme admirably conceived for producing a complete photographic atlas of the moon. Unfortunately, owing to various causes, the object-glass had to be stopped down to 6 in. and the time of exposure greatly increased. The plates are published in Vol. II. of the Harvard Annals and in Professor W. H. Pickering's book on the moon; but in consequence, probably, of atmospheric disturbance definition leaves much to be desired. Up to the present time there can be little doubt that the best results have been obtained by exposing the plate in the principal focus, and this, too, is the plan adopted by Mr. Ritchey, whose marvellous photographs have yet to be noticed. These have been taken with the 40 in. visual object-glass and a yellow colour screen. Mr. Ritchey watches the images of the moon by means of a totally reflecting prism suspended in front of the exposing shutter. When an instant of good definition is noted the prism is removed and the exposure made. In this way he has been able to secure much finer detail than has ever been photographed before. I have detected on one such of Ritchey's negatives a small crater on the floor of Ptolemaeus so difficult that, although the region has been under the special observation of the members of the Lunar Section for the last thirteen years, no one, so far as I am aware, had previously recorded it. Since seeing it on the negative, I have been just able to see it, and

to measure its position with a 7 in. reflector; but I should probably have overlooked it had I not previously known of its existence. An illustration of one of the uses to which photographs of the moon may be put is to be found in a recently issued number of the Smithsonian contributions to "Knowledge," in which Professor N. S. Shaler, of Harvard, gives "A Comparison of the Features of the Earth and the Moon." Professor Shaler commenced his studies of the moon in 1867 with the Merz 15 in. refractor of the Harvard Observatory; but since 1872 they have been almost entirely pursued by means of photographs, which he has found more convenient and more serviceable than the opportunities afforded by even such an instrument as the Harvard Merz. Many astronomers have endeavoured to form a consistent theory to account for the peculiar features presented by our satellite; but it is rarely that the question has been approached by an expert geologist, and this alone would afford good reason for welcoming such a work by one so eminent as Professor Shaler. Professor Shaler believes that the ring mountains are the result of volcanic action of a much less violent type than terrestrial eruptions: there were no explosions, but simply a quiet upwelling of lava of a very viscid character. The maria he believes were caused by the impact of large bolides, perhaps five or ten miles in diameter. He will not allow the possibility of any present volcanic action on the moon, nor of the existence of even the lowest forms of organic life. He seems to be unacquainted with the reasons on which selenographers have based their belief that the moon still has some slight atmosphere, and though his book will well repay a careful study, it is probable that selenographers will not agree with all his conclusions. He himself admits that many of them are debatable. Another use which may be made of photographs is for the determination of the selenographic positions of a number of well-marked points to serve as bases, either for the construction of a large-scale accurate map, or for the minute observation of selected portions which it is much to be desired that all who wish to advance our knowledge of lunar topography should make, and which cannot fail to yield a rich harvest of results. Dr. Weinek, of Prague, has shown how the photographs may be used for measuring the heights of mountains above the level on which they stand, and when a number of measures have been made of the same point on different photographs it may be possible to deduce its absolute altitude above or below some "mean sphere." By combining a number of such absolute altitudes it becomes possible to obtain an idea of the figure of the moon. And, again, by measuring the positions of a few points on a great number of plates, spread over at least two or three years, it may be possible to get a new determination of the moon's physical libration. All this is much more than could be accomplished by any one astronomer, but it is not too much for an association. Is it too much to hope that more members of the B.A.A. may be induced to take up some part of it? S. A. SAUNDERS, M.A., F.R.A.S.

A NOVEL METHOD OF PUTTING CLOUDS INTO LANTERN SLIDES.

THE making of lantern slides, fascinating work though it be, has its troublesome and worrying side. One of these is putting in clouds. My method, I think, has the charm of novelty, and I would like to give readers of the "B. J." the benefit of it, if I may. Lantern slides, as we all know (or should know), with blank white skies, are an eyesore, not to be tolerated for a moment by good workers; nothing looks so bad upon the screen. I will endeavour, to the best of my ability, to describe my method; fairly simple if one does it properly, but therein lies the cause of the worry previously alluded to. It is so painfully easy to do it improperly! Presuming the landscape of the slide is made to your satisfaction—which, with a good worker, is seldom the case—the next "item on the programme" is the selection of a suitable cloud negative (a quarter-plate one). Care must be taken to observe that this, when forming the cover glass, is lighted the same way as the landscape, that is to say, from the same direction. For instance, should the cloud negative be lighted from the right, it will, when bound to the slide, be lighted from the left, and vice versa. Your mind being easy on this score, place the quarter-plate cloud negative in contact with the already-made landscape slide, and observe which portion of it comes most appropriately into the

sky portion of the landscape slide, bearing in mind the warning previously given as to the lighting. Now, with a small paint brush, charged with water colour (red for choice) paint upon the back of the cloud negative the outline of the landscape lantern-plate seen through it. This is for the purpose of indicating the place to be occupied by a previously unexposed lantern plate, to afterwards form the cloud cover glass. The next thing to do is to observe if the cloud overlaps the landscape. Should it do so, then make another line in paint across the back of the cloud negative to indicate that that portion need receive no exposure; in fact, the portion below this line is eventually covered up to prevent light acting upon it. Now take a half-plate printing frame, with glass in it. The reason a half-plate is used is this, it enables the cloud negative to be moved about, so as to use any portion of the cloud. Take an unexposed lantern plate and (in the dark room, of course) place it film downwards, as in printing, within the limits of the painted lines (alluded to above) and put the back of the printing frame on in the usual way. You are now ready for the exposure—not forgetting to cover up that portion below what I had better describe as the "landscape line" painted on your cloud negative, and also mentioned above. Lay the printing frame upon a table, face downwards, and expose. Clouds having to be very thin in density, it will not require a lengthy one. In my experience, half of an ordinary wax match, burnt about six or eight inches above the printing frame, is ample, unless the cloud negative be very dense, which, of course, it ought not to be. An ordinary developer may be used to develop, but the development should only be carried, let us say, a quarter as far is necessary for the landscape slide. When the cloud cover glass is developed and fixed, place it against the landscape slide, film to film, but without permitting the two to touch, as one is, of course, wet; and observe if any portion of the cloud overlaps the landscape, shows through a mountain, house, or tree, for instance. Should it do so, then recourse must be had to a saturated solution of ferricyanide of potassium and hypo, which will, if carefully applied with a brush, and not used too strong, effectively remove all trace of the obtrusive cloud. This portion of the work is, however, very ticklish to do and only constant practice and a great deal of patience will successfully accomplish it. It is simplicity itself with what is known as a "Cirrus" cloud, but when one has to deal with clouds of the "Cumulus" description, it is far from easy. Some workers, however, contend that clouds should be made by reduction in the camera, for, by the contact method, the contention is that they "come out" too big in proportion to the landscape. There may be some truth in this, but I have never attempted it, and I should imagine it would be very troublesome, still more so than the contact method. It is, of course, quite unnecessary to add that the tone of the cloud, when developed, should match that of the landscape. In conclusion, may I express the hope that should any of your readers try my method, they will be successful?

HARRY HOLT.

PHOTOGRAPHING THE SEA BOTTOM.

It is natural enough that the recent tragedy in the North Sea should have aroused a strong desire for some investigation which would determine whether or not a disabled torpedo-boat may be lying on the Dogger Bank. To satisfy this desire certain suggestions have been made, as, for instance, that the shallows should be examined by dragging or explored by divers—suggestions by no means impracticable, but such as would assuredly entail not only much expense but a considerable loss of time, which at the present moment would not be willingly tolerated. There is another method, however, of making a survey of the sea bottom which is comparatively little known, writes the Rev. J. M. Bacon in the "Morning Post," and which does not seem to have suggested itself, though it could be adopted at a mere nominal expense and without any delay whatever. This method is that of photographing the actual shallows from a sufficient height overhead, and its practicability was fully tested by me two years ago in an experiment carried out, with the co-operation of the Admiralty, over the Irish Sea. It was precisely at this time of year, only in stormy weather and murky air, that objects on the sea bottom were clearly photographed, though lying at ten fathoms below the water's surface, and that surface strongly ruffled by a wind which had blown hard for a whole week. The photographic survey thus secured was, it should be mentioned, submitted for inspection both to the Admiralty

and to the Royal Society, and none but favourable criticism was passed on the results obtained. The photography in this particular case was carried out by a balloon, manœuvred across the sea; while a torpedo-gunboat was in attendance to render any assistance that might be required. In the case of the Dogger Bank, however, a reader and a far less expensive means could be adopted, which can be best understood when the rationale of the experiment has been explained.

THE NATURE OF CLOUDS.

It may not be generally known that in ordinary navigation, when some danger, as, for instance, a shoal, sunken wreck, or the like, is suspected of lying in a vessel's course but cannot be seen from deck, it is customary to send a man aloft, and the higher in reason that he can climb the further will his vision penetrate and the better will his eye command the view of any submerged object. And the cause of this may in part be at once made plain, for every one has noticed that in obedience to the laws of refraction, even in the clearest pool, it is only objects lying nearly vertically below which are seen with any distinctness, so that if, say, a sunken vessel were lying in a few fathoms of water and a man were looking down on it from a boat and floating somewhere just over its middle part, then that middle part might be fairly well seen, but the more distant parts fore and aft, being viewed at a slant angle, would probably be altogether invisible. If the observer were to be let up a quarter of a mile into the sky, however, and to look down thence, all parts of the vessel would now lie practically perpendicularly below and all would be equally well seen. The case is, of course, different when the surface of the water, being troubled, breaks up the rays which would otherwise pass through it. But the fact yet remains that when the eye is removed to a distance the distraction caused by the broken light largely disappears, and objects below can be seen more clearly. A very striking example, and so far proof of this fact, may be mentioned. Cloud is simply composed of particles of water mingled with particles of air, and though both separately are perfectly transparent, confused together they form a mass which stops and reflects back the light, and for this reason the illumined surfaces of clouds are white, yet in actual fact the stoppage of light is not so complete as it appears, and a thin veil of mist will behave precisely as the broken water's edge, obliterating the view at short range, but to a more distant observer allowing objects to be seen through it with tolerable distinctness. Thus it often happens that a balloonist, whose view of the outside world is wholly obscured by a shroud of thin mist, can be quite clearly seen by those at a distance. It should then be only in accordance with known fact if the secrets of the sea depths which hide themselves even from the trained eye of the sailor on board ship should become revealed to an aeronaut who will poise himself in space overhead, say ten times higher than the main-top.

OIL ON TROUBLED WATER.

But means may be readily adopted for very greatly reducing the disturbance on the surface of troubled water and of allowing vision to penetrate that surface. This is the time-honoured method of oiling the waves. So long and well has the truth of this method been established that we find it mentioned by Pliny as a fact turned to practical account in his day. Thus again so accurate and scientific an observer as Dr. Franklin calls attention to the same fact, which he verified by his own careful experiments one hundred and fifty years ago. On the same matter C. F. Gordon Cumming bears interesting witness, "Brought up," he writes, "in the heart of the Highlands, where the excitement of leistering salmon by torchlight on a dark night was a sport not altogether unknown even in days of Salmon Commissioners' and watchers and water bailiffs, we were well aware of the use often made of a good flask of oil in smoothing the surface of the deep brown pools in which the silvery fish lie all unconscious of the impending spear. And kinsmen returning from Bermuda have told us how the fishers there pour oil on the sea whenever the ripple prevents their seeing clearly enough to strike their fish, and also how those at Gibraltar do likewise to enable them the better to discern where the largest oysters are to be found." Should it then be desired to examine the shallows in so well defined and accessible a spot as the Dogger Bank it would be a simple matter to despatch any convenient boat with facilities for spreading oil—the required quantity of which is fabulously little—over the water bit by bit as it is examined. The method for conducting the photography remains to be provided. And here undoubtedly the readiest method is by utilising a kite. The height to which the camera should be elevated is, in my experience,

about six hundred feet. A box kite of very manageable proportions is well adapted for this purpose in an open sea, where sufficient breeze is not always in evidence, and in the exceptional event of actual calm the kite can be raised by the mere motion of the vessel. For the rest it is able to state from my own trials that practical details are of the simplest. The kite string is supplied by a twin wire, which is in connection with an electro magnet attached to the camera, and operating the shutter, the other end of the wire being connected up with a battery and push below under the control of the operator. A series of photographs, covering a very wide area, could in this manner be taken and developed within the daylight hours of a single day.

AMATEUR PHOTOGRAPHY FOR LADIES.

There are a great many women who would like to take up the art of photography, and who would, doubtless, find great interest and pleasure in it if they were not deterred by curious old-fashioned notions regarding the difficulties and expenses in connection with it. I was a writer in a recent issue of "The Queen." Time was when these drawbacks were very real; but every year has simplified the processes, and made the pleasures in connection with it greater and the pains less. One of the chief obstacles in the way of many is the absence of a room which may be used as a dark room. Of course, a properly appointed room is a great convenience, and to be obtained where possible; but at the same time, with management, good work may be quite well done without, and that independently of any special contrivances. It merely requires forethought and method, and all photographers ought to be both neat and methodical. It is doubtless a saving of trouble for lazy people to be able to leave all their dishes and bottles lying about in an apartment which no one may enter on pain of annihilation, but to keep everything away neatly and expeditiously in a cabinet becomes a task when it must be done. By the way, a chest of drawers is to be despised as a photographer's receptacle for his tools when it is a consideration, and when one must needs cover up one's camera. A small drawer for the developing apparatus, another for the printing materials, a third for storing negatives, frames, and so on. It is, of course, rather a trial to have always to go like a burglar—for darkness to arrive before commencing operations, but in time one comes to arrange things so that this is not upon merely as a matter of course, and, in fact, there are few places where there is no small room which can have some kind of temporary shutter arranged for occasional use, although it may not be practical to give it up entirely to photographic uses. When one becomes accustomed to working without a dark room it may be rather a bore to have to retire to its recess and conduct one's work in solitude.

Patent News.

Following applications for patents were made between October 1 and October 29, 1904:—

Printing Apparatuses.—No. 22,960. "Improvements in photo-printing apparatuses." Ferdinand Nusch.

Colour Photography.—No. 22,988. "Process of colour photography." A. Lumière et ses Fils.

Negative.—No. 23,064. "Improved photographic negative." Ada Hume Lucas.

Photographs.—No. 23,098. "An improved process of and means for the production of relief photographs or the like." Friedrich Gartner.

Copying Apparatus.—No. 23,228. "Improvements in photo-copying apparatus." Richard William Cunliffe.

Photography.—No. 23,291. "Means for rendering objects insusceptible to photography." Joseph Polak.

Exhibition.

PLYMOUTH EXHIBITION.

THE photographic section of the Plymouth Exhibition was opened on Wednesday, November 2, by Mr. W. Hurrell, Mayor of Plymouth, and a distinguished company of visitors numbering several hundreds. Though the actual exhibits numerically are not much greater than last year, yet the section is certainly stronger in artistic quality and technical excellence than on that occasion. It is as good an exhibition as has yet been held in the West, and should do much to popularise photography with a purpose. It has also demonstrated that there are workers in the West who are capable, but who hitherto, with undue humility perhaps, have not been seen at exhibitions. The section is a good one throughout, but probably suffers from over-classification. In these days there is not so much need for this as in the days when photographers produced photographs rather than pictures. And in saying this we hold no brief for those who make claim for photography as a fine art—with or without a capital letter. The distinction between the professional and the amateur was not sought to be made by comparison. There were two classes for professionals and two for amateurs, but these were for work dissimilar, where a definition was made; all the rest was without distinction. It is not a little curious that the professionals of the West proved averse to showing their ability in the work that is peculiarly their own—portraiture; and though there are a number of good portrait and figure studies, they do not fall into the class for portraiture. There is no class for landscape except for Devon and Cornwall scenery, and these prints, curiously enough, do not, in the matter of subject, follow very closely the definition. They would equally be suitable, in the matter of title, for a class not so defined. They are, however, an excellent lot. There was a good attempt to encourage architecture, two classes (one local) being given to it, but there were not so many exhibits as might have been expected. Classes devoted to miscellaneous work were the best filled, and in them were found examples of work that might have come within a closer definition, as in the other classes. All of which goes to show that an exhibition without classification might have been attempted. But the purpose in organising the exhibition, the encouragement of photography in the West, was eminently successful and deserves praise.

Class A.—Portraiture (professional, open) was small, and it is curious to note that contributions to it came from the almost furthest west point in England, and from very far north in Scotland. The first prize was withheld, and the second went to Mr. F. A. Swaine, Southsea, for his "A Difficult Piece for Grandpa," a little girl holding up a piece of music for grandpa to play as a violin solo, in which pose and expression are natural. The technical quality of the work is good also. "Lead, Kindly Light," by the same exhibitor, secures the third place, with a study of a nun's head and shoulders. A diploma of merit is awarded to V. T. Paul, Penzance, for "Master Alec Forbes," a portrait study, certainly unconventional in pose and arrangement.

Class B.—Miscellaneous (professional, open)—Though not a big class, it is of more than average merit, and has some very nice things in it. Technically, the whole class is strong. F. W. Beken, Cowes, has a fine series of yachting studies, with one of which, "Marine Study," he secures a third prize. E. Seymour, Watford, is strong in his examples of flowers and fruit, the skill of which, both in arrangement and technically, is clearly evident. He is awarded first for "Flower Study," an exquisite arrangement of chrysanthemums; and second for "Currants," the texture and quality of which are very fine. He is awarded a diploma for "Nettles," a clever study. D. W. Kyle, Anderston Cross, Glasgow, has two fine examples of flower photography in "Pæonies" and "Lilies," the former, perhaps, the finer. A. Debenham, Ryde, has much variety in his exhibits, but his "Sweet Seventeen" is his best, and to this the judges gave a third prize. "Prince," a study of a perky little dog, by Chas. Treasurer, Inverness, is a very attractive work. Graystone Bird, of Bath, in "On the Way to the Spring," is not, we think, quite up to his best. A. G. Gibson, Penzance, has two striking studies of the sea—both wrecks—"The Trail of the Storm," a ship high and dry

on a beach, for which he is awarded a diploma, and "Foundering," a brave steamer with the sea washing over her upper deck.

Class C.—Architecture (amateur, open).—An excellent class throughout, well-chosen subjects in most cases, and well treated. Rev. S. J. Clark, Newnham-on-Severn, has work of great interest, securing a diploma for "The Triforium," an honour very fully deserved. S. G. Kimber, Southampton, is, of course, well represented (he could hardly be otherwise with his experience), and is awarded third for "A Shaft of Light," a very clever and capable piece of work. J. W. Smith, Falmouth, contributes a number of architectural things in one frame, several of them of merit, but this way of exhibiting is not the best possible treatment of such subjects. "St. Mary's, York," by A. Macpherson, West Norwood, is a clever study. R. Morris, Ivybridge, contributes a most excellent interior in "Pisa Cathedral," a subject demanding great care in treatment and happily secured. A. W. Walburn's "An Old-time Street" is a very charming production. W. A. Clark, Moseley, in "Crypt, Winchester," and "An Abode of Ancient Peace," is to be congratulated upon work of the best quality and great breadth of treatment, for the first of which a first prize is awarded. "Unto Eternity," W. G. Hill, Eaglescliffe, is an architectural study in which a tomb is included, with a very felicitous treatment, harmonious with the title, which has secured a second prize.

Class D.—Miscellaneous (amateur, open).—This is a good class throughout, strong in number, and technically and pictorially calling for praise. Of course, it ranges over the wide field of photography, from the purely scientific to the picturesque, and in each case well represented. W. H. Waterfield, Stonehouse, is represented by "Idle Moments," a study of a boy and ducks, very happy and pleasing. W. M. Martin, Redruth, makes a specialty of scientific work, and is represented here, as at the Royal, by "Embryology of a Chicken," showing the development of the chicken from the egg, for which an extra prize has been awarded. His "Radiograph of a Pigeon" is a wonderfully clever thing, showing also the value of radiography for diagnosis. C. F. Grindrod, Malvern, is splendidly represented with some head studies, fine rugged faces, well and naturally posed, and admirably lit. His "Ploughing on the Upland" and "Cutting Oats" are pictorial in a high degree, but the former suffers slightly from the somewhat exaggerated size of the man. For his "Cornish Fisherman" he is awarded a second prize. A. B. Fellowes Pryme is up to his usual standard of excellence, and of his exhibits perhaps the best is "A Rest by the Way." J. W. Catford, Devonport, is awarded first prize for "Morn," an excellent study of early day, but with a somewhat heavy foreground, and rather too pronounced. It is, however, stronger in all qualities than his "Rushes." A. Edmund Spender, Plymouth, contributes several prints, the most pictorial of which is "The Cradle of British Commerce," a study of a sailing ship. A. H. Harding, Plymouth, has some capital woodland studies, of which perhaps "Woodland Beauty" is the best. E. Salisbury Tardrew's (Croydon) "Idle Moments" is a very natural example of posing, a young woman with some time on her hands sitting on the end of a table. R. Morris's "Une Bonne Histoire" is a most enjoyable rendering, a group on the deck of a steamer listening to the good story that one is telling, and at which all are laughing. C. H. Rogers, Swansea, is awarded a diploma for his "Fruit," a well-arranged example of grouping. Percy B. Williams has a very nice picture in "A Hertfordshire Stream." Of the Rev. A. G. Chapman's (Tintagel) contributions "Sheep on the Headland" is the best, and a very enjoyable picture, quite suggesting outdoor and sunlight effect. Charming and enjoyable in every way are the prints of G. B. Clifton, Ealing, the best of which undoubtedly, "A Lone Wood's Unfrequented Path," is awarded a diploma. John Smith's (Hastings) "Study of Old Age" very deservedly secures a third prize, though his "Veteran" and "An Old Salt" approach it closely. There is much merit in "Sunrise from Schlossberg," Miss Boucher, Plymouth, but the difficulties of the subject are rather against a more artistic treatment. Henry W. Bailey, Totnes, in "A Misty Morning," does convey the idea of such a condition, and, what is more, has chosen a pictorial subject, handling it very capably. Will H. Foxall, Tunstall, quite deserves his diploma for "Toilers of the Harvest," a small print, but full of much artistic feeling. John R. Sandilands (Edinburgh) "Cranford Brig" and "At the Close of the Day," the latter of which has deservedly had a third prize, are most enjoyable. An extra prize

is awarded to "Virginian Creeper," C. L. Williams, Redruth, for a decorative treatment of foliage. "Here She Comes," by C. Newton Abbot, a study of a fishing-boat entering a harbour of merit, and the glint and shimmer of the sea of the foreground is very natural.

Class E.—Devon and Cornwall Scenery (open).—Without most of the scenes are to be found in the two counties named, they do not all carry out the idea prominently. W. O. S. King, Maidenhead, has "Four Views on the River Lyn," which is all interesting. "Shaugh Bridge," W. H. Waterfield, Stonehouse, Devon, is acceptable. G. W. Pitt's (Barnstaple) "Lynmouth" is characterised by good work. "St. Michael's Mount," V. T. Penzance, though pictorially excellent in the matter of point of view, is rather muddy and choked up. The same worker's "Fishing Boats" is a very pictorial treatment and a most enjoyable picture, which a second prize is given. He is awarded a diploma for "Kinsale," a study of a fishing boat. Rev. A. G. Chapman, Tintagel, has a rather interesting selection, in which the excellence is not so good as it might be. "Early Morning, Pool," E. F. Jarvis, Plymouth, a very happy rendering of the subject, is awarded a diploma. A third prize goes to Fredk. J. Plymouth, for "Mar's Hill, Lynmouth," a very well-deserved. Undoubtedly the finest print in the class is "A Glean of Light," W. Clayden, Plymouth. The subject is a soft shimmering, hazy atmosphere, fishing boats near and further away, the most picturesque in arrangement. This secures the first prize and the diploma of honour for the best picture in the exhibition.

Class F.—Postcards (sets of four).—These very popular things have now invaded photographic exhibitions, and this class is certainly meritorious and of as high a standard as any, though, of these are examples of "the usual thing" in it, as we suppose always will be in every exhibition. The range of subjects is wide—fruit, flowers, streets, old houses, shipping, landscape, and anything between. The prizes have been won as follows:—First, J. H. Saunders, Burmantofts, Leeds; second, E. S. Watford; third, W. H. Foxlee, Tunstall; diploma, Fred. Hastings (2).

Class G.—Architecture (members of Devon and Cornwall Photographic Societies).—Though not a very strong class, this is of a very high standard. Carslake Winter Wood, Paignton (Torbay Camera Society), has a number of good things, the best of which is, undoubtedly, "South Door, Kenton Church," for which he is awarded a first prize. R. Morris, Ivybridge (Torbay Camera Society), secures a second prize with "Jewish Synagogue, Nürnberg," a subject pictorially well arranged and making a very pleasing effect. E. G. M. Paignton (Torbay Camera Society), has four good subjects, of which he is awarded a first prize for "North Choir Aisle, Tewkesbury Abbey," a full of fine quality, run very close indeed by "The Cloisters, Worcester Cathedral." Frederick Johnson's "Haddon Hall" has merit.

Class H.—Miscellaneous (members of Devon and Cornwall Photographic Societies).—Carslake Winter Wood, Paignton (Torbay Camera Society), shows a very excellent little picture in "Mid-day Slapton," for which he is awarded a diploma. A. B. Fellowes (Plymouth Photographic Society) is well represented, both technically and pictorially, and is awarded a first prize for "On the Vire," a happy snap of two terriers on a sandy beach, in the foreground of which are faint reflections of the dogs, behind being a steep sea and cliffs far away, the whole soft and tender. Of the popularity of the picture there can be no doubt. He secures a third prize for "Portrait Study," and a diploma for "Her Favourite Pose," a charming study of a little girl. Diplomas are awarded to C. H. D. (Plymouth Photographic Society) for "An Anxious Moment," a finely arranged group of boys engaged in a game of marbles, and "Farrier," an excellent picture in which horse and man play a part. "By the Roar of the Sea" is a fine study of a dog lying on a rocky shore. His "Portrait of a Lady" is evidence in portraiture which he has not often called into play. "Lilac" is a meritorious flower study by Mrs. Marillier (Torbay Camera Society), and equal to it is her "Toilers of the Sea," a group of fishermen at a quay. A. E. Coleman, Plymouth (Plymouth Photographic Society), has three meritorious works; the cleverest is certainly "Strike

"Iron is Hot," an artistic rendering of the operation of welding on an anvil in a blacksmith's shop, full of difficulties well overcome. Morris, Ivybridge (Torbay Camera Society), in "Lake of Annecy," is a quiet, reposeful landscape of much pictorial quality. Miss E. L. Millier (Torbay Camera Society) has a clever print in "Study of Argyranthemum," full of fine gradation and good half-tone. F. W. Packard, Bideford (Bideford Camera Club), has a charming subject in "Low Tide," the fine stretch of flat sand being admirably handled. Harrowing," E. V. Hearn, Plymouth (Plymouth Photographic Society), while depicting an agricultural operation that is not usually associated with the picturesque, manages to impart a great deal of quality to his rendering by the factors he gathers into his subject. "Evening in Harbour" is a very enjoyable subject and is awarded third prize. Of the several pictures E. J. Jarvis contributes, two and out from the rest by their pictorial qualities—"Pride of the Morning" and "Through the Morning Mist," both of them studies of fishing craft seen through the hazy light of a grey morning. The one of these is awarded a second prize. "Cattle at Valle Crucis," Fred. K. Johnson, Plymouth (Plymouth Photographic Society), has considerable attraction, although the cattle do give a somewhat spotty character to the print. "The Widower," R. Burley, Truro (Cornwall Central Photographic Club), is certainly a fine composition and of excellent technique. For a very excellent work, "A Study of Home Life," Mr. W. Clayden, Plymouth (Plymouth Photographic Society), is awarded a third prize. Class I.—Miscellaneous (boys and girls under 18).—These are days when the young idea shoots with a snap-shot camera, and so it was thought wise to encourage youth in this way. The result in point of numbers is small, but the work is certainly highly meritorious. "Study," by Eddie Jarvis, Plymouth, is a creditable bit of portrait work. W. Gundy, jun., Balby, Doncaster, for "An Impending Storm," a landscape with a strong sky, is given a second prize. "Evening Calm," C. A. W. Duffield, Maidstone, secures a third prize. Diplomas are given to Harry Hill, Stoke, Devonport, for "Plymouth Church," and to C. A. W. Duffield for "Old Hastings." There are some very fine pictures exhibited by Wellington and Ed. Elstree, showing the possibilities with their bromide and other plates. Henry F. Purser, 35, Charles Street, Hatton Garden, London, W., representing the Busch Camera Co., has a splendid lot of prints showing the power of the Busch lenses. The exhibition has already been crowded, and as it runs to the end of the month, it is expected to be very popular, as excursion trains are being sent from all points in the West. The judges of the photographic exhibition were Mr. Walter D. Finch, head master, School of Art, Teignmouth, and Mr. H. S. Hill, Plymouth, a past-president of the Plymouth Photographic Society. Their awards have given the greatest satisfaction. The management of the section is in the hands of Mr. M. R. Rowe, M.J.I., and Mr. E. Croft, to whose admirable hangings much of the success of the show is due.

FORTHCOMING EXHIBITIONS.

- November 2-23.—Plymouth. Hon. Sec. Photographic Section, M. R. Rowe, 2, Walnut Villas, Cockington, Torquay.
 November 15-19.—Sunderland Camera Club. Hon. Sec., Selby-Ord, Frederick Street, Sunderland.
 November 17-18.—Braintree and Bocking Camera Club. Hon. Sec., W. H. Tilsdon, 81, High Street, Braintree, Essex.
 November 17-19.—Darwen Photographic Association. Hon. Sec., G. Thomas.
 November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.
 November 22-23.—Ipswich Camera Club. Hon. Secretary, R. H. Brown, 37, Henley Road, Ipswich.
 November 23-26.—Hove Camera Club. Hon. Secretary, A. R. Meant, 55, The Drive, Hove.
 November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., W. Simmers, Aberdeen House, Ramsgate.
 November 25-26.—Ilford and District Photographic Society. Hon. Sec., W. N. Beal, 155, Thorold Road, Ilford.

November 26-December 3.—Glasgow Eastern Amateur Photographic Association. Secretaries, John Brough, 68, Dalmarock Street, Park Head, Glasgow; and Geo. R. Johnstone, 591, Alexandra Parade, Dennistoun, Glasgow.

December 2-3.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.

December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104, West 101st Street, New York.

December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.

December 12-17.—Sefton Park Photographic Society, Liverpool. Hon. Secretary, H. E. Cubley, 3, Langdale Road, Sefton Park, Liverpool.

December 13-20.—Southampton Camera Club. Hon. Secretary, S. G. Kimber, Oakdene, Highfield, Southampton.

December 28-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 138, Glasgow Road, Wishaw.

January 12-14, 1905. Boston Camera Club. Hon. Sec., H. M. Hames, 65, West Street, Boston.

January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.

January 20-21, 1905.—South Essex Camera Club. Hon. Secretary, T. Michell, 180, Browning Road, Manor Road, E.

January 28-February 12, 1905.—Photographic Society of Marseilles. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.

February 6-11, 1905. — Blairgowrie and District Photographic Association. Hon. Secretary, Wm. D. M. Falconer, James Street Cottage, Blairgowrie.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

March 4-11, 1905.—South London Photographic Society. Hon. Sec., H. Creighton Beckett, 44, Edith Road, Peckham, S.E.

March 20-25, 1905.—The Cripplegate Photographic Society. Hon. Sec. John B. Parnham.

June, 1905.—Northern Photographic Exhibition. Secretary, F. G. Issot, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

December 31.—Barnet. Nineteen classes. Prizes valued at £500 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

March 31, 1905.—Ilford. £750 in cash prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

A GENERAL meeting of the Arbroath Amateur Photographic Association was called for last week, but owing to the lack of interest displayed by the members it was resolved to dissolve the Association.

SOCIETY OF ARTS.—The Society of Arts will commence its fourth half-century on the 16th, when Sir William Abney, as chairman of the society's Council, will open the 151st session with an address. The subjects on which papers will be read at the meetings before Christmas include "British Trade," "Canals," "The St. Louis Exhibition," "Patent Law," "Burma," and "Street Architecture." There will also be a course of lectures on wind instruments, with musical illustrations.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Nov.	Name of Society.	Subject.
12.....	Croydon Nat. Hia. and Sc. Soc.	Messrs. R. & J. Beck's <i>Noctelles, Lenses, Hand Cameras, Day-light Changing, Tele-photography, &c.</i> Demonstrated. Mr. W. F. Slater, F.R.P.S.
14.....	Optical Society	<i>Periscope Lenses.</i> Mr. W. A. Dixey.
14.....	Luton Camera Club	<i>Carbon Printing.</i> Demonstrated. Mr. John W. Gear, F.R.P.S.
14.....	Southampton Camera Club	<i>The Cathedral of Winchester.</i> Illustrated. Mr. S. G. Kimber.
14.....	South London Photo. Society.....	<i>Developers and Developing.</i> Mr. Charles F. Dickinson.
15.....	Blairstown and Dis. Ph. Assn.	<i>Ruskin as an Art Critic.</i> Mr. H. D. Ross.
15.....	Birmingham Photo. Society	<i>What is Art?</i> Mr. R. Catterson-Sold.
15.....	Devonport Camera Club	<i>Stereoscopic Photography.</i> Mr. J. Batten.
15.....	Brentford Photo. Society	Lantern Evening.
15.....	Croydon Nat. Hia. and Sc. Soc.	<i>Bernhardy Priory.</i> Illustrated. Mr. N. P. Roberts, F.G.S.
15.....	Nelson Photographic Society	Members' Print Evening.
15.....	Hackney Photo. Society	Excursion Prints Judged and Criticised.
15.....	Glasgow Southern Ph. Assn.	<i>Résumé of the Summer Outings.</i> Mr. W. H. Wilson.
16.....	Everton Camera Club	<i>Three-Colour Photography.</i> Demonstrated. Mr. J. Mansell.
16.....	Windsor Camera Club	<i>Rising to the Occasion.</i> Mr. Walter D. Welford, F.R.P.S.
16.....	North Middlesex Photo. Soc.	Lantern Slides. Mr. A. H. Lisett.
16.....	Crickwood Photo. Society	<i>Photographic Christmas Cards.</i> Demonstrated. Mr. F. Carter.
16.....	Redhill and Dis. Camera Club.....	<i>Auto-Dichromate Printing.</i> Demonstrated.
16.....	G.E.R. Mechanics' Institution	Judging of Prints and Slides.
16.....	Boro' Poly. Photo. Society	Lantern Night.
17.....	Hull Photographic Society	<i>Photography Prize Slides.</i>
17.....	London and Prov. Photo. Assn.	<i>Binocular Vision and the Theory of the Stereoscope.</i> Mr. T. W. Baiber, M.I.C.E.
17.....	Richmond Camera Club	<i>Lantern Slide Making for Beginners.</i> Mr. Cheese.
17.....	Southport Photo. Society.....	<i>Chloro-Bromide.</i> Demonstrated. Mr. W. Parkinson.
17.....	Liverpool Amateur Ph. Assn.	<i>Various Methods of Improving Faulty Negatives.</i> Demonstrated. Mr. F. Anyon.
17.....	Leigh Photographic Society	Thornton-Pickard Ltd. Prize Slides.
17.....	Watford Camera Club	Thornton-Pickard Co.
17.....	Watford Camera Club	Royal Photographic Society's 1904 Prize Lantern Slides.
17.....	Ta'ing Photographic Society	<i>Rising to the Occasion.</i> Mr. Walter D. Welford, F.R.P.S.
18.....	Redhill and Dis. Camera Club.....	Annual Exhibition and Conversation.
18.....	Boro' Poly. Photo. Society	<i>Bromide Printing.</i> Mr. F. W. Gregg.

ROYAL PHOTOGRAPHIC SOCIETY.

TUESDAY, November 1, 1904. Mr. George Lamley in the chair. Mr. W. Thomas gave the first of the new series of lectures, from a practical standpoint, on the various branches of photography, which were organised by the Council last season and attained such success. The first series was upon the different printing processes at present in vogue, and the present we understand is to deal with the obtaining of the negative.

The present subject was the negative in landscape photography, including composition, the use of lenses of varying foci and so forth. In his opening remarks Mr. Thomas said that he did not purpose developing a plate although the syllabus termed it a demonstration, nor did he propose, except in so far as it might be necessary in dealing with the slides which would be shown, to touch upon apparatus.

Why was it, the lecturer asked, if two equally clever photographers were out together, while the works of one appeared in exhibitions those of the other never attained publicity. It was because one had learned to "see" and the other had not. When you go out to photograph you must have a very distinct idea of what you are going to do. If you look at the material either as self-contained or merely as the framework, you will find that what you might be inclined to describe as a miserable flat place, provided you with an endless fund of material. In monochrome works shade represents colour, and the lecturer showed a chart of washes of colours which one meets with in Nature, and alongside of these, the colours, or shading colour, which an artist uses when he works in monochrome; different shades should express different colours. A number of slides were then shown to demonstrate the use of lenses of various focal lengths. Very often it happens that a subject is so constituted that you cannot give it the

amount of exposure it demands, and the resulting negative is. If, however, you introduce a certain amount of diffusion it is found that the gradations are evened up, and a pleasing result obtained, impossible by other means. The advantages of long lenses appear when we get into open country, when, owing to configuration, we cannot choose our standpoint so as to use a small angle lens, and for this purpose the lecturer uses spectacle lenses. The great advantage of the modern high-class lens is that you can with it on dull and even foggy days, and Mr. Thomas showed a photograph taken on such a day with a lens working at $f/2$. The lecturer then dealt with plates, showing a number of negatives, through the Chapman-Jones plate tester. He took a certain number of plates made in four varieties. The first, an ordinary, orthochromatic one, the second sensitive to green and yellow, the third sensitive to red and yellow, and the fourth to red, yellow and green. These were all exposed for approximately the same time on the plate tester, and the results were most marked, for where an ordinary plate rendered only the green and blue, the panchromatic rendered all the colours on the plate tester and practically correct compared with the chart we have already mentioned. Slides were also shown of a hedge containing masses of brilliant yellow flowers. That from a negative on an ordinary plate did not at all differ between the green hedge and the flowers. Next an isochromatic was used, but the ultimate and true result was obtained by use of an isochromatic plate used in conjunction with a colour filter.

Mr. Thomas' method of development is to have two dishes, one containing rodinal 1:15—instead of about 1:30 as usually recommended—the other containing the following developer.

No. 1.

Hydroquinone	1 oz.
Sodium sulphite	2 ozs.
Pot. bromide	1 oz.
Boiling distilled water	12 ozs.

No. 2.

Sodium carbonate	2 ozs.
Sodium sulphite	2 ozs.
Distilled water, to	12 ozs.

For use take equal parts of each. The plate having been exposed, is put into the rodinal solution and immediately the image appearing is transferred to the hydroquinone.

The lecturer strongly advised making rough sketches for reference, and if one could not do this the next best thing was to photograph simply as studies. From these it was possible to get what manner of treatment, whether under a different condition of lighting or otherwise, would best do justice to the subject. A great advantage is that in revisiting some scene no time is wasted in selecting one's point of view—or perhaps even in finding the subject—and in this way the lecturer has exposed a couple of dozen plates in two hours, whereas without his sketches he would probably have been unable to get but a very small portion of the pictures he required. Even with simple material something can be done under such conditions of lighting and so forth.

An actinometer is, said Mr. Thomas, a very useful article, but many sneer at it as they do at a number of other useful things. When you do marine work you must remember that the same conditions apply as with landscape. There is the dark colour of the rocks and the high actinism of the sky and sea to render all of them together an isochromatic plate and screen are necessary.

With regard to halation, this can be practically overcome by use of full exposure, and Mr. Thomas showed two slides of a hospital which were certainly very convincing, there being practically no trace of halation, although in one case the sun was streaming through the windows.

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

NOVEMBER 3RD.—Mr. R. P. Drage in the chair. The chairman, in a few well-chosen words, on behalf of the association, presented A. Teape, the gold medal of the Henderson Award, which he had won for his paper, entitled "Intensification Without Metallic Salts." Mr. Teape, after thanking the members for the award, said that an exception had been taken to the title, because a metallic salt was used, but he would explain that that was only a matter of convenience.

chlorine or bromide water would rehalogenise the negative image, would not be so convenient to use. A series of portrait studies by Mrs. Welford were projected, and from the frequent applause were clearly thought of high artistic and technical excellence. Mrs. Welford described her arrangements for portraiture in a conservatory at the south, and showed how good work can be done under difficult circumstances.

Mr. Freshwater revived the memory of his summer holiday by exhibiting a series of views in Cornwall. Mr. Ellam's contribution to the exhibition consisted of a series of remarkable photographs of birds and their nests.

CAMERA CLUB.

At the weekly meeting Mr. G. E. H. Rawlins brought before the club a printing process, which he has named "Oil Printing," and gave a demonstration of the same, which excited great interest. He does not claim originality of the process itself, but takes credit for its application to a particular kind of photograph. As a matter of fact the method was patented as early as the year 1855, by Poitevin, who heads his specification "Improved Photographic Printing" (December 13, No. 2,815), and the invention has been half a century before the world without being taken up by photographers with any exuberant eagerness. We are led to assume that it does not appeal to them as being variable to better known methods of producing prints.

There is so little difference between Poitevin's method of procedure and that of his modern disciple, that if we quote from the specification, number and date of which has just been given, we shall at once get a grip of the process. "A concentrated solution of albumen, gum arabic, gelatine, or similar organic substance," is mixed with a solution of a chromate or bichromate of potash, and is spread upon the surface which is to receive the design." Such surface may be a lithographic stone, metal, glass, wood, or any other material. The picture is impressed upon the sensitised surface by the agency of light, after which "a greasy ink" is applied to it, when the ink will be found to adhere to those parts only which have been affected by the light, and the print thus obtained "may be retained on the surface on which it is first produced," or impressions may be taken from it in the manner of lithographic printing. A design in various colours may be produced by suitably applying different colours to different parts of the surface.

Mr. Rawlins does not go so far as Poitevin, he uses gelatine only, and the material upon which the gelatine is spread is paper. He makes no reference at all to the lithographic possibilities of the process, and says nothing about printing in more than one colour at a time.

It may fairly be asked, Why has this somewhat ancient method of printing been suddenly recalled from the files of the Patent Office? Rawlins explains the problem in this way. He had long been dissatisfied with existing methods of photographic printing were unsatisfactory, in not giving the operator that amount of "control" over his work which is desirable. The gum process he thought well of, but in objection to it was that in the effort to control the effects there was a risk of pulling the image entirely to pieces. It was an analytical process, and he was looking for a synthetical one, in which the image, as parts of the image, could be built up, as well as taken down. And he experimented with this oil process, and found that it gave him what he wanted.

His method of going to work—and we must give him full credit for working out all the necessary details—is as follows:—Good quality paper, or other paper, is coated with a solution of plain gelatine, which some hardening agent, such as chrome alum, or formaline, has been added. The paper is dried. When wanted, it is sensitised by dipping upon a 24 per cent. solution of potassic bichromate, with the usual precautions common to the carbon process. The paper is exposed to a negative and transferred to a water bath, when the lights are washed up and remain absorbent, while the shadows of the picture retain their little water. When drained and surface dry, the print is laid, face upwards, on a sheet of plate glass, and is rolled with printer's ink which has been reduced to a creamlike consistency by the aid of turpentine. The roller which he advocates is an ordinary india-rubber roller squeegee. The ink clings to the shadows but is rejected from the lights, so that the result is a positive in oil pigment. Slow even pressure will ensure a good coating of ink, while quick and light

motion of the roller will remove the ink from the surface, so that the operator can deepen his shadows or lower his lights, according to his own sweet will.

It will thus be seen that the resuscitated process is one for the "pictorial" worker to play with. And certainly in one respect it is better than the gum process for such adventurous use, for the bichromate image is so persistent that it cannot be eliminated. The operator will therefore be found to reproduce the general lines of his picture, but he can modify the lights and shades to any extent which he may desire. We do not think that the process will be of much use to the professional photographer. Indeed, had that been its destiny it would not have remained, as we have already hinted, in abeyance for fifty years.

CROYDON CAMERA CLUB.

Mr. A. W. GREEN, representing the well-known firm of Messrs. John Griffin and Co., gave a clearly worded and interesting exposition on "Enlarging at Home Without Expensive Apparatus." The fact that the apparatus in question consisted mainly, if not entirely, of enlargers placed on the market by Messrs. Griffin did not detract from the utility of the subject matter in the least, as those shown were varied in character, and also, within moderate limits, in price. Perhaps of all the enlargers shown the Series C. attracted most attention, and deservedly. These are of the familiar double camera type, and are fitted with a most ingenious link motion, which automatically moves the lens in relation to the sensitive paper, or plate, as the case may be, and also adjusts the negative in correct ratio, the sensitive surface and the negative thereby occupying conjugate foci. By this means visual focussing can be dispensed with, and the worker, by consulting a scale on the baseboard, can enlarge to various predetermined sizes or reduce, with every assurance that the results will be sharp. A cordial vote of thanks to Mr. Green was adopted.

WOODFORD PHOTOGRAPHIC SOCIETY.

THIS Society met as usual last week, at the Wilfrid Lawson Hotel, and the president for the current session, newly elected at the last meeting, took his seat for the first time. Mr. Wilmer acknowledged in a few straightforward and graceful sentences the honour the members had done him in electing him, and *en passant* paid a warm tribute to the useful work done by the late president, Mr. F. G. Emler, who this session returns to his no less useful secretarial duties, and in conclusion expressed the hope that when he came to lay down the reins of office he would find the Society in the same flourishing state as that in which he now found it. Mr. Hillsworth then showed as an object of interest a newly-brought-out stand development tank, the "Standa," supplied by Messrs. Houghton's, Ltd., and showed some negatives developed by its aid. The lecturer for the evening, Mr. McIntosh, of the North Middlesex Society, who was accorded a cordial reception, then gave his lecture on "Orthochromatics." Mr. McIntosh, in the course of a lucid and closely reasoned lecture, advocated the use of screens with colour sensitive plates, and in particular mentioned that he had done good work with a green screen of his own make, specimens of the work of which were handed round and met with much admiration. He then showed how to make such a screen by actually preparing one before his audience, and altogether made a most practical and interesting speech.

Some discussion ensued, in which Messrs. Malby, Marriage, Wastell, and Carpenter took part, and a very hearty vote of thanks to Mr. McIntosh closed the proceedings.

THE death took place last week, at Blackpool, of Mr. J. Wilde. Deceased, who was 72 years of age, was a native of Oldham, but took up his residence in Blackpool some forty years ago. For many years he carried on the business of a photographer in Talbot Road, but latterly had lived in retirement. He was a member of the Fylde Board of Guardians, and when the borough bench was created he was made a Justice of the Peace. Mr. Wilde was a Liberal in politics, and on two occasions sought municipal honours in Talbot Ward, but was unsuccessful. At the present time his son, Mr. Milton G. Wilde, is one of the representatives of this ward. Deceased leaves a widow, two sons, and a daughter.

News and Notes.

ENTRIES for the Hove Exhibition must reach the hon. secretary, 55, The Drive, Hove, on or before Monday, November 14.

THE Optical Society's next ordinary meeting will be held on Monday, the 14th inst., at 8 o'clock p.m.

THE Leicester and Leicestershire Photographic Society intends holding its next exhibition from March 27 to April 1, 1905.

ROYAL INSTITUTION.—A Christmas course of lectures, adapted to a juvenile auditory, will be delivered by Mr. Henry Cunynghame, C.B., on "Ancient and Modern Methods of Measuring Time" (experimentally illustrated). The dates of the lectures are December 27, 29, and 31, 1904; January 3, 5, and 7, 1905.

THE Hastings and St. Leonards Photographic Society's photographic exhibition will be held at the Public Hall, Hastings, on Wednesday, Thursday, and Friday, January 11, 12, and 13, 1905. The judges will be Mr. A. Horsley Hinton (editor "The Amateur Photographer") and Mr. John H. Gear, F.R.P.S. The Hon. Secretary is Mr. Fred Judge, 21A, Wellington Place, Hastings.

THE members of the Linked Ring held their annual smoking concert at the Dudley Gallery, Egyptian Hall, Piccadilly, on the evening of Tuesday, November 1. The function, which was in every way enjoyable and successful, should be memorable as the last of the series to take place in the Gallery, as next year the Photographic Salon finds it necessary to seek new premises for its exhibition.

INFORMATION has been received that the St. Louis Exhibition have awarded a silver medal to the Royal Scottish Agricultural Society for the exhibit of photographs of American conifers grown in this country. The pictures—twelve in number—were enlargements of photographs of trees, growing at Scone and Murthly, taken for the purpose by Mr. A. D. Richardson, the society's photographer.

THE last sale of section 4 of the final sale of the Marquis of Anglesey's effects realised £200. The best price (£34) was paid for a bedroom suite in walnut, and £15 was the price of an electric portable Turkish bath. Among the photographs were two presented by the students and professors of the University College of North Wales "to Boy Blue, in appreciation of his invitation to the Gaiety Theatre pantomime." A local tradesman secured the pair for three shillings.

MR. LAFOSSE (of Messrs. Illingworth and Co.) gave a demonstration of carbon printing by the single and double transfer process to the members of the Windsor Camera Club on Wednesday, November 2, which was much appreciated, and on the motion of Mr. C. C. Harrison, seconded by Mr. T. J. Cartland, a vote of thanks was accorded to the firm, and to Messrs. Russell and Sons, of Windsor, for kindly lending the utensils necessary for the demonstration. On the 16th Mr. W. D. Welford delivers his lecture entitled "Rising to the Occasion."

THE British Optical Association Examination.—An examination of candidates for admission into the British Optical Association was held in Glasgow on October 31 and November 1 at the Shepherd's Hall, Bath Street. This has been the most successful examination yet held in point of numbers. The examiners were Mr. J. T. Graddon, M.A. (Oxon.), for the Practical Section, and Dr. E. H. Cook, Assoc.R.C.Sc., for the Theoretical Section. The next examination in London takes place on December 6 and 7, and there will be another in Glasgow in February, 1905.

PHOTO Micrography.—A lecture on the technique and application of photo micrography was delivered last week before the members of the Birmingham Scientific Society by Mr. J. Dancer Whittles. The lecturer remarked there was no doubt that the great advance made in photography was due to the perfected dry-plate, which was the veritable handmaid of science. Although book illustrations of the highest order had been made by fine-line drawings, etc., they were now being replaced by the actual photo-microgram. The lecturer then traced the history of photo-micrography from 1865 down to the present time, and illustrated its utility to the research worker for making permanent records of certain phenomena which might only have been transient. He instanced the utility of the photo-micrograph in the study of pathology, and exhibited micrograms taken of the blood of persons suffering from the new disease known as "craw-craw."

RADIUM and Radiographs.—Mr. C. Thurston Holland, in his dental address last week to the members of the Röntgen Society, 20, Hanover Square, dealt almost entirely with the value of in relation to medicine and surgery. The discovery of radium, said, had created the belief that it would make it possible to dispense with all the paraphernalia connected with the X-rays, but result had not been secured, and it was not now expected to be a substitute in the treatment of malignant growths. Their abundant evidence to show that most successful effects had been secured by radiography—its use, indeed, was now almost indispensable for medical men. There was an impression that the process was dangerous one, but it could be used both safely and beneficially by a well-qualified man who was skilled in radiography. He had said himself with most favourable results, and he was sure that it would prove still more useful in the future than in the past.

ROYAL INSTITUTION.—A general monthly meeting of the members of the Royal Institution was held on Monday afternoon, the 7th inst., at 4.30 p.m. Sir James Crichton-Browne, treasurer and vice-president, in the chair. H.H. the Raj Rana Bhawani Singh Bahadur of Jhalawar, 1st, and Mr. E. J. Preston were elected members. It was announced that the Institution had received a bequest of £100 from the will of the late Miss Harriet Jane Moore. The special thanks of the members were returned to Dr. Ludwig Mond for his donation of £755 for the purpose of erecting a lift from the basement to the second floor of the Institution, and any surplus after the completion of the work to go to the Research Fund. During the reconstruction of the entrances and exits of the lecture-room of the Royal Institution, the room had been materially improved by the erection of two covered-in iron cases and the widening of the doorways, and the ceiling has been considerably raised.

THE late Basil Bradley.—The death of Mr. Basil Bradley, R.C.S.D., of Locket Road, Wealdstone, who poisoned himself with carbolic acid on Sunday week, was investigated by a coroner's jury at Wealdstone on Monday. A verdict of suicide while temporarily insane being returned. The son of William Bradley, a portrait painter, he was born in 1849, at the age of fifteen started life as a photographer's assistant. He subsequently became an assistant portrait painter, and at the age of nineteen he definitely decided to embark on an artistic career. Five years later he was elected an Associate of the Royal Society of Painters in Water Colours, and in due course he became a full member of the body. His works in water-colour include "The Challenge," "Lingham Castle," "Full Cry," and "A Lift on the Way." Bradley also painted in the stronger medium of oils, and exhibited a number of oil paintings at the Royal Academy, among them "Victor and Vanquished" and "July on the Thames," 1878; "Time," 1882; "Gathering the Sheep," "Midsummer on the Thames," "Hard Times," "Twelfth of August," "Caledonia," and "A J. Idyll."

ROME in Bayswater.—Mr. Robert Arthur invited representatives of the Press last week to the Coronet Theatre to witness a photographic exhibition of illuminated and coloured pictures of Rome thrown on a white screen on the stage by a very large and excellent lantern. It may be said at once (says the "Daily Telegraph") that no better of their kind than the photographs here presented by Signor Eugenio Inguimbart has ever been seen. They cover an enormous extent of interesting material, dealing with the architecture and unrivalled art treasures of St. Peter's and the Vatican. In the way of detail reproduced, only one single example of bad focussing is observable, the right hand of the Belvidere Apollo. The rest is simply astonishing in the life-like appearance of atmosphere, reality and space obtained by the careful colouring of the slides, the judicious management of the lantern. In many cases the effect looked as if it was filled with real statues, and had suddenly been transformed into a Papal gallery. The educational value of the exhibition is undoubted. Every school in London and near it should be taken to see this collection of pictures, statuary, and buildings. A suitable time should be fixed upon for studying each scene before the next is produced; and a short, crisp, running commentary with an audible voice is the only necessary addition to explain the value of the masterpieces of art or relics of history presented one after another. The management of the Coronet Theatre may be congratulated for their enterprise in producing so fine an intellectual entertainment for the pleasure and benefit of Londoners.

Correspondence.

Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.

We do not undertake responsibility for the opinions expressed by our correspondents.

LOST CAMERA AND LENSES.—A WARNING.

To the Editors.

Gentlemen,—The camera and lenses mentioned below were stolen Friday, the 4th inst., from a messenger from the City Sale and Exchange, Aldersgate Street, E.C. Will you warn your readers against having anything to do with these articles and ask them if they should come across any of these goods to communicate either with me or the City Sale and Exchange, Aldersgate Street, or the City Police? Thanking you in anticipation.—Yours faithfully,

C. P. GOERZ.

3-6, Holborn Circus, London, E.C.

November 5, 1904.

1 Anschütz camera half-plate.

1 Double anastigmat series B. No. 2, 142245.

3 Double dark slides.

1 Case.

Anschütz camera quarter-plate with double anastigmat III/O 153740, six slides and case and extension.

1 Double anastigmat series IB. No. 3.

THE TIMES ARE OUT OF JOINT.

To the Editors.

Gentlemen,—The correspondence columns of your admirable journal last week revealed a condition of affairs in the photographic profession which would be extremely amusing if one could forget for the moment its pathetic side.

First, there was a further contribution to the ink-slinging competition between some photographic firms in Liverpool, whose incidental revelations of the methods which are resorted to by photographers—out of the class which has been spoken of as “the scum of the profession,” but of a class to which the terms “reputable and respectable” should be applicable—should be a warning to those who have any thoughts of taking up photography as a career, that if they do so outside they must expect, not the wholesome and honourable competition that is fairly general in commerce, but the most virulent antagonism and enmity of those whose true interest it is to act with and not against their fellows in the same profession.

We have all heard that amusing account of an island where the civilised inhabitants live by taking in one another's washing. Of course it is a fable; but it is no fable that there exists amongst us a community attempting to live on stealing one another's trade.

Then there is the letter from the Baptist minister, who, being a failure in his own profession, it may be, as he says, through no fault of his own, wishes to enter the already overflowing ranks of photography. Better, by far, had he learn to mend boots. It is a more peaceful, a more useful, and certainly a more honest occupation as times go. What he describes as the weakness of his denominational system is not really a weakness. It requires more than average ability to succeed, business ability and mental ability, precisely what is required to succeed in photography. It is brutal to put it this way I know, but even this brutality is justifiable if it prevent a good man taking the road to failure.

Then there is the process worker. Times are so bad that those already established have so little work that they cannot employ him. He naively asks you how he is to do that which people who have experience and every facility for the purpose cannot do; that is, get orders. Anyone who can get orders can get the work done. He, for example, is ready to do the work, but there is no work to be done, or not enough to go round.

Then there is the letter by “Ten by Eight.” He makes a legitimate complaint that his competitor in business uses as specimeus work which is not his own. To do so of course in any other business than photography would show an absence of any sense of commercial morality, but this kind of thing seems to be quite a venial offence in our honour-

able profession. But your correspondent follows on with a statement that an amateur starting in business without professional experience, can, by sending the finishing of his work out to be done, deliver to his customer results equal to, if not better than, ordinary professional work. What a pitiful admission of incapacity—photographic incapacity, business incapacity.

If your correspondent's competitor can turn out good work by sending out his finishing, and can sell it remuneratively, what is to prevent your correspondent from following the same lines?—business incapacity. If your correspondent's competitor can get his work done better outside than your correspondent can do it at home, what is the reason?—photographic incapacity.

Why is it, I wonder, that photography exercises such a baneful influence on those who practise it? That noble animal, the horse, we know, is supposed to exercise a sinister influence over the morals of those of that nobler animal, man, who associate themselves with it, but that a pursuit which would seem to be particularly conducive to a philosophical disposition should cast a blight around is inexplicable. Look at the business side of photography. A few honourable men engaged in it, but otherwise a horde of grasping savages, intent upon nothing but acquiring money, without regard to the honesty of the means employed. Look at the amateur side at our exhibitions. The same sordid struggle throughout. At the top a conspiracy for the purpose of fraudulently obtaining renown for those engaged in it. Lower down, a fierce contest for medals, not to earn them by superior merit, but to get the award by any means, legitimate or otherwise. Look at the scientific side of photography. Who have the greatest reputations; those who deserve them by their work or those who spend their time less usefully but more effectively in advertising themselves? Look at our photographic writings, volume upon volume and article upon article, supposed to be intended to teach but really merely written for pelf by writers who are in need of elementary instruction themselves. Look at our leading Society. How does it occupy itself? In carrying out its object—the furtherance of the interests of photography? O, dear no, nothing so dull and uninteresting, it is apparently regarded as of far more importance to settle who shall be president next year, and who, besides, shall share the honour of mismanaging its affairs.—I am, etc.,

A. C. B.

STUDIO CONSTRUCTION.

To the Editors.

Gentlemen,—Having in preparation a revised edition of “The Studio and What to do in it,” by my late father, H. P. Robinson, I shall be obliged if any photographers who have built studios on the plan recommended by him on page 23, or without a sloping roof, as he suggested might be the “Studio of the Future,” will communicate their experience of them to me.—Yours faithfully,

RALPH W. ROBINSON.

Redhill, November 7, 1904.

SIR CLEMENTS R. MARKHAM, president of the Royal Geographical Society, opened, on Friday last, the exhibition at the Bruton Galleries, Bond Street, of photographs, water-colour drawings, sketches, and other articles of interest brought from the Polar regions by Captain Scott and the officers of the Discovery Antarctic Expedition. There was a large attendance. Sir Clements Markham, in declaring the exhibition open, said it would enable people to realise better than anything else the extraordinary hardships and perils which were encountered by our gallant countrymen in the Antarctic regions, and would also show to them the magnificent scenery in the midst of which they achieved such great results. The very best artist who ever entered the Polar regions was on board the “Discovery” in the presence of Dr. Wilson, and the most talented photographer in the person of engineer-lieutenant Skelton. No Polar expedition was perfect unless that expedition wintered in those regions with sleigh travelling. Visitors would be able to see the methods by which the great and successful journeys were made; the sleighs, the cooking apparatus, the food, and everything else which the members of the expedition took with them, and any of those who wished to do so could have a small piece of pemmican.

Answers to Correspondents.

- *** All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.
- *** Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.
- *** Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.
- *** For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

- W. Thorneycroft, 61, Green Lane, Wolverton. Photograph of Miss Moleseworth's Wedding Group.
- A. Wrags, 30, Barscough Street, Ormskirk. Photograph of Latham House, and Photograph of Latham Park Chapel, Latham, near Ormskirk.
- E. Ove-Thomsen, 15, Hall Gate, Duncaster. Photograph of the Bishop of Sheffield and Curates.
- G. H. Greenway, 181, Midland Road, Bedford. Photograph of Bedford Football Club.
- C. Bellinger, 4, Town Hall Terrace, Paignton, S. Devon. Photograph of Screen, and Photograph of Screen and Pulpit, Lydford Church, near Bridestowe, Devon. Two Photographs of the Interior of Woodbury Parish Church, near Exeter, Devon.
- J. Javrett, High Street, Keynsham, Bristol. Photograph of the Interior of Keynsham Parish Church, and Photograph of the Font, both decorated for Harvest Festival.
- J. H. Partridge, Park Green, Macclesfield. Photograph of Buffalo Bill.
- T. R. Hammond, 1, Rose Hill Street, Conway. Two Photographs of a General View of Conway.
- J. W. Wheeler, 4, North Street, Horsham. Photograph of A. Shrubbs.

CHANGED TONES.—"ANIS" says: "The enclosed prints have gone red by being exposed in a showcase. Is it any fault of manipulation or normal? What is your opinion of the work for 15s. per dozen?" In reply: Prints made from weak negatives and lightly toned are liable at times to undergo a change in colour by long exposure in showcases. The work seems good enough for the money.

SENSITISING ALBUMEN PAPER.—"ALBUMEN" asks: "Can you oblige me by publishing how to sensitise albuminised paper?" In reply: This appears to be a repeat of your query which we replied to in our issue of the 21st ult., to which we refer you. If you know nothing of silver printing, which we assume is the case, we should advise you to get a treatise on the subject—say "Art and Practice of Silver Printing," by H. P. Robinson and Captain Abney.

FADED PRINTS.—"E. W. B." asks: "Can you give me any formula that will restore old, faded albumen and P.O.P. prints, as I very often get them for copying when they are nearly faded away?" In reply: We know of no successful method of restoring faded silver prints. More than one method at times has been suggested, but in our hands they have not proved of value. Prints on albumen paper that have gone yellow, if they were toned with gold, may have the yellow tint removed by treatment with a dilute solution of bichloride of mercury, but that will not restore any detail that has disappeared.

RECOVERY OF ACCOUNT.—"ONE AT A LOSS" writes as follows: "I should feel greatly obliged if you could tell me how to act in this matter. Two months ago a builder called at my studio and got me to photograph some houses for him W.P. size. I submitted a finished proof, which was approved. An order for six prints was given, which were never called for. I wrote about the matter, but got no answer. The party lives twenty miles from here. Your advice will greatly oblige." In reply: Send the prints ordered to the builder's address and demand payment for them. If not made, promptly sue in the County Court.

SPOTTY PRINTS.—"YELLOW SPOT" asks: "Could you kindly give your opinion as to cause of yellow spots showing on enclosed print? The photo has been finished about three years, spots appeared a few months ago. These markings have appeared on other photos mounted on similar cards, but photo finished with same batch, but on different mounts, are now good as when finished. Do you think the mounts are to blame?" In reply: Spots such as these may be due to ferent causes, all of which are attributable to the manipulations. We see no reason to suspect the mounts, but if you are suspicious of them why not send them to an analytical chemist for examination?

STUDIO QUERIES.—"EMILE" says: "(1) Enclosed you will find plan and elevation of proposed studio. On the north side is where I shall have my side lights, which will be 5 ft. from ground. You will see by elevation that I shall have also 9 ft. by 3 ft. side-light on top of the wall, and also a 3 ft. 6 in. by 2 ft. 6 in. light on the door and also a fanlight above door. By referring to plan you will see pencil lines indicating light, which will be 6 ft. by 4 ft. Do you think that will be sufficient light with the aid of reflectors? (2) If I place the scene on wall on north-west side, and place the camera at east corner, I shall be able to get about 7 ft. between lens and scene. Should I be able to purchase a half-plate lens capable to photograph sitters for carte-de-visite full length? Do you think it would be advisable to lower the north wall have a little more side light? I trust diagram is discernible. In reply: (1) We must confess that the sketches, to us, are a little "mixed," but so far as we can make out the studio will be very small if you require it for professional work. It will be light enough for so small a place. (2) No, you certainly will not. (3) Yes, by a couple of feet.

STUDIO.—BOOK WANTED.—A LADY OPERATOR asks: "(1) Would you very kindly look over the enclosed plans (which I do not need returned), and tell me if you think they would make a good workable studio? Would you also advise me as to what would be best for the slant of the roof. (2) Can you advise me in the choice of a book on the theory of photography—one that would give me a good, simple explanation without my having to sit up all night with a wet towel round my head? Your article on this subject in this last issue of the "Journal" made me determine that at least one professional is not going to be accused of ignorance even by her own conscience. I am in absolute darkness, as I have learnt, picked up, and also used my (what is commonly called) "gumption" but want to have it in black and white." In reply: (1) The studio as shown in the sketch would be a very good one. The glass need not come down so near to the floor by a foot. A similar angle to that shown in the sketch will do for the roof, but a little more slope would perhaps be an improvement. "Instruction in Photography," by Abney, or "Science and Practice of Photography," by Chapman Jones, are both good books.

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PRICE TWOPENCE.

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THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1905.

Edited by THOMAS BEDDING, F.R.P.S.

THE forty-fourth annual issue of THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC will be published on December 1. This year's ALMANAC reached a total of 1,604 pages, and the entire edition of 25,000 copies was sold out before publication. Of no other photographic book ever issued can two such unique facts be recorded. The edition for 1905 will also consist of 25,000 copies, and will number 1,612 pages, thus constituting the volume the largest yet published.

The following are some of the important features of the forthcoming volume:—

1. The frontispiece will be a portrait study specially produced for the Almanac by Mr. Furley Lewis (Medallist at the Royal Photographic Society's Exhibition, 1903).
2. The first editorial article, which deals with "The Present and Future Position of Photography," discusses the probable growth and expansion of all branches of modern Photography.
3. The second editorial article supplies a succinct illustrated history of the BRITISH JOURNAL OF PHOTOGRAPHY and the Almanac ever since their foundation.
4. Important articles and papers by the following, amongst many other well-known photographic writers, are included in the volume:—

Abney, Sir W. de W., C.B.	Dormer, J.	Hartmann, Dr. J.	Nelson, E. M.	Salisbury, J. W.
Baker, T. Thorne.	Duncan, F. Martin.	Henderson, A. L.	Neuhanss, Dr.	Salmon, P. R., F.R.P.S.
Baldock, J. H., F.C.S.	Dunmore, Edward.	Hepworth, T. C.	"Ons."	Selby, H.
Barker, J.	Dunmore, G. H.	Hett, Charles Louis.	Payne, A., F.C.S., F.R.P.S.	Slater, P. J.
Bentley, B. F., M.A., F.L.S.	Everitt, Philip.	Hodges, John A., F.R.P.S.	Perkins, Rev. T., M.A.	Smith, J. H.
Bird, J. J. S., B.A.	Foxlee, E. W.	Joly, Dr. J., F.R.S.	Pike, J.	Sutton, C. T.
Blasbroek, G. Van.	Gamble, William.	King, Horatio Nelson.	Piper, C. Welborne.	Tilfor, J.
Boias, Thomas, F.I.C., F.C.S.	Goodchild, Rupert.	Leisk, J.	Procella.	Wall, E. J., F.R.P.S.
Brosig, P.	Gower, H. D.	Lockett, A.	Rheinberg, Julius.	Wallace, Robert James.
Brown, G. E., F.I.C., F.C.S.	Graves, Frederick.	Mills, Edmund J., D.Sc., F.R.S.	Richards, T. W.	Walmsley, W. H.
Channon, H. J.	Hackett, J. T.		Rohr, Dr. Moritz von,	Watkins, Alfred.
Clifton, Edgar, F.R.P.S.	Harris, Geo. T., F.R.P.S.		D.Phil.	Valenta, E.

5. Numerous illustrations, including Portraits of many Celebrities in the Photographic World.
6. An exhaustive Review of recently introduced Photographic Apparatus.
7. Sections devoted to Practical Points; Epitome of Progress during 1904; Formulæ; and a great mass of Miscellaneous Information.

EX CATHEDRA.

The Dublin Convention.

The Dublin Convention will be held in Trinity College, the authorities having, at the instigation of the President-elect (Professor Joly), generously placed that portion of the building known as the Engineering School, with its lecture rooms, museum, etc., at the disposal of the Council for the week commencing July 10, 1905. Trinity College is one of the most interesting buildings in Dublin, and was founded by Queen Elizabeth in 1591. Several capital pictures may be secured in and around the Quadrangle, which is adorned by Foley's fine statues of Oliver Goldsmith and Edmund Burke, and the handsome Bell Tower, erected by the late Primate Beresford at a cost of £10,000. As the College will be open to members of Convention only, arrangements are being made to hold the Trade-Exhibition of Pictures and Apparatus in an adjoining building, which will be free to the public as usual.

* * *

Lenses for Post Card Pictures.

A correspondent, whose letter we reply to here instead of in the usual column, as the information may be of use to others, writes to the following effect:—"I wish to take negatives for post-cards the full size allowable. But when I use my half-plate camera and lens the angle included is too small. If I get a 5 by 4 lens it will not cover the $5\frac{1}{2}$ in. allowed by the Post Office. What lens shall I get to cover the $5\frac{1}{2}$ by $3\frac{1}{2}$ and yet include a fair angle?" Now, if we measure the diagonal of a picture 5 by 4 and that of one $5\frac{1}{2}$ by $3\frac{1}{2}$, we shall find that the measurements are practically the same. Consequently, any lens that will cover a 5 by 4 plate will equally as well cover one $5\frac{1}{2}$ by $3\frac{1}{2}$, while of course a wider angle, on the base line, will be included. The field of a lens is a circle, and any oblong, no matter what its proportions, that can be cut from that circle will be covered. For example, any lens that will cover a 10 by 8 plate will cover equally as well, or rather better, one $11\frac{1}{2}$ by $6\frac{1}{2}$, or 12 by 6 in., while as a matter of course, a much wider angle on the base line will be included. This fact does not appear to be so well known to many as it should be.

* * *

Ilford and German Injustice.

In another column we publish the translation of an account which has appeared in some of the German photographic newspapers of an action brought by the Westendorp and Wehner Company against Ilford, Ltd. The action took place in Cologne. It is a fact, which almost every photographer knows, whether here or in any other civilised country, that the Ilford Co.'s trade mark has been for many years a steamer bearing the flag inscribed "Ilford." It appears that a trade mark was registered in Germany by the Westendorp and Wehner Co. in 1902. This mark is described in the proceedings as a steamer in a circular frame, and, according to the account, it is to be inferred that the Westendorp and Wehner Co. were exporting plates to China in boxes labelled with tickets bearing two of these marks and the inscription "The Ilford Empress Plates." It is moreover stated that the Westendorp and Wehner business has been established for a number of years at Ilford. From this description, which implies that the Westendorp and Wehner plate bore the name of one of the "Ilford" well-known brands, we think there is fair ground to believe that an imitation of the "Ilford" brand was intended. The Ilford Co. supplied the American Trading Co. with plates, for export to China, bearing a label with the inscription, "The Ilford Empress Plates," and two circles enclosing a sailing ship. It seems to us that the retaliation was fair sport. If the Westendorp and Wehner

label was a colourable imitation of the Ilford, what be the possible defence for it on the grounds of commercial morality. If the Westendorp and Wehner dry plates, which are exported to China, are made at Ilford, cannot the Company be sued by the Ilford Co. upon similar grounds?

* * *

Note on a Property of Lenses.

Under this title a paper, by Dr. G. Allan, was read at a recent meeting of the Physical Society that it may be of interest to summarise for these pages, bearing in mind that it does, on a comparatively novel method of determining the focus of a lens. A well-known method of testing the concavity or convexity of a lens is that of holding the lens at arm's length and moving it from side to side or up or down; it will be seen while looking through the lens that the image will move in the same direction as the lens when the latter is concave, and in an opposite direction with a convex. If a microscope be used for viewing instead of the naked eye, the same phenomena occur. If the division marks of a scale be looked at through a lens of considerable focal length, as the lens be at the same time moved across the field of vision the motion of the lens appears far to exceed that of the image, and the flatter the lens, and the nearer it is to the scale, the greater this disparity. Dr. Allan shows that the focal length of a lens can be expressed as the product of the distance from the scale to the lens and the magnification, the magnification being defined as the ratio between the displacement of the lens and the displacement of the image. Examples of the method as applied to three lenses were given in the paper. In the ensuing discussion, Mr. T. H. Blakeley pointed out that the distance required was not that between scale and lens, but between scale and the first principal point, a difficulty that could be overcome, he said, by making two experiments with different distances between scale and lens.

* * *

A New Meteorological Station.

A new observing station for London has just been established, under the auspices of the Meteorological Council, in St. James's Park. It is situated in an open spot a few yards from the railing bordering on the Horse Guards' Parade. It is equipped with a set of thermometers and two rain gauges, one of the ordinary kind and the other a self-registering one. The latter records on a sheet of paper, which is renewed daily, the occurrence of rain at any hour of the day or night, and the rate at which it falls. On one of two screens close by are placed automatic records of bright sunshine, of rainfall, and the temperature for the previous twenty-four hours, all made at Westminster. On the other is placed copies of the latest weather charts and forecasts prepared at the Meteorological Office. The information thus displayed in the Park will doubtless prove of interest to a large section of the public—particularly if one may judge from the number of people who stop to see the latest weather charts shown in the doorway of the Meteorological Office in Victoria Street. When we were in Munich a year or two ago we saw in the Maximilian Strasse a meteorological station somewhat similar to the above. It contained a self-recording barometer, a self-recording thermometer, hygrometer, etc., showing the fluctuations of the previous twenty-four hours, and it attracted great attention from the passers-by—almost every one seemed to consult it. It would be of great interest to a large proportion of the public if similar stations were established in some of the open spaces of London, say, such as Trafalgar Square, opposite the Royal Exchange, and the like. The cost would be but small, and the up-keep quite nominal, namely, changing the records every morning, or night. Of course,

London space is valuable, but the affair we saw in Munich did not take up more room, if so much, as an ordinary drinking fountain.

* * *

Disappearing Blondes. Some considerable time ago there appeared in the pages of a popular magazine—*Cornhill*, if we remember aright—an article founded on some investigations that had been carried out by a German philosopher, and entitled, "On the Probable Future Extinction of Blue Eyes." It was shown as the result of observations over an extended period that the proportion of blue eyes to dark was gradually decreasing, and to such a marked extent as to lead to the deduction that eventually there would be no more blue-eyed people in the world—the European world, at any rate. The same idea has been utilised by an American scientist, but he has dealt with blondes generally and not a particular case of blondes. Professor Mason, Anthropologist at the Smithsonian Institution at Washington, has devoted his investigations to the prevalence of girls with fair hair, and these, he states, are disappearing so rapidly that he anticipates the next six centuries will see the end of the blondes. He accounts for this gradual decrease by stating that they possess a lower vitality, are shorter-lived, and more susceptible to the evil effects of urban life. Any advantage that the photographer will gain will not be participated in by the present generation, who will have to be content with the usual modes of counteracting the photographic difficulties that connect themselves with the photographing of fair and red-haired sitters. As we need not observe, the hair is by no means the chief difficulty; wrinkles on the face usually accompany light hair, especially that of the "red" type. Of course this simply means work for the retoucher. As for hair, we know of one professional photographer who uses powder of three different tints, according to his subjects, for bringing out a suitable effect on the negative without need for retouching. Blue eyes can only be treated correctly (failing the practically excluded isochromatic plate) by a special arrangement of the illumination.

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Water Absorption by Wood. The user of photographic apparatus is specially liable to troubles arising from the absorbing powers of wood, which takes up atmospheric moisture so readily. Thus he receives, say, a new outfit of camera and slides, which work "dead true," as the phrase goes. He puts the apparatus away in a dry place, and, perhaps, does not use it for a month or two. He then finds the dark slides tight and difficult to insert, while the shutters are annoyingly tight and difficult to withdraw or close when opened, all through the fact that moisture has been absorbed with a consequent slight swelling of the wood. In course of time he finds the backs of his printing frames liable to warp, especially with the larger sizes, while the minor evils of cupboard doors sticking, and so on, are numerous enough at winter time. A good coat of French polish or of oil-paint laid upon dry wood will prevent much, but not all, of this trouble, for there will usually be some portion of the woodwork which cannot be polished or painted, and thus the absorption and swelling begin, especially when the hygrometric conditions of the atmosphere are unfavourable. The only remedy, or, rather, prevention, is to have apparatus which, at any rate to start with, is free from moisture—i.e., commercially "dry"—and then to see that it is always kept with its polished or painted surfaces in good condition and removed when damaged. According to M. Deploy, wood kept for several years in a dry place still retains 15 to 20 per cent. of water, and when it has been thoroughly desiccated will, when

exposed to air under ordinary circumstances, absorb 5 per cent. of water in the first three days, and will continue to absorb it till it reaches to from 14 to 15 per cent. as a normal standard. It will thus be seen how easy it is to complain of "damp wood" in apparatus when not an atom of foundation exists for the charge.

* * *

Testing Copper Sulphate.

The use of sulphate of copper for the toning of bromide prints has increased to quite a considerable extent during the last year or two, the process introduced by Mr. W. B. Fergusson having been followed by the other methods, in which the print is bleached in a solution of copper chloride. This latter salt is usually prepared by double decomposition from the sulphate, and therefore any impurity in the common source of the toning preparations will be injurious in both cases. In Fergusson's process especially the presence of iron is likely to interfere with the tones obtained, inasmuch as ferricyanide of potassium is the other active constituent of the toning bath, and the blue-coloured compounds which it forms with iron are well known. In the case of the bleaching process also the presence of traces of iron may lead to irregularity from the tenacity with which paper retains iron salts. The subsequent application of the darkening solution of sulphide would then give rise to the dark-coloured ferrous-sulphide. It is useful, therefore, to have a ready and sensitive test for iron in copper salts, such as is recommended by Grouzel in the "*Journal de Pharmacie et de Chimie*." A 10 per cent. solution of the copper sulphate is prepared and excess of sodium thio-sulphate (hypo) added so as to give a colourless liquid. Potassium ferro-cyanide solution is then added, and gives in the presence of iron a pale-blue precipitate which becomes dark-blue after a time. In the case of copper free from iron the precipitate is greyish white. A further test can be made with hypo alone. Equal volumes of 10 per cent. solutions of the copper-sulphate and the thio-sulphate are mixed together and allowed to stand for some time. In the case of a pure sample of copper the well-known Lenz's Salt is formed as pure yellow crystals on the sides of the test-tube. If iron be present the colour of this precipitate is noticeably modified by an ochre-yellow deposit or basic ferric-sulphite. The two tests are specially convenient to photographers, as they require only reagents, which are on the shelves of every dark-room.

* * *

Alcoholic Colours.

A short time ago the photographer had little interest in questions of colour, except, perhaps, that he found it useful in his work to issue a few hints in print to his sitters in order that they should avoid those tints which photographed dead black, and so put the wearers into involuntary mourning. But now everything to do with colour interests him, and a fresh addition to the long list of anilines will cause him to make inquiries as to its particular virtues. People used to talk about the seven colours of the rainbow, but their number is no longer confined to seven, but rather to seventy times seven, and we are not quite sure, without the means of reference at hand, whether that aggregate would include all the tints which are now at the command of the experimentalist. To find different names for all these little bits of the solar spectrum was as difficult a business as it was to Adam to find appellations for the beasts of the field and the fowls of the air, but it had to be done. When colours were few the names were borrowed from familiar things, so that we have among the old names "rose" pink, "sky" blue, "lemon" yellow, and so on. No one raised any objection to this sensible course. But people—or at any rate some people—are more particular now, and we find a worthy abstainer

protesting in the columns of a religious periodical that the hateful word "champagne" has been applied to a new colour which approaches in its tint that effervescent beverage. To quote the immortal words of W. S. Gilbert, "How very, very pure this pure young man must be!" It takes away the breath of the ordinary man, the common sinner, to think that there are beings on this earth so superlatively good that with them "champagne" must be numbered among the naughty words. Let us try to live up to the same ideal by carefully abstaining from calling anything claret colour, or the colour of pale sherry, or mentioning the compromising fact that wine is sometimes red. Happily we can do without these vulgar and harmful references by studying the list of colours issued by the aniline manufacturers. Thus we can without a blush use the terms eosine, erythrosine, and phloxine for reds, or, to be more precise, we can describe them as alkali salts of bromine and Iodine compounds of fluorescëin and of dichlorfluorescëin.

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English Dry Plates. In the "Photographisches Wochenblatt," Herr Gaedicke returns to the paper by Mr. S. H. Wratten on the manufacture of dry-plates, of which he published a translation. He takes exception to the remarks—"The home product of dry-plates is far and away superior to the Continental makes"; "in that country (Germany) there is not a plate factory of any magnitude"; "English plates are preferred." With all deference to Herr Gaedicke's opinion, we venture to think that much may be said in defence of Mr. Wratten's statements. Herr Gaedicke asserts that good dry-plates are now made all the world over, and that English plates are not one jot better than the Continental. We answer: Have you a plate equal in speed to the Ilford Monarch? With regard to Herr Gaedicke's statements as to orthochromatic plates, we would also reply, since the best-known plate in Germany—the Perotto—is instanced, that on page 775 of this paper, this year, he will find the report from one of his own countrymen of a comparison between the Barnet Orthochromatic Plate with another, which, to our personal knowledge, was one of Perutz's Perotto Plates. We have the negatives before us. Moreover, the price of the Barnet plate is about half that of the Perutz plate. We would remind Herr Gaedicke that price must also count. Mr. Wratten's experience agrees with our own. We have introduced English plates to German photographers, and after trial they have regretfully acknowledged that they prefer them to those of German manufacture. Regarding the extent of the manufacture of plates in Germany, we would refer Herr Gaedicke to the first paragraph we published in our issue of January 24, 1902. These are the latest figures at our disposal, but we doubt if those of this year differ materially. The entire German exports of photographic requisites were then £550,000. Apart from papers and lenses, the value was £270,000, from which a very considerable deduction has to be made for chemicals and cameras. For the present case we will assume these to represent only £70,000. As two-thirds of the entire German plate production is exported, the entire output must, consequently, be about £300,000. The figures upon which these calculations are based were published in Herr Gaedicke's own paper. If we remember that there are a number of German plate-makers, can it be doubted that Mr. Wratten was not exaggerating seriously. The question of magnitude is a relative term, some idea of which may be gathered from the fact that nett profits of the Ilford Company in 1901 were £53,700. What must have been the output of this one firm alone?

THE IDEAL RETOUCHING DESK.

CURIOSLY enough, while all around them photographic apparatus of every description has been improved or modified almost out of recognition, retouchers are content to work patiently on with the same old pattern of desk which did duty in the early dawn of photography. Speaking generally, the retouching desk of to-day may be summed up briefly as consisting of a hinged flap with square or circular aperture, attached to a box-like base, possibly containing a drawer, with, overhead, another hinged flap forming a screen from the light when in use, and a lid for the box when closed. The reflector and side flaps are secondary additions which, to judge by their apparent lack of adaptability to their purpose, are thrown in as an after-thought.

Now, at the best, retouching is a none too healthy occupation. It would certainly seem, then, but simply common sense to inquire critically how far the existing form of desk is consonant with the requirements of hygiene, and, secondly, whether it meets the practical needs of the retoucher to the extent that might be expected.

The convenience of the present model may be at once admitted. As regards portability and readiness of erection it leaves little to be desired. But when inquiry is instituted as to its character from a medical and sanitary standpoint, the answer is hardly so satisfactory. In the first place, sufficient attention is not paid to the necessity of adjusting the height of the desk to obviate stooping on the part of the worker. In a good many cases, of course, this difficulty is intelligently overcome by choosing a table of suitable height on which to place the desk, or perhaps by inserting books or small boxes underneath. Frequently, however, the retoucher, ignorant or possibly careless of the harmfulness of continual stooping, does not attend to the matter. That such a position, constantly adopted, or work requiring steady application, and in a more or less stuffy atmosphere, is decidedly injurious there can be no manner of doubt. We have known consumption and other chest affections induced by this cause alone. The ideal retouching desk, then, should apparently possess not only a means of adjusting the height of the negative, but also provision for raising or lowering the whole contrivance to any convenient height.

Another matter of urgent importance is the question of ventilation. It is bad enough, and unhealthy enough, to have to work in the semi-darkness which seems to be considered indispensable, but there is no valid reason why air also should be excluded. Yet in how many cases the retoucher is seen surrounded by stuffy hangings of heavy black cloth, draped clumsily over the desk, and with every air inlet closed on three out of four sides. Worse still, perhaps, an insufficiency of daylight compels the employment of a paraffin lamp, whose close proximity converts the atmosphere under the hood of the desk into the faithful similitude of a miniature Inferno. The retoucher pines away at full pressure under such conditions for the greater part of the working day, emerging finally from the heated and vitiated surroundings into, it may be, the chilly air of a winter's evening. Need one anticipate the probable consequences?

The remedy for this state of things is easy and obvious. Attention should be paid to the provision of suitable apertures at various parts of the desk. The top, too, instead of being wood, may consist of several thicknesses of soft light, open fabric, pervious to air, which, by means of rings attached to a stout wire frame, can be allowed to hang over at each side in the manner of curtains. This is no means a new idea, but such an arrangement is, unfortunately, seldom met with. The ventilation of the room used for retouching should also receive its proper share

voice, so that the slightest sense of stuffiness or closeness is rendered impossible.

The angle of the retouching desk is commonly at too great a slope, involving not only stooping, but a certain strain on the eyes. The adjustments should be such as to allow of the negative being worked in a practically upright position, on a level with the eye. In this respect sufficient regard is not paid to the proper balancing of the arrangement, which, unless inclined to an undesirable angle, is morally certain to topple over in front. It would seem, therefore, to be a desideratum that the panel supporting the negative should be capable of clamping or fastening at any desired slope, even leaning towards the retoucher if necessary, while the base of the desk should be sufficiently heavy to prevent any tendency to overbalancing. Some suitable means of firmly gripping the negative should, of course, be provided; but on this point there is little to be said, since there are already many excellent ways in which this may be accomplished. In fact, it might be stated with considerable truth that greater regard has been paid to the safety of the negative than to the comfort or health of the worker.

We come now to yet another important factor—that of lighting. It is a recognised truth that retouching, in many cases, causes serious injury to the eyesight—often to such an extent as to compel the unfortunate artist to abandon what is practically his or her only means of livelihood. On the other hand, we find a large number of workers who not only emphatically deny any ill-effects in their own cases, but even go so far as to claim positive benefit to the eyesight, which, they say, has been strengthened and rendered keener. This apparent contradiction resolves itself into a simple question of initial fitness for the task, and the employment of certain prescribed precautions. Where the eyesight is in the slightest degree weak to begin with, it is the height of folly to embrace retouching as an occupation. By weakness is not meant any slight degree of short-sightedness, involving the wearing of glasses, or trivial idiosyncrasies of that nature, for very often short-sighted people are found to have peculiarly keen vision. What may be defined as a bar to successfully taking up retouching is that weakness of sight which feels fatigue at any prolonged exertion, or finds difficulty in executing the work for any length of time.

Assuming, then, that the retoucher's eyes are in good condition at the commencement, what means are to be adopted to keep them so? A little consideration will show that two things in particular are to be avoided—glare and strain. The light should be so managed that, on the one hand, unnecessary brightness and glare are removed, while, on the other, the worker finds no difficulty whatever in recognising every portion of the negative which requires treatment or in applying the requisite touches. In the majority of cases it will be found that mischief is done to the eyes rather by an excess than an insufficiency of light, since the latter is more readily noticed and remedied. It is advised that, when possible, the light should be obtained by reflection from a dead white surface, such as a sheet of note-paper, since this gives an illumination singularly free from glare. Light reflected from a mirror on to a sheet of ground glass fixed behind the negative is, perhaps, the next best thing, while the mirror alone is undoubtedly the worst.

The great disadvantage of daylight from an oculist's point of view is its lack of uniformity, which obviously involves eye-strain from time to time. Indeed, where this can be done, it is a good plan to work only by artificial light. Although at first more difficult to work with, the eye soon becomes accustomed to the peculiarities of artificial illumination, and can thenceforth enjoy the advantage of a lighting free from violent and disturbing fluctuations.

The one objection is, of course, the expense, though this is less than might be imagined.

There has been a good deal of disagreement as to the best artificial light for retouching. The majority of workers would probably agree that a good duplex burner paraffin lamp, used with ground glass and tissue paper as diffusers, is difficult to surpass. When this is employed, extra attention must be paid to ventilation, as before stated. It is sometimes feasible to place the desk close against a small opening between two rooms, arranging the lamp behind the opening. The worker is then entirely removed from any heat or fumes. The incandescent gas light, convenient as it undoubtedly is, hardly seems suited for retouching, though some workers find it very acceptable. The incandescent electric light is strongly recommended in many quarters, and must certainly be considered the best from a hygienic point of view, since there are no products of combustion. A distinct drawback to this, however, is found in the impossibility of regulating the amount of illumination, though this may be largely remedied by interposing different thicknesses of tissue paper, ground glass, and other media.

Given a suitable illuminant, then, it should be the retoucher's cue to avoid exposing the eyes either to excessive glare or the strain of working in a feeble light. This, of course, involves constant adjustment of the light to the negative as the density of the latter varies. The trouble involved is slight, and well repays itself in ease and facility of working, besides removing the potent causes of future trouble.

In conclusion, although there is difference of opinion on this point, it is strongly advised that those parts of the negative not being worked should be blocked out by means of a brown-paper mask. In view, also, of the fact that darkness is unfavourable to health, it is suggested that the room be kept as light as possible, consistently with the proper screening of the negative. So long as an excess of direct light does not fall on the film, a surprisingly large amount may be allowed all over the room. In addition, an occasional resting of the eyes will be found not only highly beneficial, but conducive to a broader and better style of work.

COLOUR in Character.—Experiments numbering over three hundred, and conducted over a term of three years, have convinced Dr. J. Stenson Hooker, of Nottingham Place, W., that the N-rays emitted by the human body differ in colour according to the character and temperament of the person, and he gives the following curious particulars in a letter to the "Lancet":—"Rays emanating from a very passionate man have a deep red hue, says Dr. Hooker; the one whose keynote in life is to be good and to do good throws off pink rays; the ambitious man emits orange rays; the deep thinker, deep blue; the lover of art and refined surroundings, yellow; the anxious, depressed person, grey; the one who leads a low, debased life throws off muddy brown rays; the devotional, good-meaning person, light blue; the progressive-minded one, light green; and the physically or mentally ill, dark green." "I know perfectly well," adds Dr. Hooker, "that these statements will be received by many with an amused smile of incredulity, as many other so-called 'discoveries' have at first, but I also know perfectly well that sooner or later they will become accepted facts. Nor is there anything remarkable or unreasonable in all this when we consider that man has been thousands of years (Max Müller is my authority) in evolving his colour sense to its present point. There is no Sanskrit word the meaning of which has any reference to colour; Xenophanes knew of three colours of the rainbow only. Some 15,000 or 20,000 years ago man was only conscious of one colour; later red and black were distinguished; still later, yellow, then green. As our senses become more refined surely we shall evolve the power of detecting more refined hues. We have not yet reached the point of finality in rays."

JOTTINGS.

THE last smoking concert of the Photographic Salon, which took place more than a fortnight ago, supplied opportunity for some badinage at the expense of the writer of these lines. I am said or supposed to have written the epitaph of the Salon, and to have that gem of memorial literature stowed away in a secret drawer, where it reposes under a thick layer of dust. It is a dangerous thing to make a quotation without verifying it. My recollection of the matter (and I ought to know something of it) is that in the course of a controversy in these columns, some ten or a dozen years ago, with Mr. Alfred Maskell, that gentleman ironically twitted me with my "services" to the Salon. The retort was that those services were uncompleted: I had yet to write the Salon's epitaph. It is still unwritten, but I live in hopes of an early perpetration of the effort, for I see that attempts are being made to bring about a reconciliation between the Salon and the Royal. If success should crown the movement, what a fine opportunity it would give me of casting my epitaph in the form of a new version of the parable of the Prodigal Son! Mr. H. Snowden Ward, who is the Apostle of Fusion, presumably makes the suggestion in all seriousness. That being so, I do not doubt that he will secure a considerable following amongst the more modern "pictorialists," who find it difficult to perceive the necessity of two autumn exhibitions of photographs held simultaneously within a few score yards of each other. Those persons outside the Royal who complain so much that the interests of pictorial photography are not properly looked after by the society, would be surprised to know how delighted many non-pictorial members like myself would be to have the whole business settled out of hand once and for all.

The photographic profession has not responded to the invitation to resuscitate the old Benevolent Fund or start a new one, and unless the P.P.A. can do something towards rousing its members in the good cause, failure must once again be placed to the credit of the philanthropic few who delude themselves by thinking it the easiest thing in the world to help a body of men who will not help themselves. So little esprit de corps is there amongst photographers, that even the P.P.A. itself is hampered in its work for lack of support not only by outsiders but by its own members. You would think that such a scheme as that which was printed in the JOURNAL the other week relating to the examination of assistants would call forth a perfect flood of commendatory or critical correspondence in these pages. Not a bit of it. But when cigarette and soap people enter into temporary competition with photographers, oh! then the fat is in the fire with a vengeance. Hundreds of letters are written to the Press, heated meetings are held, and appearances point to the probability of "something being done" at last. Something, it is true, has been done by the P.P.A. during the three and a half years of its existence, but the frothiest and blatest of those who clamoured for its foundation have subsided, do not attend its meetings, and now skulk behind a curtain of indifferentism. Still, all honour to the Committee of the P.P.A., a hard-working band of conscientious men who get through a great deal of useful administrative labour, unthanked and unrewarded. The status of photography as a profession or a business, however, will never be raised in the public estimation until there is more cohesion, more combination, and greater unanimity of ideal amongst those who choose a difficult and harassing, but nevertheless beautiful and interesting, method of graphic expression as a means of earning a daily crust.

I am pleased to see that thus, early arrangements are in progress for making the Dublin meeting of the Photographic Convention of the United Kingdom next July a great success.

It is an open secret that in 1906 Southampton will be the scene of the gathering; so that two very happy times are store for the members of this flourishing peripatetic photographic institution. May I throw out a suggestion with regard to the evening meetings? It is that the paid services of first-rate lecturers be secured. The hack and hackneyed photographic subjects which figure in the yearly programmes of photographic societies all over the country are of place at an avowed holiday gathering, whereas men of the eminence of Sir Robert Ball, Mr. Kearton, and others might be named, would prove great attractions, not only to Conventioners, but also to hundreds of their temporary hosts and hostesses. It is time the lighter side of the Convention were developed. If a dinner and a garden party, why not a ball? Or is it too hot for that sort of thing in July? I am not a dancing man, so cannot say. Much has been made of the fact that the Convention has a large sum of money in hand. This is a testimonial to the excellence of its business management. The lecture suggestion, if carried out, would involve inconsiderable outlay, so that the hoarding-up process would be arrested, or at any rate checked. It is quite evident that the Convention, which reaches its nineteenth year of existence in 1905, has entered upon a very vigorous phase of its career and bids fair to survive to a green old age. I wonder what the scene of its meeting will be in 1907, when it attains its majority! May I suggest the Isle of Man, which, like Ireland, has not yet had the honour of a visit from the present writer?

THE St. Louis awards to British photography have on the whole been well received in this country, although, of course, there are some surprises and several disappointments. An American exchange, "The Photo-American," just to hand, contains a reproduction of a group of the international jury whose names no doubt will interest many of my readers. They are J. Poulton; Curtis Bell, F. Dundas Todd; I. von Reden, G. M. S. Stein, W. Zimmermann, C. M. Kurtz (Department of Fine Arts), S. Lazarenech, J. Craig Annan, M. Lumière and M. Gaumont. Poulton, Von Reden, and Lazarenech are names to me. Bell and Zimmermann are prominent American Secessionists, and Todd is, of course, the hustling editor of "The Photo-Beacon."

American "Photographic Politics" (I have been credited with the invention of the phrase in inverted commas) appear to be mixed; at any rate, they are more difficult to an outsider to comprehend than I imagine are our own by onlooker from a distance. I understand from quite independent sources that the management of the photographic section at St. Louis left much to be desired. This is generally the way with comparatively small sections in these huge international exhibitions. I remember at Paris in 1900 much the same sort of thing was experienced. Paris, by the way, is already talking of another great exposition to be held a few years hence. Attempts that have hitherto been made to secure separate pavilions or palaces for pictorial photography at these universal exhibitions so far completely lack successful results. But we are moving quickly in such matters, and shall move with even greater rapidity in the future, and it would not surprise me to find that when the fair city on the Seine again invites strangers from all nations to become its guests, the world's pictorial photographers will have achieved their ambition. As to the establishment of a Royal Photographic Academy, that will be only a step.

The report of the St. Louis National Photographic Convention takes up over forty pages of "Wilson's Photographic Magazine." It seems to have been a busy and wordy week. The only novel address was one by Mr. W. G. South on "Color Photography," who in the course of a fragmentary sketch

his subject, stated that he had invented a process for producing prints in colours which he called "Solgram." Says Mr. South:—"For years I have been convinced that the three colours—yellow, red, and blue—had some particular office in the world of art except tinting objects, and I invented the "Solgram" to prove my theory (namely, that red was the base and warmth of a picture, blue was the great drawing master, giving detail, shadow, and form, and yellow gave to our work light and life). I reasoned with myself thus: If red is the base, it should be placed first upon our paper (or suitable substance), and as its office is simply to give warmth, tone, or colour, it need not be sharp and wiry; therefore, the old gum bichromate pigment process would suffice, with the advantages that the pigment could be chosen for permanency, and also that by reason of its colour the print, upon which a surface would be visible, doing away with actinometers, etc. After printing and washing we would obtain a beautiful crimson picture." And so on. Mr. South's reasoning as to the "offices" of red, yellow, and blue is certainly original. His "invention" seems to consist of a mixture of gum bichromate printing and the Koenig process. Please oblige with fuller details, Mr. South.

The erudite Mr. South, who had a display of "photographs in natural colours" at St. Louis (I quote his own description), is not kind to the various systems which antedate his own somewhat ambiguous and mystical method. Mark him: "So far as negatives for producing colour photographs are concerned, every desirable quality has been obtained. But, as I have said, we have no colour photographs. If this is true, then what have we? Why, we have tri-colour photo-engravings, the pictures from which cannot be produced without excellent printing presses and equally excellent printers. We have lantern slides and colour transparencies, which are beautiful, but they are not photographs. We have physical prints from dyed or stained positives which are not permanent, and are messy and dirty things to handle, and they are not photographs when finished. Now and then a photographic print is made by superposing three carbon prints or by fading out unstable dyes, but such methods are not of any commercially practical use." Will some one explain to me why it is that whenever your half-educated dabbler in colour photography "invents" some empirically mongrel process of making tinted prints he must go out of his way to show his ignorance of the main subject by passing wholly absurd and irrational comments on the work of those who have preceded him? If a trichromatic transparency is not a photograph, Mr. South, what on earth is it?

Cosmos.

Mr. W. Towle, the manager of the Midland Hotels, kindly sends us an illustrated brochure dealing with the tariffs, etc., of these well-managed institutions.

An Amusing Incident.—Hand camerists and others who were anxious to obtain portraits of the British Ambassador in Germany (Sir Frank Lascelles) had ample opportunity of securing them at Potsdam one day last week. It occurred this way. After the luncheon at Potsdam, to which Sir Frank Lascelles was invited by the Emperor, on the occasion of the birthday of King Edward, His Majesty, it appeared, had given orders that as the British Ambassador drove to the station the band should play "God Save the King," so long as His Excellency remained in sight. Sir Frank Lascelles, not knowing the order, however, and hearing the band play our National Anthem, ordered the coachman to stop and rose in honour of his sovereign. The result was humorous. The Ambassador remained standing as long as the band played, and the band played as long as the Ambassador remained in sight. The British National Anthem was therefore rendered several times over, until the Emperor, realising the situation, laughingly sent orders for the music to stop. It is not often that snap-shottists have such an opportunity, as this appears, according to the daily Press, to have been for securing a picture of a notable personage, and at the same time excellent portraits of him under humorous circumstances.

PHOTOGRAPHY AND DAMP.

APART from manipulative faults there can be no doubt that damp is one of the chief causes of failure—and fading in photographic printing. We all know how much sooner the old silver prints on damp walls faded before those in drier situations; so much so that it was quite the usual formula as a salve for conscience, when a blotched, faded albumen was returned, to say, "You must have kept it in a damp place." Damp having this effect on the old albumen print, there cannot be the slightest doubt that it is equally as active a cause of fading in the case of gelatine P.O.P., or, perhaps in a lesser degree, of bromide paper and the gaslight varieties. If, therefore, it is known that silver prints of any description are to be kept in any place where dampness will have access, or where the air itself is at all humid, special precautions should be taken in the framing, such as pasting in the glass, and putting a sheet of damp-proof paper between print and pack, and again pasting the latter in, that is to say, covering over all with stout paper.

Platinotype and carbon are affected to a lesser degree, though we have seen prints in the former process exhibiting all the appearance of bad fading, but of course they could have been restored. The effect of dampness with these processes is that of mildew and a kind of growth on the surface of the prints difficult to remove.

It is not, however, the effect of damp on the finished prints so much as its effect on the paper before finishing that we want to discuss. At this time of the year this is particularly seasonable, as probably November, December, and January are the most humid of months, not an ordinary dampness, but a kind of nasty, sticky variety, penetrating everywhere, and making any work-room without fire or heating apparatus perfectly objectionable and unfit for the storage of sensitive material. If your printing room happens to be of the above variety, and there are many such, only sensitive paper for the day's work should be kept therein. The frames, pads, and blocks should every now and again be placed round a stove, and very probably, if this operation has not been performed for a week or two, quite a volume of steam will be driven off, for the soft wood of printing frames absorbs quite a lot of moisture from the atmosphere. The negatives, too, should be dried over a stove or gas-ring, more especially if they are not varnished. Varnishing is, however, a necessity just now, if you wish to be free from silver stains. Do not be misled by those who say it is unnecessary, and that varnished negatives are more easily damaged than those untreated. All professionals will know this is not the case. Handling hundreds of negatives, as we do, during the year, we can say that never do we print an order (proofs are different) from an unvarnished negative, and frequently, if proofs are taken from a plate without first carefully drying plate and paper, silver-stains result.

Home-sensitised albumen even in summer goes yellow before the fourth or fifth day, and this time is greatly lessened during the winter months. Gelatine P.O.P., though keeping perfectly in the warm weather and in dry rooms, goes yellow in a few days if kept in a room unwarmed. This yellowness, however, fixes out, but we certainly think it should be guarded against.

Platinotype is known as the printing-out paper most affected by dampness, and the different precautions necessary to keep it in fit condition are well recognised. We are surprised, however, that companies supplying carbon tissue do not give warning against damp, for in our opinion carbon tissue is as easily affected as platinotype, and similar precautions should be taken, especially by those buying ready-sensitised material. With reference to this latter, we may mention that not a week ago we obtained a fresh lot of transparency tissue by post at

nine o'clock, printed two or three hours outside in an exceedingly foggy atmosphere, and developed at two o'clock. Every sheet was wholly or partially insoluble, without a doubt due to the humidity of the air. Therefore, we advise the reader to dry his frames in the morning before printing, and also to thoroughly dry his negatives, for it must not be forgotten that the gelatine film can absorb, and does absorb, if it can easily obtain it, a great quantity of water, and this even if the so-called waterproof varnish is used. We should also say, use india-rubber pads, and dry them before use. In large sizes the india-rubber sheeting becomes expensive. American cloth is a good substitute. It should be placed next the paper, and over it an ordinary felt pad.

The storage box to keep tissue should always be thoroughly dry and supplied with waterproof pads top and bottom. At night always take into a room in which there is, or has recently been, a fire. With reference to the Autotype Tissue storage box, we should recommend that tissue be taken out and put in only in heated room, for if damp air gets in, if only in small quantities at a time, insolubility will probably ensue. It is also recommended to only keep bulk in these boxes, taking out sufficient for the day, first thing.

Another point about carbon is to see that the pieces of blotting-paper put between the adhering tissue and supports after first transfer should be kept dried, or proper contact may not occur. This is mentioned as these papers are frequently used over and over again, and, whereas twenty-four hours are easily sufficient to dry them during the warm months, just now they are frequently thoroughly damp.

Another paper easily affected by dampness is the Collodio Chloride. To make it print as well and as richly as usual, it is better to keep a newly opened tube in a warm room for some time. The collodion surface appears to be more apt to crack and blister just now, whether due to cold or damp we are not aware. Again, with mounting, as was pointed out in a recent article, slow drying gives yellow spots, and this slow drying is of course due to dampness in some shape or form. Doubtless the starch, or whatever mounting is used, ferments.

Another annoying thing we all find just now is the fogging of windows and show-cases. There seems to be no remedy except good ventilation top and bottom of glass, and if the obstruction is due to actual fog this is no use.

COPYING BY GASLIGHT.

WINTER is with us, with its short days, dull days, foggy days—days when little or no photography can be done, and then only under conditions far from the best; days when the distracted professional man dreams about arc-lamps, flash-lamps, and magnesium ribbon, but finds himself next morning still struggling in semi-darkness and gloom.

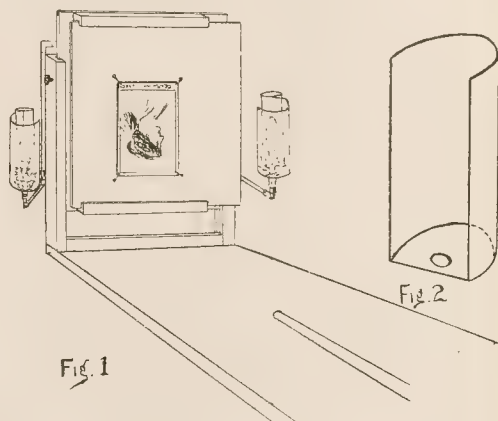
Sitters are scarce, and printing, except on development papers, next to impossible. Grist can be brought to the mill at this time of the year by specialising in enlargements, which are wanted for presents, and photographic Christmas cards; but this creates a good deal of copying work, and copying cannot be done without light. The uncertainty and variability of daylight at this season renders copying far from a pleasant or profitable task, and studio work probably demands one's presence during the two or three hours of good light with which we are occasionally favoured.

Yet almost every photographer has gas in his work-rooms, and I want to show him how he can apply it to his copying-board in such a manner that he will never again trouble about daylight for this purpose.

Fig. 1 shows a convenient form of copying easel, which admits of a vertical and lateral movement to facilitate the centring

of the object upon the camera screen, thus obviating the use of the rising or cross front on the camera, and the consequent removal of the lens's axis from the centre of the screen, which, unless the lens is a very good one, puts a considerable strain upon its covering powers. But that is the usual form of board, and possesses no novel features. It is to the lighting arrangement I wish to draw the professional's attention. Down each of the side supports of the easel is fixed a length of india-rubber gas-pipe, terminating with an L swing-joint and an 8 or 9 inch horizontal arm with burner elbow on which is fixed an ordinary incandescent gas-burner. The two gas-pipes are joined at the back of the board by a T-piece, and a length of india-rubber tube connects this with the nearest gas-bracket, which should have its burner removed so as to permit a sufficient pressure of gas to pass to fill each mantle.

The only addition to the usual incandescent burners is a couple of screens, as illustrated in Fig. 2, which any turn will make for a few coppers. They are made of bright tin cylindrical or parabolical in form, 7 in. in height by 3 or 3½ in. in diameter, with an opening the whole length, 2½ in. wide. The bottom must be soldered to each, with a hole in the centre 9-16 in. in diameter. Through this aperture the burner stem can be passed, when the upper portion is lifted off, and the bottom of the screen (which also serves as a reflector) will



then rest on the loose metal disc which forms the draught screen of the burner, and is held firm by the three projecting feet of the top part of the burner when that is again placed in position.

The burners can be placed at right angles to the copying-board or swing further out as desired. The screens can be turned so that the light is reflected directly upon the photograph or object to be copied, when the lens is screened from direct rays. I need hardly say that the tubes should be fixed so as to bring the mantle in a line with the centre of the copying-easel and level with the lens.

The exposure required with two incandescent burners used in this manner is very brief, and, once ascertained, it only varies slightly with the nature of the object to be copied. The light coming equally from both sides, produces no shadows, and prevents the reproduction of any unevenness or roughness of the print's surface. I am sure that any one who tries this system of lighting his copying-board will hereafter employ it winter and summer alike. By its aid copying can be done day or night, and I have also found it most useful for photographing small articles, such as natural-history or geological specimens. Light and shade can be secured to a nicety by adjusting the distance of the burners from the object—swinging one further away than the other, and thus, by increasing the distance, reducing

the intensity of the light on that side by comparison with the other; and, at whatever angle the bracket is placed, the light can always be directed upon the object and away from the lens by a slight turn of the cylindrical screen.

Another point which I would recommend to all photographers who have much copying to do, is to suspend the whole apparatus from the ceiling at a convenient working height. Then, if the camera, board, or easel receives a knock during exposure, the whole thing swings together, the image is not "moved," and the mantles are not broken. This is particularly serviceable in a building subject to vibration from passing traffic or machinery. If slung over pulleys the apparatus can be drawn to the ceiling out of the way when not in use.

C. C. VEVERS.

PHOTOGRAPHY AS A FINE ART.

ANOPROS the recent exhibitions of the Royal Photographic Society and the Photographic Salon, the "Burlington Magazine" for October remarked that they showed how vast are the advances which photography has made during the last few years. "One illustrates chiefly the convenience and capacity of the process for rendering natural facts in monochrome; the others prove that this literal rendering can be modified in innumerable ways by the operator's dexterity and taste, and the talent displayed may well make one ask if such results do not in some degree challenge the achievements of the older graphic arts. Certain limitations will be obvious to eyes accustomed to look at good painting. The shadows, for example, are heavy and murky, a defect which is especially noticeable in landscape foregrounds. It is for this reason that snow-scenes seem to make better pictures than any other class of subject. Again, a general monotony of surface texture damages the effect of even the most brilliant examples by neutralising much their vitality, and the general aspect of a collection of them is just a little depressing. Local colour, too, seems to tell far more strongly than light and shade, so that the prints are rarely luminous. Natural obstacles, also, will interfere with designs that are otherwise good; awkward forms in landscape foregrounds, for instance, cannot be manipulated with the freedom which a painter enjoys. In the case of portraits, where the lighting and the masses can be deliberately arranged, this disadvantage is far less apparent, and the results in consequence are of a far higher general average. Even the most perfectly arranged photographs thus lack the quality, vibrancy, luminosity, and vitality of fine painting, as well as its marvellous opportunities for creative design (i.e., perfect freedom to select and to emphasise), for colour, and for human skill and sensitiveness in the workmanship; and it is difficult to see how these defects can ever be completely mended. On the other hand, for every painter who succeeds in utilising a tithe of the possibilities of his art, there are at least a thousand who do not, and our art schools are increasing this number at an enormous rate. These unfortunates can neither design, draw, nor colour well enough to produce a work of art, yet year after year they struggle on, hoping against hope, pushing forward products which crowd and embarrass those of better artists, are the despair of honest critics, and a source of confusion to an already confused public. To those who thus possess the artistic temper without the artistic faculty the camera now offers an endless vista of possibilities. It can supply them with powers of delineation such as their hands could never attain; it can free them from the nightmare pursuit of colour harmonies whose laws they can never master. All the enthusiasm and talent they possess is left free for discovering fine subjects and for composing them with taste and personality. Their energies, being restricted only by the resources of a medium which grows more and more flexible every

day, may thus blossom at last into art of a quality to which as painters they could never aspire. Of course, even the finest photography must always remain hopelessly inferior to fine painting in its range, beauty, and suggestiveness. Yet there can no longer be any doubt that good photographs are infinitely more dignified, delicate, and powerful than mediocre pictures. The recognition of this superiority may not become general all at once, for bad painters will be slow to sacrifice the desperate satisfaction of remaining 'real artists'; but come it must, and all good painters will rejoice at its coming."

UNFAIR COMPETITION IN THE PHOTOGRAPHIC INDUSTRY.

[Translated from the "Photographisches Wochenblatt."]

THE company for the manufacture of dry-plates, formerly known as Westendorp and Wehner, of Cologne, which for a number of years has carried on a manufacturing business in photographic dry-plates and other photographic articles at Ilford, London, has registered at the English Patent Office a ticket under the Trades Marks Act. The steamer which this ticket bears was entered as a trade mark at the Imperial German Patent Office on May 15, 1902, under No. 54102, and on October 30, 1902, under No. 56409, with the following note concerning its commercial use by the company: "Manufacture and sale of photographic cameras, dry-plates, and photographic papers. The tickets described are pasted upon grey packing paper used by the company for wrapping the dry-plates made by them, which are intended for export to China."

At the instigation of the American Trading Company, Hamburg, the Ilford Company, Ltd., Ilford, London, also made a ticket, which in size, inscription, and drawing corresponded exactly with the aforesaid ticket of the Westendorp and Wehner Company's, but with the difference that the ticket was not inscribed "The Ilford Empress Plates," but "The Milford Empress Plates," and that instead of the two steamers in circles which are on the tickets of the Westendorp and Wehner Company, two sailing ships in similar circles are used. These tickets of the Ilford Company are also pasted on grey packing paper, which was used for the plates delivered to the American Trading Company, Hamburg, who, as was proved, shipped some of them to China. The Westendorp and Wehner Company thereupon brought an action against the Ilford Company under paragraph 826 of the B.G.B., paragraph 16 of the law for the protection of trade marks, and the law against unfair competition, and sought to restrain the defendants, by penalty for every offence, from offering for sale their dry-plates as Milford Empress Plates, or under any similar description, and especially from use of the tickets complained of; also to forbid the use of such description and packing, and of such descriptions in their advertisements and circulars. The plaintiffs likewise asked for £250 damages.

By decision of the Fourth Court for Commercial Affairs of the General Court of Justice, the defendants were condemned to the payment of £250 damages, and forbidden the use of the description Milford Empress Plates, as well as the plaintiffs' trade mark, upon all their packing, tickets, and other business papers, under penalty of fourteen days' imprisonment for every such offence. By decision of the First Civil Tribunal of the Cologne Upper General Court of Justice, dated October 19 this year, the decision of the General Court of Justice was essentially confirmed, but with the modification that a fine be imposed instead of imprisonment for every offence, also that only the right to damages at present be affirmed, and that the amount be afterwards assessed. The Upper General Court states in its reasons for this decision that the law against unfair competition does not apply to this case, but that the general prescription of paragraph 826 of the B.G.B. does.

According to the correspondence between the defendants and the American Trading Company the defendants wilfully caused injury to the plaintiffs in a way offensive to good custom. It must be particularly described as an unloyal act of the defendants if, to compete unfairly with the plaintiffs, they packed and ticketed their plates in such a manner in order to deceive the buyer in China. This should be judged by the fact whether the defendants' plates were bought as those of the plaintiffs, which had been imported for years. In so doing the defendants had offended against paragraph 14 of the law of May 12, 1894, for the protection of trade marks.

THE LIPPMANN PROCESS SIMPLIFIED.

ONE of the greatest obstacles to the general adoption of the Lippmann process has been the necessity of using the mercury dark slide, and the next the necessity of home preparation of the plates. The former has now been overcome by an announcement made by M. Rothé to the Académie des Sciences of Paris, and proved by several excellent specimens obtained by his method.

M. Rothé argued that it was impossible to remove an extremely thin film of air which must always be present between the gelatine surface and the mercury, and that the stationary waves would be formed by reflection from this film of air alone, and has proved his argument by practical tests, by merely placing a Lippmann plate, glass side to the lens, in an ordinary camera, and obtained good reproductions of the spectrum, a parrot, birds, and flowers.

Hermann Krone in 1891 stated that the mercury mirror was unnecessary, and merely placed a piece of black velvet in contact with the film, but he ascribed the formation of the stationary waves to a "Zickzackspiegelung" in the glass, and was led to this conclusion by his work in connection with halation.

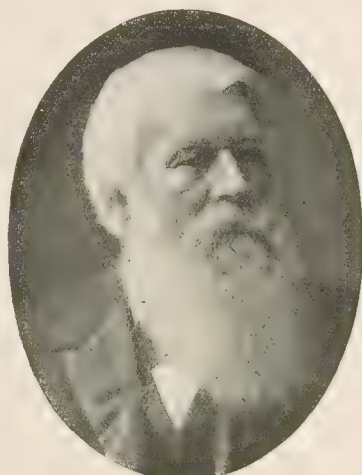
With regard to the exposures given by M. Rothé, they were, as usual in this process, very long—for instance, thirty minutes for an object in the sun, two hours for the same object in a room, and twelve minutes for the spectrum of the arc-lamp. The developer used was weak ferrous oxalate, and the image was bleached with bichloride of mercury, and again blackened with ferrous oxalate.

One of the failures of this process is the want of a good red sensitiser; so far, Neuhauss's mixture of cyanine and glycin red, or possibly Lippmann's methyl violet, would seem to be the most satisfactory, but an experimenter is wanted who will try the new isocyanines in this interesting branch of photography.

AMATEUR Photography—A Celluloid Danger. — D. O. writes to "The Times":—"By way of 'glazing' their photographs amateur photographers frequently press the damp pictures, half-a-dozen at a time, face downwards on a specially-prepared metal sheet about the size of a school slate. To hasten the tedious process of drying the sheet is often put near the fire. A day or two ago I found my wife, bending over the fender with a batch of South African photographs on a patent glazer which she imagined to be talc. She remarked that it was supposed to 'do' them quickly, but that, though otherwise good, it was a slow drier. As the supposed talc looked to me suspiciously like celluloid, I begged her to keep it away from the fire until I should have communicated with the manufacturers. I now enclose their reply. You will see that they state that 'the glaze is made of celluloid, and would be dangerous near the fire.' As knowledge of the fact may save some one a ghastly accident, I think it right to call attention to it. But what shall be thought of people who, with a full knowledge of its highly dangerous qualities, supply such an article for the use of ladies and children without one word of warning?"

SIR JOSEPH WILSON SWAN.

AMONGST the honours bestowed on the King's birthday, we are pleased to see that the dignity of knighthood has been conferred on Sir Joseph Wilson Swan. We, and we know that our readers do, most heartily congratulate Sir Joseph on the well-deserved honour conferred upon him. The "Standard," in its biographical notes on new knights, says:—"Sir Joseph Wilson Swan's name will be handed down to posterity as the inventor of the incandescent electric lamp, and of the dry plate so much used in photography." Here is an error on the part of the "Standard" which it will be as well to correct at once. Sir Joseph is not the inventor of gelatine dry plates, and we are sure that he would be the last to make that claim. The well-known firm of Mawson and Swan were amongst the first to manufacture gelatine dry plates on a commercial scale, but they were not the inventors of them. In connection with photography Sir Joseph's name will go down to posterity as the inventor of the carbon process, as at present worked. It is now forty years ago that Swan patented and published the carbon process (patent No. 503, dated February 29, 1864). A year later (July 6, 1865, No. 179) he patented a method of producing printing-surfaces by photographic agency, termed "Photo-mezzotint Printing." This process was somewhat analogous to the process of Woodbury, and there was some



considerable controversy at the time in the journals as to the two processes. A little later on (1866) Swan took out another patent for preparing paper with an insoluble coating of gelatine by the addition of chrome alum to the gelatine—such as is used for transfer papers in the carbon process. In 1879, Swan took out a patent (No. 2968, July 22) for gelatino-bromide paper, and, at the same time, one for the production of photo-relief plates and producing stipple effects for photo-typography, photo-lithography, and photo-engraving. This process was a few years afterwards re-invented, repatented, exploited, and a company formed to work it; with the commercial success of this the shareholders are well aware. During the same year he patented a plate-coating machine. In 1890, Swan, in conjunction with another, made application for a patent for sensitised films, but the patent was not completed. Sir Joseph Wilson Swan has filled the presidential chair of the Chemical Society as well as that of the Institute of Mechanical Engineers.

PHOTOGRAPHS of Criminals.—A return made from the Habitués Criminals Office states that in the fourteen months ending the 31st of December, 1872, there were 373 instances of detection of prisoners, a having been previously convicted, by identification of the photographs registered in the office. The returns show that 43,654 photographs of convicted criminals had been sent to the Habitués Criminals Office since the Act of 1870 came into force.—From the volume of the "Leisure Hour" for 1873.

SCIENCE v. ART.

The scientific photographer holds much the same relationship to the pictorial worker as does the writer on science to the novelist. Where the scientific man has one patient disciple, the pictorial worker or the novelist has a thousand followers. But the pictorial photographer must look to it that he does not hold the scientific worker at too low an estimate, for the time may soon come when he will be only too glad to be beholden to him. We seem, at last, to be within reach of photographs in colour, and Sir William Abney showed at the Camera Club, the other night, that success in this very difficult phase of photography is entirely dependent upon strict rule and scientific accuracy. The examples of trichrome landscape work, which he projected upon the screen, were certainly the finest things of their kind which have ever been shown. It has been the common cry, hitherto, that the three-colour method, while all very well for flowers and still life, will not produce a good landscape. Sir William has shown that by using plates and screens in harmony with one another, and by careful attention to exposure, most beautiful results can be secured, and landscapes produced which have all the delicacy of carefully-executed water-colour drawings. But, as he said, there is a far greater wealth of detail in the photographs, and here came his opportunity for a slap at the impressionists. Detail, he said, is not now regarded as an advantage, but as a thing to be abhorred. The man who wants his picture hung at the Salon, or at the Royal Photographic Society's exhibition must be a "fuzzyist," or he had no chance of recognition. For his part, he considered that he was too old to think of changing his methods, and he meant to stick to sharp pictures in three colours. There was a time when he considered himself to be a decent photographer, but now he was a pariah, and he thought it best to fall back upon science. We were glad that Sir William thought it well to speak thus strongly of the present fashion in photography, for he certainly is our leading authority. It is very unlikely that the impressionists will take his words to heart, for they will argue that he is not an artist, although they may admit that he is a master of the science of photography. But the pictures exhibited the other night showed that Sir William must possess artistic powers to no small degree. The subjects were most admirably selected, the point of view in every case being that which an artist would choose. Moreover, we learnt from his own lips that he had practised water-colour painting for years, and that now it was a common habit with him to make a colour sketch of the same view which he photographed, so that he might check the one by the other. We fervently trust that some of the fuzzyists will take up this three-colour work, and we shall be curious to see if any one of them will be able to produce by this method more artistic pictures than those exhibited by Sir William Abney.

PHOTOGRAPHY and Astronomical Research.—Professor T. H. Core, who has retired recently from the presidency of the Manchester Astronomical Society, lectured to the members at the Municipal School of Technology last week upon photography in astronomy and some of the important results which had followed from its application to that science. He described the progress which had been made in the use of photography for astronomical investigation since Dr. Herschel, of New York, obtained the first lunar photographs in 1840, and dispelled the idea that it was impossible to photograph the moon so as to produce any effect on a sensitive silver surface. Ten years later Professor Bond, of Cambridge, United States, succeeded in obtaining daguerreotypes of the moon, some of which were shown in the Great Exhibition of 1851. Within the last twenty years photography of the celestial bodies had made rapid progress, principally by adopting more and more sensitive plates. In a series of very beautiful photographs Professor Core showed the appearance of the moon in its first quarter, at the full, and in the last quarter, and also reproductions of areas of star-lit sky. In one of the areas thus covered by the telescope there could be counted, he said, 30,000 stars of varying magnitude. Solar photography, he explained, was first attempted in 1845. In 1857, by direction of the Royal Society, an instrument was prepared for purposes of solar photography by means of which the first sun photographs of any value were taken. The work of photographing the sun was now carried on in every quarter of the globe, and accurate knowledge about the sun and its surroundings had been gathered.

Exhibition.

HACKNEY PHOTOGRAPHIC SOCIETY.

THE following were the judge's awards in this exhibition, which was held last week:—

Members' Classes.—Best Picture in Classes A. to D.: Silver medal (No. 166), W. A. I. Hensler.

Class A.—Portraiture and Figure Studies: Medal (No. 5), Walter Selfe; medal (No. 37), W. Rawlings; certificate (No. 16), W. A. I. Hensler; certificate (No. 50), S. H. Hill.

Class B.—Landscape, Seascapes, and River Subjects: Medal (No. 155), J. Linley; medal (No. 158), F. E. Roope; medal (No. 198), W. Rawlings; medal (No. 222), S. C. Stean; certificate (No. 57), Walter Selfe; certificate (No. 87), J. J. Westcott.

Class C.—Architecture: Medal (No. 224), G. Cathal; medal (No. 251), F. E. Roope; certificate (No. 233), A. W. Cook.

Class D.—Animals, Still Life, etc.: Certificate (No. 287), P. J. Hanson; certificate (No. 292), A. C. Smith.

Class E.—Lantern Slides: Medal, W. A. I. Hensler; medal, F. W. Burt; certificate, F. E. Roope.

Open Classes.—Best Picture in Classes F to I: Silver medal (No. 335), John Hepburn.

Class F.—Portraiture and Figure Studies: Medal (No. 333), Miss M. Silverston.

Class G.—Landscape, etc.: Medal (No. 407), T. Wright; medal (No. 449), B. C. Wickison.

Class H.—Architecture: Medal (No. 463), W. H. Mayne; medal (No. 474), A. W. Walburn.

Class I.—Animals, etc.: Medal (Nos. 478 to 481), W. Morley Martin; medal (No. 493), E. Seymour; medal (Nos. 514 to 526), A. E. Smith.

Class J.—Stereoscopic: Medal, H. Wormleighton; medal, Ernest Law.

Class K.—Lantern Slides: Medal, H. Wormleighton; medal, F. Parkinson; certificate, Graystone Bird; certificates, John Stabb.

Trade Section.—Best display (silver medal), Houghton's, Ltd.; most useful photographic novelty (bronze medal), J. Ashford, for Adjustable Tripod Head.

FORTHCOMING EXHIBITIONS.

November 2-23.—Plymouth. Hon. Sec. Photographic Section, Chas. R. Rowe, 2, Walnut Villas, Cockington, Torquay.

November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.

November 22-23.—Ipswich Camera Club. Hon. Secretary, R. H. Sutton, 37, Henley Road, Ipswich.

November 23-26.—Hove Camera Club. Hon. Secretary, A. R. Sargeant, 55, The Drive, Hove.

November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., G. W. Simmers, Aberdeen House, Ramsgate.

November 25-26.—Ilford and District Photographic Society. Hon. Sec., W. N. Beal, 155, Thorold Road, Ilford.

November 26-December 5.—Glasgow Eastern Amateur Photographic Association. Secretaries, John Brough, 68, Dalmarnock Street, Park Head, Glasgow; and Geo. R. Johnstone, 591, Alexandra Parade, Dennistoun, Glasgow.

December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.

December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104, West 101st Street, New York.

December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.

December 12-17.—Sefton Park Photographic Society, Liverpool. Hon. Secretary, H. E. Cubley, 3, Langdale Road, Sefton Park, Liverpool.

December 13-20.—Southampton Camera Club. Hon. Secretary, S. G. Kimber, Oakdene, Highfield, Southampton.

December 23-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 133, Glasgow Road, Wishaw.

January 12-14, 1905.—Boston Camera Club. Hon. Sec., H. M. Hames, 65, West Street, Boston.

January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.

January 20-21, 1905.—South Essex Camera Club. Hon. Secretary, T. Michell, 180, Browning Road, Manor Road, E.

January 28-February 12, 1905.—Photographic Society of Marseilles. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.

February 6-11, 1905.—Blairgowrie and District Photographic

Association. Hon. Secretary, Wm. D. M. Falconer, James Street Cottage, Blairgowrie.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

March 4-11, 1905.—South London Photographic Society. Hon. Sec., H. Creighton Beckett, 44, Edith Road, Peckham, S.E.

March 20-25, 1905.—The Cripple Gate Photographic Society. Hon. Sec. John B. Parnham.

June, 1905.—Northern Photographic Exhibition. Secretary, F. G. Issot, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

December 31.—Barnet. Nineteen classes. Prizes valued at £500 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

March 31, 1905.—Ilford. £750 in cash prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

Commercial & Legal Intelligence

TAMESIS, LIMITED.—The above-named company has been registered with a capital of £4,000 in £1 shares. Object, to acquire the business carried on at 3, Denman Street, W., as the Tamesis Syndicate, and to carry on the business of photographers, lithographers, engravers, printers, publishers, stationers, designers, advertising agents, and contractors, theatrical librarians, club proprietors, etc. No initial public issue. The first directors (to number not less than three nor more than seven) are H. J. Macfarlane, A. B. Dalton, and J. H. Jennings. Qualification, 100 shares. Remuneration as fixed by the company.

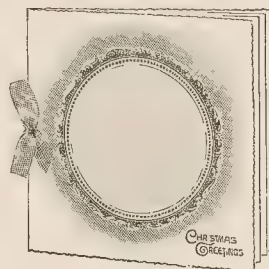
SQUABBLE Over a Portrait.—Before his Honor Judge Allen, at the County Court last week, George A. Poole, an artist, living in Welbeck Street, Nottingham, brought an action against Elijah Goddard, King Street, to recover £5, being the balance of £15 for a portrait of defendant's wife. Mr. Jackson appeared for Mr. Poole, and Mr. Hazeldine represented the defendant. Defendant put in a counter-claim for £10 paid on account. Mr. Jackson said that on the completion of the picture Mr. Goddard was satisfied with it, and sent £10 on account. Afterwards, however, defendant found that his friends did not like it, but, of course, an artist could not undertake to please the artistic tastes of the defendant's friends. Defendant complained of the portrait being coarse. He stated that he sent the £10 because he had heard that Poole was "hard up." The Judge, however, pointed to the letter in which defendant wrote, "I am pleased with the painting." Judgment was given for the plaintiff.

RE RICHARD CROMPTON CLIFFORD, lately carrying on business as a photographer in Wilson Street, Middlesbrough.—The above-named debtor appeared for his public examination at the Middlesbrough Bankruptcy Court on October 19, before the Registrar. The statement of affairs filed by the debtor disclosed liabilities amounting to £768 ls. 7d., and assets, £12 10s.; cash deposited with his solicitor, £10 17s. 6d., book debts (there are bad book debts to the value of £136 6s. 9d.), making, with a reduction of £10 17s. 6d. for preferential creditors, £12 10s. assets, and leaving a deficiency of £714 14s. 1d. The causes of failure alleged by the debtor are "bad trade, bad weather, and sickness." Clifford, who is forty-three years of age, is described as lately residing at 90, High Street, Redcar, and carrying on business at that address, and at 18, Wilson Street, Middlesbrough, and now residing at Crescent Road, Middlesbrough. The Official Receiver (Mr. J. R. Stubbs), in his observations, remarks that debtor commenced business in Middlesbrough in February, 1896, with a capital of £70, borrowed and since repaid. From about March, 1902, to March, 1904, he resided at Redcar, and was the holder of an off-beer licence there, on which he estimated he had lost about £400. Three of the unsecured liabilities, amounting to £430, are for borrowed money. In 1891 the bankrupt filed a petition in the Bradford Bankruptcy Court, with unsecured liabilities of £961 10s. and assets which realised £161 11s. A dividend of 1s. 8½d. was paid; and bankrupt obtained his discharge, suspended for three years, in June, 1892. Bankrupt states that all his assets are included in an ante-nuptial settlement, and the Official Receiver is investigating the validity of that statement. The Official Receiver concludes his observations by expressing his regret that he could not give the information to the creditors earlier, as bankrupt did not file his statement of affairs until Tuesday last. The examination was adjourned for a fortnight.

New Materials.

Christmas and New Year Greeting Cards. Sold by Houghtons, Ltd., 88 and 89, High Holborn, London, W.C.

Messrs. Houghton, Ltd., send us a copy of their special list of Christmas and New Year greeting cards, as well as specimens of cards themselves. Messrs. Houghton have always made a special feature of these mounts, and the enormous trade they do in them is sufficient evidence that the mounts are of real value and that prices are as low as they possibly can be. Particular attention is drawn to some of the most popular series. A red parchment fold slip mount has a very dainty appearance, and is at the same time very striking; the fan design folding slip mount, blocked and bossed on a delicate blue board; the circular-opening white parchment



ment folding slip mount, with a decorative design in green and gold, attached to a white ivory inset, with a dark green ribbon; the Whatman series, and the more simple, but equally popular, slip mounts for either paste-down or slip-in photographs. The series of photo calendars for 1905 are worthy of notice, and so are the "Holborn" Christmas slip mounts with struts, of both of which samples have been submitted to us. The list before us extends to twenty-four pages, so that a vast choice is available by the photographer; while of the specimen cards above referred to, all we have to say in conclusion is that they are strikingly refined and beautiful and deserve to secure widespread popularity for Messrs. Houghton's cards this year-end.

The "Chic" Mounts and Greeting Cards. Sold by Kodak, Limited, Clerkenwell Road, London, and branches.

The series of Christmas-card mounts issued by Messrs. Kodak includes the following:—

Hand-made Series (Green, Brown, and Grey). **Paste-on:** Thick hand-made mounts, with original deckle edges. Heavily plain marked space for photograph and impressed border. Greeting blocked in gold. **Slip-in:** Folding thick hand-made mounts, with original deckle edges. Motto blocked in gold outside. Inside Whatman paper, with opening for photograph, around which is impressed border. **Flat Series:** Matt-art brown, green, and white mounts, with blind blocked design around space for photograph, an embossed greeting. **Paste-on and slip-in.** **Folding Series:** Thick white hand-made mounts, with original deckle edges, greeting embossed in colour outside, and space for photo, blind-blocked inside. **Paste-on only.** **Calendar 1905 Series:** For slip-in photos. Green and brown matt-art boards, with silk loop and calendar for 1905. **Folding Series:** Thick white Whatman and green, brown, and grey matt-art mounts, with paste-on and slip-in space for photograph the outside. Silk tassel and greeting on cover. Inset with motto and greeting. **Folding Series (Green, Brown, and Grey Matt-Art Mounts):** Embossed design and greeting on cover. Inside of thick Whatman paper, with cut-out opening for photograph and blind blocked border around opening. **Slip-in only.** **The Scarlet Folding Series:** Similar to the above, but in scarlet only, with plain embossed design and white embossed greeting on cover.

Practically every size of photograph up to half-plate is catered for in this delightful series of tasteful mounts—tasteful, that is, in design, tone, and form. They should be enormously popular this season. Messrs. Kodak also issue an album containing samples

"Chic" private greeting cards, with prices quoted so that the retailer or user may make a suitable selection. All photographers should make the acquaintance of the "Chic" series.

The Rotary Photographic Company, of 12, New Union Street, Moorfields, London, E.C., write:—"We have much pleasure in sending you herewith packets of our latest introductions, 1-plate 'Court' postcard and carbon tissues, in 17 colours. The 'Court' postcard has been produced in response to the continual demand of the 1-plate user, who has hitherto had no postcard of a suitable size to use the whole of his negative without considerable masking. The cards are cut with rounded corners, which adds considerably to the artistic appearance of same. As with all our other sensitised cards, we supply the new size both in Rotograph (bromide) and Rotox (gaslight), each matt and glossy, and these cards are listed at popular prices, viz.: 1-plate packet of 12 and three masks, or 5s. per 100, 6s. 9d. per gross. The carbon tissues are supplied in 17 colours, in an artistic range of colours, which offers a more varied selection of tints than the carbon printer is accustomed to." We hope to report on these products from practical trial at an early date.

New Books.

"Photograms of the Year 1904." London: Published by Dawbarn and Ward, Ltd.

"Is photography Art?" "No." "Can it be used to express artistic feeling?" "Yes." "Then let us so use it." This morsel of imaginary dialogue is printed on the first page of the tenth annual issue of "Photograms of the Year." If such a commonsense definition of the position of photography amongst methods of graphic expression had been promulgated half a century ago the world would have been spared the affliction of much verbose nonsense as to the claims of photography to be ranked as a fine art, and that "recognition" for which such gentlemen as Mr. Stieglitz and his friends are belatedly clamouring to-day would have been vouchsafed years ago. For no spectacle on this earth is so pathetic and so painful as that of the photographer trying to persuade the world and his wife that he is something altogether different from what he appears to be. The volume before us contains numerous reproductions of examples emanating from the various photographic "schools" of the day, selected from the R.P.S. and Salon Exhibitions, the Scottish Salon, Australia, British Columbia, France, Germany, and the United States. Thus its representative character cannot be denied. The literary and critical contents are as follows:—"Pictorial Photography in France," by Robert Demachy; "Pictorial Photography in British Columbia," by H. Mortimer Lamb; "Notes from Australia," by A. J. Hill-Griffiths; "A New Departure in American Pictorialism," by Sadakichi Hartmann; "Suggestions to Would-be Picture-Makers," by H. Snowden Ward; "The Two Great [English] Photographic Exhibitions," by A. C. R. Carter; I. The Photographic Salon; II. The Royal; "The Western Workers in the United States," by Fayette J. Clute. We also have an unsigned paper advocating, or at any rate discussing, a possible fusion of the Royal Photographic Society with the Photographic Salon. The feasibility of the idea is, we fear, somewhat remote, although it is one which neither in our journalistic nor our personal capacity would we at all oppose if once it came within the sphere of practicable politics. For there is no longer room for two "great" exhibitions running concurrently each autumn in London. The volume before us is full of valuable and discriminating criticisms of the photographs reproduced, and its perusal and study cannot but be found helpful by the aspirant after success in pictorial photography.

The Velox Manual. Published by John J. Griffin and Sons, Ltd., 20-26, Sardinia Street, Lincoln's Inn Fields, London, W.C. Price 2d.

This little book deals exclusively with velox printing. Manipulation of the paper, exposure and development, fixing, washing, drying and mounting, each receive separate attention, and there is a special section devoted to causes of failure and remedies. Formulæ are also given for colour-toning. The manual has evidently been compiled with great care, and is rendered additionally valuable by the inclusion of articles by Mr. F. M. Sutcliffe, Mrs. Cadby, Mr. John A. Hodges, and Mr. Chapman Jones, one of which we take the

liberty of reproducing. The Velox Manual should be in the hands of all lovers of the charming process with which it deals.

Mrs. Cadby's article is about printing Velox postcards. Appropriately enough, Messrs. Griffin have just introduced two new Velox postcards. These are Art Velox and Portrait Velox. The surface of Art Velox is semi-glossy. These are sold in packets of eighteen, with two masks, for 1s. The Portrait Velox surface is a delicate egg-shell half-matte, and the price of the cards is 1s. for twelve with two masks. Messrs. Griffin also now issue their Carbon Velox postcards at the price of 1s. for eighteen, with two masks, instead of twelve as formerly.

"Retouching." By Arthur Whiting. London: Published by Dawbarn and Ward, Ltd. 91 pp. Illustrated. Price 1s.

This is the second book on retouching that has recently come under our notice. Quoting from the publishers' preface, it is a handbook of retouching negatives by modern methods with pencil and knife. The text deals with working methods and the preparation of tools and materials, and with the procedure in retouching portrait and landscape negatives. Special work, such as removal of halation, retouching draperies, working in clouds, etc., is considered, and there is a collection of formulæ. The supplements include "Examples of Knife Work in remedying Defective Negatives," "The Stages of a Portrait Negative from the Un-retouched to the Over-retouched State," "Forms of Clouds and Skies Drawn in Negative for Working into Landscapes," "Touches to be employed in working up various kinds of trees," and "Examples of halation removal." Mr. Whiting is an experienced professional retoucher, and his book embodies a vast amount of theoretical and practical knowledge of his subject. The anatomical and other illustrations will be found of the greatest service by the practical student of this branch of photographic work.

"PHOTOGRAPHY" BOOKSHELF.

Recent additions to this useful series of handbooks, which is published by Messrs. Iliffe and Sons, Limited, of Tudor Street, E.C., at one shilling per volume, include "Practical Retouching," by Mr. Drinkwater Butt, F.R.P.S.; "Intensification and Reduction," by Mr. H. W. Bennett, F.R.P.S.; and two volumes on "Professional Photography," by Mr. C. H. Hewitt. The latter, in particular, are well worth study by those who intend making a business of professional photography. To quote our author, the volumes have been "written in the hope that they might interest the professional worker and lead him to a further study of matters—the mere fringe of which is here touched. The labour market is flooded to-day with workers—employers, employed, and unemployed—whose knowledge is merely superficial or elementary. It is only by close application to the less ordinary matters that the ambitious may find the vacancies always existing "at the top."

Patent News.

The following applications for Patents were made between October 31 and November 5, 1904:—

Lens Shades.—No. 23,411. "Improvements in photographic lens shades or screens." Charles Henry Fryer.

Cameras.—No. 23,518. "Improvements in photographic cameras." Francisque Pascal.

Washing Racks.—No. 23,581. "Improvements in washing racks for photographic plates." Walter Henry Harrison.

Pigment Paper.—No. 23,766. "Improvements in and relating to photographic pigment paper." Albert Höchheimer.

CINEMATOGRAPHY in Colours.—According to the "Photographische Chronik," Dr. Miethe, of Berlin, has attempted to obtain cinematographic films in colours by the three-colour process, using for this purpose ordinary negative films sensitised with eosine, ethyl red nitrate with a small addition of chinoline red. The lens was worked at an aperture of F. 3 or F. 4, and the filters placed in a rotating sector in front of the film were moved synchronously with the same. The apparatus used for projection was built on the same lines, but the results showed but faint traces of colour, and a "ghastly flicker." Dr. Miethe hopes to obtain better results by using a film three times the ordinary width and placing the filters side by side.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Nov.	Name of Society.	Subject.
21.....	Camera Club	<i>The Capabilities of the X Rays.</i> Dr. G. W. Rodman.
21.....	Southampton Camera Club	<i>Photography Prize Slides.</i>
21.....	Luton Camera Club	<i>Cameras and Pictures.</i> Demonstrated. Mr. R. Hesketh.
21.....	South London Photo. Society.....	<i>Affiliation 1904 Competition Slides.</i>
21.....	Bowes Pk. and Dis. Ph. Soc.	<i>Architectural Photography.</i> Mr. H. Creighton Beckett.
21-26.....	Sheffield Photo. Society.....	<i>Second Annual Exhibition at the Montgomery Hall.</i>
22.....	Nelson Photographic Society	<i>Open Night.</i>
22.....	Hackney Photo. Society	<i>Focus Lecturettes.</i>
22.....	Glasgow Southern Photo. Assn	<i>Lecturettes Illustrated.</i>
22.....	Birmingham Photo. Society	<i>Cameras and Pictures.</i> Demonstrated. Mr. R. Hesketh.
23.....	Boro' Poly. Photo. Soc'y	<i>Photography for the Press and Some Points on Copyright.</i> Mr. H. Snowden Ward.
23.....	North Middlesex Photo. Society	<i>Carbon Printing by Magnesium Ribbon.</i> Mr. F. M. Ainsley.
23.....	G.E.R. Mechanics' Institution	<i>Bronide Enlarging.</i> Mr. H. W. Bennett, F.R.P.S.
23.....	Society of Arts	<i>The Systematic Promotion of British Trade.</i> Mr. Ben. H. Morgan.
23.....	Cricklewood Photo. Society.....	<i>Lantern Night.</i>
23.....	Windsor Camera Club.....	<i>Development for Beginners.</i> Demonstrated. Mr. Ernest Oetzmann.
24.....	Hull Photographic Society	<i>A thousand Miles in Warwickshire with Cycle, Motor Car, and Camera.</i> Mr. G. Thistlewaite.
24.....	Southport Scientific Societies	<i>David Garrick: his Life and Times.</i> Mr. Rimbault Dibdin.
24.....	London and Prov. Photo. Assn	<i>Open Night.</i>
24.....	Glasgow Southern Photo. Assn	<i>Annual Visit to the Photographic Section of the Paisley Philosophical Institution.</i>
24.....	Watford Camera Club.....	<i>Westminster Abbey.</i> Illustrated. Mr. Harvey Piper.
24.....	Batley and Dis. Photo. Soc.	<i>The Dales and Coasts of Yorkshire.</i> Mr. Godfrey Blagiey.
24.....	Liverpool Amateur Ph. Assn	<i>Pictures from Portugal.</i> Mr. G. E. Thompson.
24.....	Gateshead Camera Club	<i>Copying by Artificial Light.</i> Demonstrated. Mr. J. T. Brownlow.
24.....	Camera Club.....	<i>The Pianola.</i> Mr. Fred H. Evans.
24.....	Rodley and Dis. Photo. Soc.	<i>Members' Night.</i>
24.....	Rugby Photographic Society	<i>Trimming and Mounting the Print.</i> Mr. G. A. Towers.
24.....	Richmond Camera Club.....	<i>Discussion on Animal Photography.</i> Dr. Rodman.
25.....	Wakefield Photo. Society	<i>Decorative Photography.</i> Mr. Percy Seward.
25.....	Boro' Poly. Photo. Society	<i>Bronide Printing.</i> Mr. F. W. Gregg.
25.....	Watford Photographic Society	<i>A Method of Control in Bronide Printing.</i> Mr. J. Sterry.
25.....	Aberdeen Photographic Assn.....	<i>Printing Papers.</i> Mr. G. Robertson.
25.....	West London Photo. Society	<i>Development of Roll Films and Kodoid Plates.</i> Mr. J. Brown.
		<i>Lantern Slide Making by Contact.</i> Mr. M. W. Cockrell. <i>Demonstrate.</i>

ROYAL PHOTOGRAPHIC SOCIETY.

ORDINARY Meeting, November 8.—Major-General J. Waterhouse, I.A., vice-president, in the chair.

Nearly sixty candidates for membership were proposed or elected.

The chairman read a letter from the Royal Commission for St. Louis Exhibition announcing the award of a grand prize to the Society for its collection of scientific photographs.

In the absence of the president, the chairman then presented their medals, won at the New Gallery at the recent exhibition, to Mr. Arthur Marshall, of Nottingham, and Mr. Arthur C. Banfield. Mr. F. J. Mortimer, absent through illness, was represented by Mr. Thomas Bedding, F.R.P.S. The other medals were ordered to be transmitted to their owners, none of whom could be present.

Mr. E. Walter Maunder then gave a lecture on "Recent Astronomical Photography at the Yerkes Observatory." In his opening remarks the lecturer said that the services of photography to astronomy were so great that an astronomer appearing before the Society must do so with a feeling of gratitude. The great telescope at the Yerkes Observatory, which is built on the Lake Geneva, Wisconsin, and presented to the Chicago University, was erected and equipped by Mr. Yerkes. The lecturer, after giving the various measurements of the observatory, said that the object glass of the great telescope weighs, with its cell, nearly half a ton, and is forty inches in diameter. The floor rises and falls through twenty-three feet by means of electrical mechanism, designed by Sir Howard

Grubb, and the movement of the whole—a weight of thirty-seven tons—is effected in a like manner. Slides of the spectra of various stars were shown, as well as a number of the sun's irradiations during a total eclipse. The objective of the telescope being uncorrected photographically, means had to be devised by which it could be used for photography. The difficulty was overcome by the employment of a sheet of glass worked optically plane, coated with lodion stained yellow, and used in front of the photographic plate. Mr. Maunder stated that the use of this isochromatic screen not appreciably prolong the exposure—a rather curious fact, judged from the usual photographic standpoint. A number of lunar photographs were also shown in which portions of the moon's surface resembling terrestrial mountain ranges were depicted. From this it could be determined that, at any rate since their formation, the moon has possessed no appreciable amount of atmosphere since otherwise one would find traces of watercourses, which, however, are entirely absent. With an aperture of fifteen inches the Yerkes telescope will give a photograph of a star of the 17th magnitude with an exposure of two hours.

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

A MEETING of the general committee was held at 51, Baker Street, on Friday, November 11. The following members were present: Messrs. T. C. Turner (Hull), A. Ellis, F. A. Bridge, A. Mackie, H. Mendelssohn, E. Scamell, S. H. Fry, R. Fellows Willson, H. Spink (Brighton), E. C. J. Elliott, D. Prodder, Lang Sims, H. McInds Hull, A. C. Banfield, Martin Jacollette, P. Lankester, Wm. Grove; Mr. T. C. Turner, president, in the chair.

Mr. William Grove was unanimously elected hon. secretary and treasurer, and Mr. A. Mackie assistant secretary.

It was reported that, notwithstanding the invitation given through the medium of the JOURNAL to all photographers and others interested to criticise the draft prospectus of the assistants' certificates scheme and to suggest amendments, not a single letter had been received except from members and their own assistants. A large number of members have written expressing unqualified approval, and there was also a large number of letters containing suggestions. The reading of these occupied much time, and finally it was agreed to refer them to the sub-committee which had previously acted in the matter for consideration, and to embody those of the suggestions which were practical and sensible in the prospectus. It was further agreed that the amended prospectus should be passed at the next committee meeting. It should then be put into force for the next twelve months; at the expiration of that period the committee would be able to discover its weak points, if any, and to rectify them.

The subject of the formation of a benevolent fund was then discussed. It was decided that before pledging the Association to the course, every member should be given the opportunity of stating whether he approved of the idea, and, in the case of approval, what sum he was prepared to subscribe annually.

CAMERA CLUB.

MONDAY, November 7, was an "open night" at the club, by which it is meant that there was no formal lecture, but members were invited to bring before their colleagues anything of interest; and in this way matters get discussed in a free and easy manner, which is both pleasant and profitable. On Monday the ball was opened by the hon. sec., who handed round for inspection a very old Daguerreotype portrait, the details of which were scarcely distinguishable. He then passed round an enlargement on bromide paper, which had been made from it by professional hands, and every one agreed that the work had been wonderfully well done. The hon. sec. wanted the opinion of those present as to how the work had been accomplished, and said that the original Daguerreotype presented such difficulties. One member suggested that the portrait had been copied in a very strong light, and that an isochromatic plate and screen had been used. Another thought that an ordinary plate had been employed, and that the thin image obtained had been bleached with mercuric chloride backed with black velvet and treated as a positive. That this had been recopied so as to get a strong negative from which the enlargement was made. Other matters were brought in an informal way before the meeting, but they do not call for notice.

The following Thursday found a large audience to meet the president of the club, Sir William Abney, who had promised to discourse upon "Photographs in Colour," and everyone was on the tiptoe of expectation and asking whether there would be any novelty to disclose. The lecturer did not attempt to theorise, but assumed from the outset that most of his hearers had no need of instruction with regard to the general outlines of the trichromatic method of producing pictures. He knew that numbers of people were busy with this very fascinating aspect of photography, and he could only express his regret that many of the pictures turned out were the reverse of satisfactory. He considered this general failure to master the intricacies of the process to be due to neglect of details, to want of accuracy in the choice of colour screens, in the production of suitable negatives, and in exposure, and he proceeded to point out the tests which should be adopted to secure accuracy in all these particulars. But the supreme test of a trichromatic picture was its projection upon the lantern screen with suitable apparatus.

Photographers were too apt to fancy that when once they had furnished themselves with a set of colour screens, those screens would be suitable for any isochromatic plate on the market. This was not the case, each plate requiring its own particular colour filters. Another mistake which was often made, and he had been astonished that any reasonable person could fall into the error, was to test isochromatic plates by gaslight, and he showed by a diagram the different luminosities possessed by gas, by the electric light, and by daylight.

After describing the apparatus which was on the table for projecting the three positive images through coloured screens to coalesce on the screen, Sir William proceeded to exhibit a large number of pictures, all landscape, which he had taken by the trichromatic method, both in this country and abroad; and very beautiful examples they were, showing, as they did, that the delicate colouring of distant hills and snow-clad mountains could be as well reproduced as the flowers, fruit, and studies of still life which have hitherto formed the chief subjects of the trichromatic worker. The pictures proved the soundness of the theory upon which the process was founded, a theory which had been worked out on scientific lines by a most competent experimentalist.

The first person who was called upon by the chairman, General Butterhouse, to express an opinion upon these pictures was very appropriately an artist, Mr. G. A. Storey. He said that he would have much preferred to hear the opinions of others first, for he himself was no photographer. These pictures were a revelation to him. It was like stepping out of night into day. They reminded him of the work of some eminent painters—Turner, for example—especially in the beautiful atmospheric effects. He also noted how the colour had the effect of separating the different planes of the picture; indeed, they were all the source of great delight to him. As pictures they were charmingly selected. He regarded them, not as perfection itself, but as the way to perfection. He hardly liked to say anything of a disparaging nature concerning them, but he considered that they were perhaps wanting in that immense variety of colouring which one saw in nature. Taken as a whole, they were most beautiful pictures.

After a few remarks by Mr. Cadett, Mr. Sanger Shepherd, and others, the lecturer replied to the criticisms which had been advanced. He said that artists always improved on nature, and that he had seen paintings with a variety of colours which no mortal man had ever seen in nature. He had always dabbled in art, and was pleased to find how closely his water colour drawings agreed with the trichromatic pictures taken from the same spots. The meeting closed with the usual vote of thanks.

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

MEETING held November 10, Mr. E. Human in the chair.—A series of bromide prints, toned with the Geka chromatic toning preparations, were exhibited; also a set of the Geka light filters for dark-room illumination. Mr. Rapson initiated a discussion upon the use of incandescent gas for copying purposes, having tried various arrangements, but could not get quite satisfactory results. One light required an exposure of two minutes, and three lights were required to reduce the exposure to one minute, and beyond the three any further addition had very little effect upon the exposure, the reason apparently being that increasing the number of lights resulted in volume increase, but not in intensity. Mr. Drage had packed some films after exposure in tinfoil, and the image had apparently faded, as only a ghost of an

image would develop, whilst films packed only in paper, without tinfoil, taken under similar conditions, were quite satisfactory. The subject was discussed at length, but the mystery was left unsolved. Mr. Freshwater was congratulated upon being in the list of winners of awards at the St. Louis Exhibition.

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION (LIVERPOOL BRANCH).

A MEETING was held at the Alexandra Hotel, Dale Street, Liverpool, on October 28. There were present G. Watmough Webster (chairman), A. F. Mowll, A. Priestly, T. Vanderbilt, J. Saronie, O. Looser, W. Cowper, S. Hibberd, R. H. Waite, W. Smith, and W. Warrington (hon. secretary).

Arrangements for the meeting on November 4 to discuss prices came forward. The Secretary reported "that he had sent, as arranged, circulars to all professional photographers in the district inviting them to be present. That he had received two letters in consequence, one from a lady, asking if she were eligible to be present, being a professional photographer, to whom an assurance of welcome had been sent; the other from a member of the branch, saying, 'He must decline kind invitation to discussion re prices, etc., as personally he did not think any good would come of it.'"

The Chairman then read a letter which had been received from the hon. secretary in London relative to the present discussion, and said their thanks were due to him for this expression of his views on the point. The clear and common-sense nature of them would certainly help all to see the matter in its general and wider bearings as well as in the particular and narrower application. The letter ran:—

"The fact that we do not feel the evil effects of price-cutting as you seem to do perhaps prevents us from realising your trouble. Many of us are inclined to think that you sometimes apply the term price-cutting erroneously to what is really the natural gravitation of prices when quality falls off. If there are, say, two photographers so situated that they are competitors in business, and one of them turns out distinctly superior work, if these prices are the same that one naturally gets the cream; the other, in order to live, instead of improving his work, as he should, frequently lowers his prices. That, strictly speaking, is not price-cutting; it is merely offering the inferior article at its relative value. I can quite understand, however, in a place like Liverpool, where there are many photographers all doing about the same class trade, that the illustration I have given can hardly be applied, and that an intolerable state of rate warfare may exist. If all photographers were honourable and common-sense men of business there would be no difficulty in coming to a satisfactory arrangement at such a meeting as you propose. Photographs, like other commodities, have their value paid by supply and demand; but, unlike some other commodities—tea, for instance, the price of which is fixed by the supply at the gardens and the demand of the whole world—it is the supply and demand of the locality which fixes the price of photographs, and the supply is entirely controlled by the photographers themselves. If they decide not to charge less than a certain minimum price it would not affect the demand, for people do not get photographed because photographs are cheap, but because they want the photographs, and they are quite willing to pay a reasonable price for them. I am referring to the standard sizes—cabinets, etc.—and not to the 6d. and 1s. a dozen things.

"With regard to your remark that some photographers stay outside the Association because there are unduly cheap men among the members, that seems to me to be an extremely narrow-minded view. We have some chance of negotiating with our own members, but outsiders can defy us completely. The parson never complains of the wicked coming to church; he complains he cannot get at them because they stay away."

Further general discussion of the subject followed, and of some of the difficulties in the path of the Association's work, such as the attitude of some photographers, who would not join because among the members were some to whose prices they (the outsiders) took exception. In inviting membership this point had arisen again and again. The hon. secretary of the Association, all agreed, had described such correctly as taking a very narrow-minded view, because, when necessary, it is possible to negotiate with members, while outsiders are practically out of reach. Some photographers, it was allowed, would expect the P.P.A. to solve all questions of competition for them, whereas it must be evident to reasonable minds that com-

petition must always exist, and that efforts such as the present were in the direction of keeping such competition along reasonable and fair lines. The members present represented widely different scales of prices, but it was unanimously hoped that the fact would never be a source of discord among them.

CROYDON CAMERA CLUB

NOVEMBER 9.—Enlarged negatives on glass and paper, respectively dealt with by Messrs. F. W. Hicks and W. H. Rogers, formed an interesting and, to the less advanced members, a most instructive topic. According to Mr. Hicks, who, so to speak, opened the batting with glass plates, if one had a suitable transparency to start with, the subsequent production of an enlarged negative was a matter of comparative ease, provided a good slow plate, such as Wratten's Ordinary, was employed. With a slow plate there was a very wide latitude in exposure, and a comparatively bright light could be used when developing, which was a comfort. A test exposure should, of course, be made on a quarter-plate, of preferably the same batch, and with ordinary care the enlarged negative should certainly never turn out to be a waster. Personally, he did not favour paper negatives, leaving out of the question the slowness of printing, and grain, due to the support, if one wished to retain any length of scale, or delicate gradations, then a dry plate, in his opinion, was absolutely necessary. Mr. Hicks brought his remarks to a conclusion by exposing and developing two really excellent 15 x 12 enlarged negatives, pyro being the developer employed.

Mr. W. H. Rogers, who had evidently been listening "more in sorrow than in anger" to Mr. Hicks's expressions of opinion respecting paper negatives, energetically defended them. They were far and away cheaper, unbreakable, stored easily, and last, but by no means least, any amount of handwork could be applied to the back. The grain, moreover, need not be obtrusive, at all events in large work, and printing was not so slow as was frequently made out. He resented an observation Mr. Hicks had made earlier in the evening that their best use would be to form a wall-paper. If this were true, then Mr. Hicks might, with equal advantage, utilise his glass negatives towards the construction of a greenhouse. Having in his turn filled the office of special pleader, Mr. Rogers proceeded to expose and develop some bromide paper negatives, which, from the paper negative standpoint, left nothing to be desired. For this class of work he preferred edinol as a developer.

RICHMOND CAMERA CLUB.

NOVEMBER 11.—A lecture was delivered by a representative of Messrs. Sanger Shepherd and Co. on the three-colour process. After showing a few lantern slides in natural colours, the lecturer threw upon the screen an illustration showing the divisions of the spectrum and a photo showing the effects of the light waves upon an ordinary photographic plate, which, as he explained, is not equally susceptible to the different wave lengths of light, for whilst the yellow waves are the most conspicuous to the eye the violet are the most active on the plate, and the red rays have scarcely any effect upon it. Another illustration showed the effect produced by the use of an orthochromatic plate with a light filter specially adapted for the particular emulsion employed, the light waves by this means acting almost uniformly throughout the length of the spectrum. He then showed and explained the results obtained by the division of light into thirds of white light and by superposing the thirds upon one another, thus reproducing white light. Another slide showed negatives of white, red, yellow, green, blue, and black squares, when photographed under red, yellow, and blue screens, and positives printed from these negatives which, when superposed upon one another, resulted in the reproduction of the original colours. The lecturer then showed and explained the Sanger Shepherd apparatus, and gave lucid details of the application of the process to the production of lantern slides and prints in natural colours. He also showed lantern slides taken upon an orthochromatic plate which gave the usual effects of monotone, and the same subjects taken under a colour screen suited to the plates employed, to show the correct rendering of the light. He explained that the most satisfactory results are obtained by the use of a screen which lengthens the exposure ten times, and it becomes a case of deciding whether it is better to have correct rendering of the light, accompanied, possibly, by some movement of trees, or to be satisfied with the ordinary dull monotone picture. Afterwards a

number of slides in natural colours were shown, among which were some very fine landscapes and Swiss scenes by Sir William Abner. Other slides were shown to illustrate faults in working, which were pointed out and explained.

ULSTER AMATEUR PHOTOGRAPHIC SOCIETY.

The second meeting of the session was held in the club rooms, Museum, College Square North, last week. Mr. D. Elliott presided. The hon. secretary (Mr. Thomas N. Murray) read a letter from Mr. Sims regretting that he was unable to attend and give his demonstration on the working of bromide papers for contact and enlarging work, etc. By the courtesy of Mr. J. Lizars, who lent a very excellent series of slides of the Russo-Japanese War, followed by a very fine cinematograph show of new films, the members were enabled to enjoy a pleasant evening. Amongst the slides shown were: The Russian fleet in Port Arthur, Cossacks in Manchuria, a military train crossing Lake Baikal, Emperor of Japan, Vice-Admiral Togo, Baron Kuroki, Baron Oku, General Stoessel in command of Port Arthur, etc., so sixty in number. The lantern, etc., was carefully worked by Mr. Buik, of Mr. Lizars.

CROYDON SCIENTIFIC SOCIETY.

ON Friday evening last the members of the photographic section of this Society were treated to a masterly exposition of some of the chief products of Messrs. R. and J. Beck, by Mr. W. F. Slater, of photographic tourist fame. Lenses claimed the first consideration because Messrs. Beck make quite a speciality of these, and none is more remarkable than their Unofocal Lens, which has an aperture of $f/4.5$, and it can be used at this aperture either alone or in combination with a negative attachment, as a tele-photo lens; rapidity and optical excellence is such, that at this large aperture a tele-photo picture may be obtained in a bright light at even 1.40th or 1.50th of a second.

The principles involved in the making of lenses, and the corrections for aberration and astigmatism were explained and illustrated by lantern slides, as also was the use of stops and the way in which these acted.

Cameras next claimed attention, and of these, two specialities merited attention, *i.e.*, the Dal-Cornex and the Telephoto-Cornex, the first being a magazine camera of box pattern, having a simple and reliable changing system, while the second was a modification of this, enabling it to be used as a tele-photo box camera. The way in which the necessary extension was obtained, and the quite novel way of adapting the negative lens, was as simple as it was original—a small rod pulled the attachment into position after the camera had been extended, and pushed it out of the way again before the camera was again closed; thus, without opening the camera or adding anything to it or taking anything away, an ordinary hand camera or a telephoto camera could be obtained in the shortest possible time.

Finally two very ingenious arrangements were shown for changing plates or films which struck us as even more simple than the film packs, and they could moreover be used over and over again as nothing had to be torn off and thrown away. Mr. Slater was heartily thanked for his lucid explanations.

The photographic enlargements exhibited by the Grand Junction Canal Company at St. Louis Exhibition were made, we are informed by Mr. Frank Wakefield, of 137, High Street, Brentford.

THE Optical Society.—The student's meeting in connection with the society have started for the session 1904-1905, and the attention of those under the age of 25, who are interested in optics, either from a scientific or business point of view, is directed to the advantages offered by the society to those joining the student section. The advantages take the form of half subscription, together with the privilege of attending all ordinary meetings of the society. Meetings for students are arranged which are distinct from the ordinary meetings, at which short papers are read and discussed, and are held usually on Thursday evenings at the headquarters of the society, 20, Hanover Square, W. Further particulars and forms of application for membership can be obtained from the Hon. Sec., Mr. W. Salt, 20, Hanover Square, W., or from Mr. H. C. Patey, 70, Blenheim Gardens, Willesden Green, N.W.

News and Notes.

MESSRS. J. EPSTEIN AND Co., of 33, Broad Street, Bristol, inform us that their new price list is now ready.

At St. Jude's Institute, Mildmay Park, London, N., on Friday, the 11th instant, Mr W. J. Sadler gave a successful lecture on photography, illustrated with practical demonstrations.

THE Nepera Division of the Eastman Kodak Company, Rochester, N.Y., kindly send us a post-card souvenir of their Kodak Park Plant, Rochester, N.Y., U.S.A.

MR. J. LIZARS, of 71, Bold Street, Liverpool, announces free demonstration classes every Friday evening in enlarging, bromide, and easel papers, making lantern slides.

THE Austin-Edwards Monthly Film Negative Competition.—The prize camera for the present month has been awarded to Mr. J. Dunlop, Myrtle Bank, Motherwell, N.B., for his negative "A Woodland Scene."

THE Lost Goerz Lens.—Mr. C. P. Goerz writes:—"Referring to my letter of the 5th inst., I am sorry to find that I did not mention the number of the Double Anastigmat Series 1 B. therein referred to. I should be glad if you would mention that its number is 132,020."

THE Right Hon. Lord Reay, G.C.S.I., G.C.I.E., LL.D., etc., will deliver the prizes at the Northampton Institute for the Session 1903-4 on Friday, December 9, at eight o'clock. The prize delivery will be followed by a conversazione, which will be continued on Saturday, December 10.

THE St. Louis Exhibition.—Messrs. Newton and Co., of 3, Fleet Street, London, E.C., have been awarded three gold medals and one bronze for their optical lanterns and slides, and coils for wireless telegraphy. Mr. T. E. Freshwater has been awarded a silver medal for his photomicrographs of rock sections.

At a meeting of the Hillsborough and District Photographic Society, held on Wednesday, November 9, Mr. T. G. Hibbert gave a very interesting demonstration on "Lantern Slide Making." A large number of his own slides were exhibited, as also were the "Camera Notes" prize lantern slides. Altogether it was a very enjoyable evening.

MR. C. P. SALTMARSH, of 44, Market Square, Witney, Oxon, writes:—"I beg to inform you that I have opened a photographic studio at the above address for the production of high-class work in all processes. Mr. S. P. White (formerly with Messrs. J. Russell and Sons, Court Photographers, of London and Windsor), will have charge of the business."

A POPULAR edition of "Astronomy for General Readers," by Mr. W. F. Chambers, F.R.A.S., has been issued by Messrs. Whittaker and Co., of 2, White Hart Street, Paternoster Square. The work, which has 134 illustrations, is published at the price of one shilling, and is written with such simplicity of style that it cannot fail to be easily understood by the class to which it is particularly addressed.

THE death took place recently of Mr. J. H. Blackburn, photographer, of Swan Croft, Colne. Mr. Blackburn was well known in the town, owing to the fact that he reproduced many old views of the district. For many years he had been the principal in his line of work, and prior to moving into his present premises occupied a shop in Stanley Street. He leaves a widow and family.

MR. T. WHITE, the new Mayor of Lewisham, is a photographer carrying on business in the High Street, Lewisham. He is an active Radical politician, being the Liberal party agent for registration and other work. It is undoubtedly due to his efforts, in the face of great odds, that the Lewisham Borough Council has now a Progressive majority.

SILICATEPHISCOGNOSCOPHOGRAPHY. — According to the German trade paper, "Die Photographische Industrie," a society has been formed in New York which has for its purpose a study of the properties, and the application, of silicate compounds for photographic purposes. A journal is to be run under the title of "The Silicate-phiscognoscophographer." We understand that the actual idea of the society is to study glasses, but whether full or empty is not said.

"TONING Bromides and Lantern Slides," by Mr. C. Winthrop Somerville, F.R.P.S., published by Messrs. Dawbarn and Ward, Faringdon Avenue, E.C., price 1s., summarises the various chemical methods available for the colour-toning of bromide prints. The author is known to be a master of his subject in theory and prac-

tice, and as his instructions are well reasoned and tersely conveyed, the book may be accepted at a reliable guide to a very fascinating branch of printing.

A BRIGHTON Photographic Exhibition.—The prize-winners in the photographic exhibition, organised by Hardcastle's, Limited, of East Street, Brighton, are Miss M. A. E. Tozer, Hove (a figure study), Mr. T. L. Lambert, Brighton (the reredos, Lichfield Cathedral), and Mr. J. Brooks, Brighton (farm horses). Many prints of great merit were sent in, and the photographs can still be seen at Hardcastle's. The judges were Messrs. E. J. Bedford (Eastbourne) and A. H. Corder (Hove).

THE Altrincham Photographic Society held its annual general meeting on Thursday evening, November 3, 1904. The election of officers for the Session 1904-5 resulted as follows:—President, Rev. L. W. Thomas; Vice-presidents, F. Kenyon and W. H. Short; Committee, T. Rowlands, J. Tonge, J. Harris, junior, E. T. Whitelaw, W. M. Blackshaw; Hon. Sec., D. Stanley Morrison, Ashley Road, Altrincham; Portfolio Secretary, T. R. Foxcraft; Treasurer, C. Rutter; Auditor, A. H. Burgess.

SOUTH LONDON Photographic Society.—An interesting and valuable lantern lecture was given at a recent meeting by Mr. A. Bedding, entitled "A Ramble Round the Tower of London." The lecture was the result of some years of work, and among the slides were views of many historical chambers and prison cells never shown to the public, and for which the personal permission of the Constable of the Tower had to be obtained. The Regalia, being in a glass case, is very difficult to photograph, yet the resulting slides were probably the best of the evening.

THE following is a list of the prize-winners in the October Ensign Film Competitions:—First prize, £10, J. H. Brookes, 32, Waldegrave Road, Upper Norwood, S.E.; second prize, £5, Miss Makechnie, 26, Commercial Road, Eastbourne; third prize, £1, W. E. Coxhead, 36, Monson Road, New Cross, London, S.E.; fourth prize, £1, E. H. Kellam, 35, The Arcade, Great Yarmouth; fifth prize, £1, Mrs. G. Green, 77, Womington Gardens, Reading; sixth prize, £1, Miss E. M. Kendall, Greenhays, Kingswear, S. Devon; seventh prize, £1, A. J. Freeman, 2, Park Villas, London Road, Newbury, Berks.

THE Christmas number of "Photography," published by Messrs. Iliffe and Sons, Limited, of 20, Tudor Street, London, E.C., is, as usual, an elegant production. Its main theme is winter camera work. Part I. consists of an exhaustive article on "The Working Up of Negatives and Prints," by Mr. C. J. Harrison; and Part II. "Bye-Paths of Photography," by Mr. W. F. L. Westall. Both articles are fully illustrated, and they are full of sound, practical information by able photographers. This Christmas number, unlike most so-called seasonable literature, should be found useful all through the winter.

PHOTOGRAPHIC CLUB.—The annual general meeting was held on the 3rd inst.; Mr. F. A. Bridge in the chair. The officers elected for the ensuing year are as follows:—Trustees: Mr. F. A. Bridge and Mr. H. Snowden Ward, F.R.P.S. Committee: Messrs. R. R. Beard, A. L. Bell, D. Bradford, G. Edey, J. R. Gotz, F.R.P.S., A. Mackie, H. Müller, H. P. Smith. Hon. Secretary and Treasurer: T. W. Derrington. Several alterations were made in the rules, the most important being the reduction of the annual subscription to five shillings. An inaugural supper will be held on November 23 at the club's new quarters, Red Cross Hotel, 19, Paternoster Square, E.C., at 8 p.m.

IN Sicily with a Camera.—Miss Ethel Heywood lectured before the Manchester Geographical Society last week on Sicily. Her lecture was an account of a tour "as an experimental geographer" undertaken in 1899, and it was illustrated by photographs of Sicily's archaeological and architectural riches. Miss Heywood said that a woman when travelling must decide whether to enjoy herself or take photographs. She took many photographs—and some excellent pictures were thrown on the screen—but her audience, having listened to the lecture, came also to the conclusion that her delightful journey from Palermo to Messina was not robbed wholly of its pleasures because of the camera which she carried.

THE mysterious "Zutka" was driven from the Hippodrome last week to the City to be photographed. "Zutka" had been packed nicely away in his three-foot-long box and set on the top of the cab, while one of his staff occupied the cab. There seemed no reason why anyone should ever find out that the mystery was there, but at Fleet Street—

of all places—a remarkable thing happened, right under the windows of the newspaper offices too! The throng in Fleet Street suddenly became aware of a couple of yellow stilt-like legs appearing in the air over the cab, then other parts of a body, which was immediately identified as “Zutka’s.” The lid had come off the box! The gentleman inside the cab did what he could to put things right, but all to no purpose, so the cab and the figure had to remain exposed to the interest of hundreds of people for nearly a quarter of an hour. An unfortunate business altogether. But are there photographers in the City?

The Ideal Portrait Lamp.—Regarding the Ideal Portrait Lamp, which we noticed in these pages on its introduction last winter, Messrs. Houghtons Limited, of 88 and 89, High Holborn, London, W.C., write:—It is now some months since we first had the pleasure of introducing to your notice the Ideal Portrait Lamp for studio and at home portraiture and group work. As the season is again arriving when this work is more largely practised than at any other time of the year, we take the liberty of again drawing your attention to the lamp. A large number of photographers have now had the lamp in use in their studios, etc., for a long period, and the copies of a few testimonials which we hand you herewith will show you what is the opinion of those who have had practical experience in its use. Messrs. Gardner and Co., of 36 and 40, West Nile Street, Glasgow, have a stock of these lamps, and will be pleased to demonstrate same to those interested.

SOUTHAMPTON Camera Club.—At the Philharmonic Hall, on the 14th inst., before a numerous company of members and friends of the above club, Mr. S. G. Kimber, the hon. secretary, delivered an admirable lecture on “The Cathedral of Winchester,” beautifully illustrated with one hundred charming lantern slides. Commencing with a reference to the remote antiquity of the city of Winchester, developed in myth and mystery, the lecturer gradually brought his audience to the time when it became the chief city of the land, and briefly noted the many important functions and ceremonies enacted there and within the walls of the grand architectural pile forming the object of the discourse. Entering the Close by the King’s Gate, the route taken was via the Deanery and south side to the west front, all of which were graphically described, with emphasis on the fact that architecture of the 11th, 12th, 13th, and 16th centuries is here represented. Entering the cathedral at the west door, the beautiful nave, aisles, minstrel gallery, and most important monuments and memorials were adequately described and portrayed; and then an advance was made into the vitals of the structure, the place where St. Swithin’s shrine once stood being pointed out. The tombs and monuments of many important personages, including those of Isaak Walton and Bishops Edyndon, Wykeham, Fox, Beaufort, Gardiner, Waynesflete, Wilberforce, Brown, etc. The triforium and clerestory were reviewed, and the organs, both ancient and modern. The interior of the unique choir—with its Norwegian oak stalls, so beautifully carved; its unequalled grand High Altar screen; its tomb of Rufus, and mortuary chests, containing the remains of several Saxon and Danish kings—was brought specially to notice in a most instructive manner. Mr. Kimber next dealt with the chapel and tomb of Bishop Langton and with the Lady Chapel. The chair used by Queen Mary when being married to Philip of Spain in 1554 by Bishop Gardiner in the nave of the cathedral was portrayed, and the fact mentioned that it may now be seen in the Langton Chapel. The lecturer next paid attention to the north transept, which is of Norman construction, of an imposing and massive character, and then to the crypts, which were pleasingly described and illustrated. He then spoke at length of the upper and less frequented portions of the building, referring to the massive Norman passages, which have existed for upwards of 800 years, and seem to be quite capable of lasting another 800 years. Lastly, Mr. Kimber spoke of and illustrated the forest (as he rightly termed it) of timber over the vaulting of the nave and supporting the huge roof, and with a fine panoramic scene from this spot the lecturer finished his discourse, which had been listened to with great appreciation throughout. Mr. Wm. Burrough Hill (the president of the club), who occupied the chair, in proposing a vote of thanks, deservedly eulogised the lecturer for his excellent contribution to the club’s winter programme, and said he hoped to hear the lecturer again, and would gladly place the large hall at his disposal for the purpose at any time. Mr. Kimber made suitable response to the hearty vote of thanks accorded him.

Correspondence.

- * * Correspondents should never write on both sides of the paper. If notice is taken of communications unless the names and addresses of the writers are given.
- * * We do not undertake responsibility for the opinions expressed by correspondents.

THE GOERZ COMPETITION LANTERN SLIDES.

To the Editors.

Gentlemen,—I should be glad if you would kindly mention in the columns of your esteemed journal that there will be ready very shortly a collection of slides from the Goerz competition, which will be at the disposal of photographic societies. In addition to these the three other lectures, which have previously been circulating will also be at the disposal of secretaries, and probably another new lecture will be ready early in January.—Thanking you in anticipation, yours faithfully,

C. P. GOERZ.

1-6, Holborn Circus, London, E.C.
November 3rd, 1904.

PROBLEM No. 2.

To the Editors.

Gentlemen,—As a poor photographic assistant I am writing for your sage and fatherly advice. Although I have been in the profession for many years, first as an apprentice, and since as an operator, I find that owing to the low ebb to which our business has fallen, the large number of competent assistants seeking employment it is very difficult to obtain an appointment in which I can do as I like, and at the same time get as large a salary as could be desired. I may say, however, that I have a knowledge of the “preaching business,” having practised it upon my friends for several years, and I think I could on at it all right if my idea could be worked into shape. Can you recommend me to a nice little tabernacle, where I could exercise my talents and undoubted oratorical abilities. I should prefer the building to be lighted from the north side, so that I may utilise it as a studio for photographic purposes during the week, where I could photograph my flock and their friends. I should prefer a tabernacle with a lawn in front, so that I could photograph wedding groups and Sunday school treats, etc., on the premises. If you could render any assistance in this matter I should be greatly obliged. I may say that I have found the preaching business pay very well, and I must not say that as a man of business I should be able to manage the finances of both branches successfully. I should also be glad to refer the services of the chapel keeper as printer and general mucker round as my own family would rather undertake district visiting among parishioners, a branch of work in which they have more than average ability, especially at tea hour.

The P.P.A. I heartily agree with, and am quite agreeable to try my abilities through that association, but would be quite aware of it becoming the parson’s and photographer’s association though still

—Yours faithfully,
November 14th, 1904.

AQUA DILUTUS

PHOTOGRAPHY UP TO DATE.

To the Editors.

Gentlemen,—Enclosed find circular distributed in our town on Saturday last. Will you kindly inform me through your paper if the black and white carbons are a new art? Also the same inquiry applies to platinotype bromides. I should deem it a great favour if you can enlighten me on this subject; or is it simply business bluff, the same as the free use of his Majesty’s name? I think it plainly another move on the part of the professional-amateur who you so ably dealt with in a recent issue of the B.J.P.—Yours, etc.

November 10, 1904.

EUREKA

[We append the essential portions of the interesting circular enclosed by our correspondent. “Black and white carbon” may be a permissible term, but there is no such thing as a “platinotype bromide.” We hope the authors of the circular will take note of this.—Eds. B.J.P.]

“Having just commenced business, and having all appliances up in the profession for the most up-to-date work, we beg to state that we are in a position to execute the very best work in black and white

platinotype bromides, the three-colour process, etc. Also the best class of oil and water-colour paintings (any size), miniatures in ivory in gold and silver frames, etc., etc. Pictures framed in every style. Enlargements any size or style. Photo postcards and Xmas cards—a great variety to select from. Mr. —, having been chief operator to Mr. —, who just recently came under the patronage of his Majesty the King. This alone should convince our customers as to the superiority of our work. Our sole aim will be to give every satisfaction and prompt delivery of work submitted to our charge."

To the Editors.

Gentlemen,—We have been following with great interest your published letters on the subject of cheap photographers, and, as old readers of your journal, we beg to send you a specimen handbill of a photographer of —, and ask you to reply through the medium of your paper whether you think he is a fool to his own interests or if photography as an art is doomed. Another photographer of some thirty to fifty years' standing is doing the same kind of thing, and if he can keep up their large establishments and still live I am sure cannot but say these men are marvels to present-day photographers, and should have monuments erected to their memory after their decease.—Yours faithfully,

LIVE AND LET LIVE.

This is the bill to which our correspondent refers:—"Look here! Photos taken Day or Night. High-class photos at the following low prices: Cabinets, 12 for 7s., 6 for 4s., 3 for 2s. 6d.; Carte-de-visites, for 4s. 6d., 6 for 2s. 6d., 3 for 1s. 6d. Private Greeting Cards 1s. dozen, taken or copied from any photo. Enlargements from 4d. each, ready for framing."

(Replying to our correspondent's question, we do not think photography as an "art" (sic) is doomed because cheap photography is successfully practised. We ourselves were taken for ninenepe, and shillings and sixpence for three cabinets in the long ago; to-day, however, nothing less than the production of a Lewis, a Crooke, or a Macdonald would satisfy us. We live, learn, and (some of us) grow wiser.—Eds. B.J.P.]

FRANK McCLEAN, M.Inst.C.E., the distinguished astronomer and civil engineer, died last week at Brussels in his sixty-seventh year, having been educated at Westminster School, at Glasgow, and at Cambridge. Mr. McClean, after being apprenticed to Sir John Hawkshaw, the famous civil engineer, in 1859, became a partner in the firm of McClean and Norman, civil engineers, three years later, and was for some time engaged in important dock and railway work. After 1870 he devoted his energies mainly to astronomical study, establishing an observatory at Thurbridge Wells in 1874. For his photographic survey of stars in both hemispheres and other astronomical contributions he was awarded the gold medal of the Royal Astronomical Society in 1881. Ten years earlier he had founded the Isaac Newton Studentships at Cambridge. Mr. McClean was a Master of Arts of Cambridge, an LL.D. of Glasgow, and a Fellow of the Royal Society and of the Royal Astronomical Society. His father, the late Mr. J. R. McClean, R.S. M.P., was at one time President of the Institution of Civil Engineers.

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The British Journal of Photography.

The Oldest Photographic Journal in the World.

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Answers to Correspondents.

* * * All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.

* * * Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.

* * * Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.

* * * For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

G. E. Clarke, Sandhurst Studio, Camberley, Surrey. Photograph of Mr. W. S. Stanley's Shop, Bagshot.
R. Wilkinson, The Studio, Hornsea, Hull. Two Photographs of the Old Hall, Hornsea.
G. Packer, 3, St. John's Terrace, Leeds. Photograph entitled, "Moonlight of Algiers."
R. Thirlwell, 21, Bridge Road, Stockton-on-Tees. Photograph of Stockton Football Team, 1904-5.

POSTCARD.—You will find your query dealt with in "Ex Cathedra."

G. B. (Croydon).—Expose the plates long enough to produce the reversed action of light, and develop in the ordinary way. The time necessary for the reversed action, which varies with different brands of plates, you can ascertain by experiment.

JOHN WICKENS.—As the work was done to your order, and you paid for it, the picture is yours, and we should say your name is rightly upon it, particularly as you did part of the work yourself. If the facts be as stated in your letter, we do not see what action can be taken.

ADDRESSES WANTED.—"INQUIRER" asks: "Could you please supply me with the names and addresses of a few German firms who print the coloured postcards?" In reply: We have no directory of postcard printers in Germany. Better put your query to one or other of the German journals.

EMULSIONS.—"F. G. W." asks: "(1) Can you please tell me what is the best book I could get upon emulsion making (in English), excepting Captain Abney's? (2) Is there a modern writer who treats especially upon collodion?" In reply: (1) There is no modern work, in English, on the subject, except that of Captain Abney. (2) No.

BOOKS WANTED.—"ECLENOFF" asks: "Could you kindly state the best book or books on photo-mechanical processes and photography as applied to printing, block-making, etc., and their prices?" In reply: "The Halftone Process," by Verfassers, 5s.; "Photo-lithography," Fritz, 3s. 6d.; "Photo-mechanical Processes," Wilkinson, 5s.

SAFE LIGHT.—"J. A. S." writes.—"Would you kindly tell me where I can procure the aurantia and rhodamine mentioned on page 1076 of the 'Almanac'?" In reply: The dyes mentioned are supplied by such houses as Hopkins and Williams, Cross Street, Hutton Garden. They may also be had, we surmise, through any of the photographic dealers.

FORMULÆ.—"A. M. M." asks: "Could you oblige by giving the formula for a very slow emulsion, such, for instance, as is used on the various gaslight papers now so much in vogue? I presume it is a bromide emulsion which is used on them." In reply: Mere formulæ—without details of working—is of little practical value. We should recommend you to get Abney's "Photography with Emulsions," you will learn a lot from that. The makers of the various gaslight papers do not publish the formulæ they employ.

GRADER.—"ENLARGING" asks: "(1) Where can I obtain a 'grader,' as referred to in Mr. Howard Farmer's paper in your issue of October 28, 'Progress in Enlarging'? (2) Kindly give your advice as to the most suitable grade for small portrait work." In reply: (1) Messrs. Penrose and Co., Farringdon Street, supply screens suitable for the work. (2) As we have not yet tried the system, we cannot say which will be the most

suitable grade for your purpose. Why not communicate with Mr. Howard Farmer on the subject?

GREEN TONES.—"PRINTER, MATTE C.C.," writes: "Could you kindly inform me if it is possible to obtain green tones on matte C.C. paper? I know of no maker of C.C. paper giving formula for green tones. My employer says he has seen some nice green tones, but I have never seen any, except on developed papers, such as carbon, bromide, and others. Shall take it very kindly if you enlighten me." In reply: We know of no method of producing green tones on collodio-chloride papers.

PHOTOGRAPHY IN AUSTRALIA.—"J. J." asks: "Can you give me any information as to professional photography in Australia? Are prices better, chemicals higher in price than in Great Britain; also, is the climate good for outdoor photography, or would there be an opening for a photographer to start business in a small way?" In reply: So far as we have been given to understand, photographic competition in Australia is quite as keen there, in some parts keener, than it is here. Chemicals are, we believe, higher in price. The climate is good.

TRICK PHOTOGRAPHY.—P. NIGHTINGALE writes as follows: "I am interested in trick photography, and I hear there has lately been a correspondence in your paper relating to Mr. Bourns, who professes to take spirit photos. I have recently had some sittings with him. Could you tell me when the correspondence was, which issues of your paper, so that I can, if possible, secure them, and whether there is any work dealing with this subject (trick photos)?" In reply: There was a good deal of correspondence in our columns on the subject of "Psychic Photography" between March and September this year.

COLOUR PHOTOGRAPHY.—"M. R. S." says: "I should be much obliged if you would tell me of any book which would give me practical instruction in colour photography. I do not want theory first as in Marion's 'Handbook of Photography in Colours,' but a book which will tell me:—(1) What camera is required. (2) How the negatives are taken. (3) How the final reproduction or print is obtained. Is it possible to print the negatives on litho stone and obtain prints in the way colour printing is done?" In reply: "Photography in Colours," by Bolas, Tallent, and Senior; or "Three-colour Photography," Baron von Hubl, are good works on the subject, and will give the information desired.

STUDIO QUERY.—"MORE LIGHT" says: "(1) Am in a fog as to the lighting of a studio which I have just bought, out of which I hope you will assist me. The studio had a top and side light of 12 feet both sides; have blocked out the light on one side. Would you advise my blocking out the top light on that side also, as the faces of sitters appear so very white, no light and shade? (2) There is also 6 feet of background end, blank, that is without top or side light. Should the sitter be posed clear of this blank? (3) The sitter faces N.W., what colour blinds would you advise?" In reply: (1) As you have blocked out one side light, you do not say why, we should say you would do well to also block out the top on that side. (2) No, they should be some little distance farther back. (3) A medium tint of green will be as good as any.

CARBON PROCESS.—W. H. G. AND SON write: "We have photographed five views, 12in. by 10in., in Kelly Den. These, we learn, are to be reproduced as panels, transferred and put on wood, in the cabin of a ship just building, named 'Den of Kelly.' The five views have been accepted, and customer writes to ask us to do two copies of each on the paper best suited for transferring to wood. This is exactly where we are at sea. We are quite willing customer should do the transferring, but we know not the kind of paper. Can you help us? The photographs are wanted at once." In reply: The best method of producing the pictures is by the carbon process, developing them on flexible supports, and then transferring them to the panels in the usual way. By the carbon process permanent results will be secured. If you read the notice that appears at the heading of this column each week, you will see that we do not answer correspondents by post.

SIZE OF POST CARDS.—D. IRELAND writes: "Having seen advertisement in your columns I asked Messrs. — and Co. prices and specimens of collotype cards to be made from subjects. They sent me some very fine specimens in different styles, one a full card; I returned with an order for two lots specifying particularly 'full card,' and paid in advance. The enclosed are samples of what they want me to accept. Apart from the wretchedness of the execution, they are not full cards as are the rest of my series, and I declined to accept them."

— and Co. say they 'think they are full card enough.' I have repeatedly asked them to execute the order in accordance with my instructions, but they take no notice. Will you kindly advise me what to do in the matter?" In reply: On measuring the cards sent we find they are the size allowed by the Postal authorities, namely $5\frac{1}{2}$ by $3\frac{1}{2}$ inches, so that they are to your order. In future, write on one side of the paper only, please.

LENS QUERY.—"GLAUCUS" says: "(1) Can you please advise upon the choice of a lens? I require a lens suitable for landscape cabinet heads and for groups, fairly rapid, F. 6 or F. 7; length of my studio is only 21 feet 6 inches. Are the following suitable?—Suter's Aplanat A, F. 6.3, No. 3, 11½-in. focus; Beck's Biplanat, series I, F. 5.8, No. 6, 11-in. focus; Voigtländer's U. Euryscope, series IV.a, F. 7, No. 2, 9½-in. focus. (2) Some years ago, I and seven others were taken in a wedding group; several of us now require additional copies, and I have written to the photographer to buy the negative or to make other copies, but can get no reply. Is he bound to sell negative or copies if required?" In reply: (1) In so short a studio the longest focus lens will be the best for large heads, the reason of the better perspective it will give. The shortest focus one will be the most suitable for groups. (2) The photographer is not bound to sell the negative. Probably he has not kept it and, therefore, is unable to supply copies.

TRAVELLING.—"MIDLANDER" writes: "A little time ago I entered into a contract to demonstrate and sell a certain 'gaslight paper' in the South of England. I was to receive a nominal salary, actual travelling expenses (fares only) and commission. When I agreed to these terms, I, in my own mind, settled that my journeys would take me anywhere within 100 and 150 miles south and west of London, but to my dismay, my employer declares that such towns as Torquay and Truro are included in the 'Southern Counties.' I am threatened with legal proceedings if I do not carry my contract out; employer having every advantage by my terms. Of course you will understand that these much longer journeys will be greatly to my detriment in every way." In reply: This is a question for a solicitor, as all will depend upon the agreement made. Truro and Torquay can scarcely be considered the South of England, but we should have thought that the wider your field of travel the better it would be for you in the end of commission.

VARIOUS QUERIES.—"STYLES" says: "(1) I have a batch of prints to mount on art paper, C.C. plat., etc., and have met with the usual difficulty of cockling, even when dried under moderate pressure; I have tried thin gelatine and secotone. Can you let me have a few practical hints? I have, of course, mounted them dry. (2) What are the most suitable subjects for the 'Romney' style of portraiture? Also could you give a brief outline of the style itself? (3) Re 'Cosway,' have you usually seen these with the head and shoulders draped? Is the draping necessary providing the subject is suitable? (4) Where could I see specimens, or obtain a print of the above and any other styles in vogue among the leading firms?" In reply: (1) The best mounting solution for the purpose, I know of, is that given on page 1,071 of the "Almanac." The Dry Mounting Company, Fetter Lane, have a system of mounting that entirely avoids cockling. (2 and 3) You had better study the works of these two painters, which can be seen at the National Gallery. (4) Better see the styles shown in the windows and showcases of leading firms.

* * Many Answers to Correspondents, Reviews, and Notices unavoidably held over.

THE BRITISH JOURNAL OF PHOTOGRAPHY.

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FRIDAY, NOVEMBER 25, 1904.

PRICE TWOPENCE.

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THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1905.

Edited by THOMAS BEDDING, F.R.P.S.

THE forty-fourth annual issue of THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC will be published on December 1. This year's ALMANAC reached a total of 1,604 pages, and the entire edition of 25,000 copies was sold out before publication. Of no other photographic book ever issued can two such unique facts be recorded. The edition for 1905 will also consist of 25,000 copies, and will number 1,612 pages, thus constituting the volume the largest yet published.

The following are some of the important features of the forthcoming volume:—

1. The frontispiece will be a portrait study specially produced for the Almanac by Mr. Furley Lewis (Medalhist at the Royal Photographic Society's Exhibition, 1903).
2. The first editorial article, which deals with "The Present and Future Position of Photography," discusses the probable growth and expansion of all branches of modern Photography.
3. The second editorial article supplies a succinct illustrated history of the BRITISH JOURNAL OF PHOTOGRAPHY and its Almanac ever since their foundation.
4. Important articles and papers by the following, amongst many other well-known photographic writers, are included in the volume:—

Abney, Sir W. de W., C.B.	Dormer, J.	Hartmann, Dr. J.	Nelson, E. M.	Salisbury, J. W.
Baker, T. Thorne.	Duncan, F. Martin.	Henderson, A. L.	Neubaus, Dr.	Salmon, P. R., F.R.P.S.
Baldeck, J. H., F.C.S.	Dunmore, Edward.	Hepworth, T. C.	"Ons."	Selby, H.
Barker, J.	Dunmore, G. H.	Hett, Charles Louis.	Payne, A., F.C.S., F.R.P.S.	Slater, P. J.
Bentley, B. F., M.A., F.L.S.	Everitt, Philip.	Hodges, John A., F.R.P.S.	Perkins, Rev. T., M.A.	Smith, J. H.
Bird, J. J. S., B.A.	Foxlee, E. W.	Joly, Dr. J., F.R.S.	Pike, J.	Sutton, C. T.
Blesbrook, G. Van.	Gamble, William.	Jourdain, Philip E. B.	Piper, C. Welborne.	Tilfor, J.
Bolas, Thomas, F.I.C., F.C.S.	Goodchild, Rupert.	King, Horatio Nelson.	Procella.	Wall, E. J., F.R.P.S.
Brosig, P.	Gower, H. D.	Leisk, J.	Rheinberg, Julius.	Wallace, Robert James.
Brown, G. E., F.I.C., F.C.S.	Graves, Frederick.	Lockett, A.	Richards, T. W.	Walmsley, W. H.
Channon, H. J.	Hackett, J. T.	Mills, Edmund J., D.Sc., F.R.S.	Rohr, Dr. Moritz von, D.Phil.	Watkins, Alfred.
Clifton, Edgar, F.R.P.S.	Harris, Geo. T., F.R.P.S.			Valenta, E.

5. Numerous illustrations, including Portraits of many Celebrities in the Photographic World.
6. An exhaustive Review of recently introduced Photographic Apparatus.
7. Sections devoted to Practical Points; Epitome of Progress during 1904; Formulæ; and a great mass of Miscellaneous Information.

UNFAIR COMPETITION IN THE PHOTOGRAPHIC INDUSTRY.

UNDER the above heading, we, in our last issue, as a translation from the "Photographisches Wochenblatt" gave what purported to be a report of a case that had been before the Law Courts in Germany between Westendorp and Wehner of Cologne and Ilford, Limited, and in another part of the paper made some remarks under the heading "Ilford and German Injustice." Since then we have received a letter from a gentleman in Germany, which we publish below, explaining that by an unfortunate error it was a complete mis-statement of what had really taken place, and that the decision there, instead of being one against Ilford, Limited, was completely in their favour, and against Westendorp and Wehner, who were the ones found guilty of an improper infringement of the ticket and trade-mark of Ilford, Limited, and condemned in damages and costs accordingly, with an injunction restraining any further continuance of the offence.

The error in the German report seems to have originated in this way:—Ilford, Limited, had been the ones originally taking the proceedings in the German Courts as plaintiffs against Westendorp and Wehner as defendants. The decision in the first Court was completely in favour of the plaintiffs, and thereupon the defendants appealed. On such an appeal apparently the appellants, though defendants in the original proceedings became appeal plaintiffs, and the original plaintiffs appeal defendants. The Appeal Court completely confirmed the previous decision in favour of Ilford, Limited, but by the names plaintiffs and defendants being thus confused the German reporter made the mistake of making it appear as if the appeal plaintiffs had been the ones who had succeeded instead of the original plaintiffs.

We extremely regret that we should have been the means of giving any further publication to this completely erroneous report of the case, exactly reversing the real decision, and still more that, based upon that report, we should have made the remarks we did, and which we admit were quite unwarranted. We offer our fullest and sincerest apologies, with every expression of regret, to Ilford, Limited, for this unfortunate occurrence, and hope it will now be quite understood by our readers that instead of there being any pretence of a ground of complaint against Ilford, Limited, or any foundation for the unjust imputations made upon them, they have been the ones entirely in the right in the matter, and so completely so, that when taking proceedings in German Courts against German subjects, they both, in the Court of first

instance, and again on appeal, obtained decision in their favour, with substantial damages.

The following is the letter we have received on the subject:—

To the Editors of the BRITISH JOURNAL OF PHOTOGRAPHY.

GENTLEMEN,—Your last number contains an article reproduced from the "Photographisches Wochenblatt," and a commenting article, "Ilford and German Industries," which both are based on wrong information. What really happened was just the contrary. The Westendorp and Wehner Company has been fined for having used the "Milford" label, which has been deemed to be an imitation of the Ilford Company's legal label Ilford with steamships.

In the next number of the "Photographisches Wochenblatt" you will find a rectification, unfortunately it was too late for last number; now as I was myself who drew Mr. Gaedicke's attention to the fact that this article really must be wrong, I will do still this for my friend Gaedicke that I give you some details how this mistake could happen. Mr. Gaedicke has been the victim of his correspondent who made for him an extract of the sentence, but was not sufficiently versed in legal language to understand the Law Courts' slang. It is a peculiarity of these sentences that the names of the parties only are stated at the head of the sentence, later they only appear as "plaintiff" and "defendant." Now in the first sentence Ilford was plaintiff, Westendorp and Wehner defendant, the latter were condemned and appealed. In the Appeal Court they call the appealing party "Berufungskläger," i.e., "Appeal Plaintiff," the other one "Appeal Defendant"; thus the sentence of the Appeal Court surely will begin "In Sachen Westendorp und Wehner Berufungskläger contra Ilford, Ltd., Berufsklägte," and in the sentence The Ilford Company will be called as well "Appeal Defendant"; if they speak in the argument in the Appeal Court of "plaintiff," they mean the original action and vice versa. Now this reporter did not distinguish between the terms Appeal Plaintiff and Plaintiff, and so resulted the dreadful Gallimathias in the "Photographisches Wochenblatt."

Most probably you will have a rectifying letter from the Ilford Company for next number, and I hope this letter will arrive in time to show you that it was only a mistake that converted the fact into the contrary and enable you to explain to your readers how this mistake could happen.

Yours most respectfully,

Luxembourg-Gare,

F. DYCK.

19th November, 1904.

EX CATHEDRA.

Chloride of Mercury Solution.

draw attention to the observations of a French chemist which were communicated to the Chemical Society of Paris recently, and appear in the current Bulletin of the Society. M. Vittenet finds that a dilute solution of mercuric chloride and ammonium chloride is readily decomposed by a solution of bicarbonate of lime, the well-known clear liquid which results from the prolonged passage of carbon dioxide through lime water, or which may be said to be represented by the average "hard" water. A precipitate is produced of yellowish-white colour, and, though we will not follow M. Vittenet through the list of compounds which he surmises the precipitate may be found to consist of, we may say that it is one of the chloro-amido bodies which are so readily formed by mercury. Though named by the author only in connection with the weak solutions of mercury used as bactericides, the change may well explain some of the uncertainties and irregularities of mercurial intensification. The remedy, or rather the preventive, is to use sodium chloride (common salt) instead of the ammonium chloride, or to employ well boiled water or distilled water. We would add to these recommendations of M. Vittenet's still another, and that is to make the mercuric solution without the assistance of solvents like these alkaline chlorides. There is absolutely no need to go beyond the plain solution of the chloride, which is most advisedly made as follows:—An ounce of mercuric chloride is dissolved in 10 oz. of nearly boiling water, the liquid cooled, and any bathery crystals allowed to settle, which they quickly do by reason of their great weight. The liquid is then poured off, and about 30 to 40 minims of strong hydrochloric acid added to it. The solution is then ready for bleaching the negative, and will retain its properties for an indefinitely long period if kept away from a strong light.

* * *

The Naturalist-Photographer.

We have always regarded with a kind of reverential awe those persevering men who, camera in hand, will track the wild beast or bird to its lair, in spite of every personal discomfort. To hang on by one's eyelids to a beetleling crag, with the wild waves beating on the rocks hundreds of feet below, with the sole reward of a negative representing the nest of eggs of a sea-bird, seems to us to be an astonishingly desperate proceeding, nor can we understand the bliss of lying for hours at full length in a ditch full of dirty water in order to photograph the giddy tadpole in the bosom of its family. It is well that there should be unselfish men, who will thus sacrifice their own comfort for the benefit of science. They are naturally very few in number, and we can hardly hope to keep up the strain for many generations. Happily we need have no anxiety on this point. In fact, there will no longer be any need for the naturalist to put himself to any inconvenience at all, so far as the birds are concerned, for these obliging bipeds, no doubt seeing what a craze there is for photographing them, are leaving their native haunts and are making themselves at home in the London parks. Why sling yourself over a

perpendicular cliff at St. Kilda's to photograph a frightened gull when the same bird, tamed and civilised, will pose for you on the grass at St. James's Park? Why stalk the gaudy kingfisher through morass and quagmire "far from the madding crowd," when it will come and eat crumbs out of your hand on the banks of the Serpentine? "Can these things be true?" asks the incredulous reader, and we refer him for answer to certain letters which have recently appeared in the *Times*. One of these, commenting upon the circumstance that wild birds, once having screwed up their courage to face a flight to London, quickly learn to treat human beings with indifference, points out that the wood-pigeon, one of the most timid of birds in its native wilds, will scarcely move out of the way of the Metropolitan perambulator. The same with the dabchick, and as to the kingfisher, three of these gaily-dressed birds have made themselves quite at home in St. James's Park. The brown-headed gull is another bird which frequents this resort of fashion, and comes there in huge flocks. Other parks which have ornamental waters are favoured in the same way, but St. James's seems to be the sanctuary generally chosen by the strangers, and in due time, no doubt, it will come to be regarded as a huge natural aviary.

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Gas and the Photographer.

There is a general impression among those who have not acquired the habit of looking much below the surface of things, that gas as an illuminant has had its day. They see around them streets and shops brilliantly illuminated by electricity, and at once come to the conclusion that this healthful and pleasant light is destined to extinguish all others. A visit to the International Gas Exhibition, opened on Saturday last at Earl's Court, would quickly dispel this illusion, and would show that the newer forms of lamps have the appearance and nearly all the convenience of the electric glow lamp at one tithe of its cost. But what we were chiefly concerned with in looking through the exhibits was the possible application of gas lighting to the requirements of the photographer, and we may at once say that we were disappointed in our quest. As far as we could ascertain, not one of the exhibitors had troubled himself to cater for the photographer. The most noticeable feature of the exhibition is the total abandonment of the old forms of "fishtail," "batswing," and other burners in favour of the incandescent mantle. Not one of the old burners is in evidence, and the mantles are everywhere. And what will especially appeal to photographers is the great luminosity of some of these lamps. In one corridor is a row of lamps, each furnished with two burners of 500 candle-power. Each globe, therefore, sheds a radiance of 1,000 candles, a brilliance which was formerly associated only with the limelight, or the electric arc. These particular lamps are fed by gas under a pressure of 16 in., the extra pressure being secured by a double action pump worked by a small gas engine, the entire apparatus being of the most compact kind. The light from the incandescent mantle is of actinic quality, and this form of light seems to be in every way fitted for studio use in places where artificial illumination is required, and where electricity is not available. At this exhibition the inverted gas mantle is much to the fore, and the fittings made for it are most artistic. Here, again, we have a possible aid for the photographer which seems to have been quite neglected by the makers. A lamp of this kind, throwing a downward light, would, if suitably protected by a non-actinic screen, make a most admirable light for developing negatives by, while with an orange screen it would be first-rate for developing enlargements.

Too often the photographer, working in a cramped space with the light immediately in front of his eyes, is heavily handicapped, and he would be the gainer by using a light like this suspended above his head. Of course, this has long been done with the electric glow lamp, but in penning these notes we have in our minds the many places where electric mains are not. The photographer is also interested in a minor degree in gas for heating purposes. In this direction no advance seems to have been made, and there is certainly much room for improvement.

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Decrease of Fog in London.

Those who delight in photographs of a foggy nature, or those of fogs, such as "the park railings in a fog," Westminster or other London bridges in a fog, etc., etc., had plenty of scope for their cameras last week. On the other hand, professional photographers found their lot a hard one with the continued fogs. However, it may be some consolation to the latter to know that the fogs we get now are not so many or so bad as they were many years ago. At the last meeting of the Royal Meteorological Society a paper was read by Mr. F. J. Brodie entitled "The decrease of fog in London during recent years." Statistics were quoted showing the number of days on which fog was experienced in London during the past thirty-three years. From these it seems that the monthly averages for this period showed that December is the foggiest month of the year, and after that comes November, the next in order being January and October. During the year there is an average of 55 days with fog of more or less intensity, and the worst year of the whole series, it seems, was 1886, with fog on 86 days. The clearest year was 1900, when it occurred on 13 days only, the number being only one-half of that recorded in the next best year (1903). The decrease in the prevalence, and also in the intensity, of London fogs was attributed by the author of the paper to a lessening of the smoke evil, due to four contributory causes—firstly, to the efforts made by the Coal Smoke Abatement Society in enforcing the laws by which factories and other large works are required to consume their own smoke; secondly, to improvements in the forms of domestic grates; thirdly, to improved forms of lighting, the old-fashioned gas-burner being largely replaced by incandescent ones, which emit far less smoke, and by incandescent electric light, which emits practically none at all; fourthly, to the largely increased use of gas stoves for heating and cooking purposes. In conclusion of his paper, Mr. Brodie said: "The position of London on the banks of a large river is, of course, eminently favourable to the development of fog and mist; so that, from a purely geographical and meteorological point of view, the position of the metropolis is, we fear, incorrigible." With a cleaner air, however, there is little doubt that fogs would diminish in frequency; and, even when they did arise, the vapour particles would not be coated and impregnated as they now are by the pestilential products arising from an imperfect and wasteful consumption of fuel. Many of our older readers will be able to recall to mind the dense "pea-soupy" and choking fogs we sometimes had during the winter months some twenty or thirty years ago. We have, it is true, occasionally fogs of a similar type now, but our older readers will bear us out in saying that they are in a more dilute form than in the olden times. Yet we hope for a still further mitigation of the evil.

CAN THE STEREOSCOPE BE REVIVED?

THE advocacy of stereoscopic photography has appeared up to the present time very like the traditional whipping of a dead horse, for, though some photographic societies always include among their schedules of prize competitions one or more classes for stereoscopic views, the competitors

are usually confined to a small band of workers—we know of cases where the prizes have been withheld through there being no competition. Even this small band, as far as our own observation goes, we regret to notice, diminishes rather than increases in numbers, and the ratio approximately represents the interest that photographers in general take in a beautiful process, to which, of all other photography is so especially applicable. Why such indifference should persist is a question to which it is not easy to give a satisfactory reply, especially when it is remembered what an absolute rage stereoscopic work once attained to. It arrived at a wonderful popularity with marvellous rapidity, but its wane was almost more rapid than its rise. It is impossible for any one not living at that time—about forty years ago—to have any conception of the popularity of the stereoscope; there was scarcely a house in the land, from the palace to the cottage, without an instrument of some sort and its attendant views. After a while, people became indifferent—"Oh, I have seen them before," was the usual cry; prices were lowered to induce further purchases, "revolving stereoscopes" were designed to obviate the trouble of changing views; but still the indifference increased. Then came the introduction of coarse, not to say indecent, subject views, and, in a wonderfully short time the demand collapsed, and an utter slump set in which has continued ever since, with the exception of a few spasmodic outbursts. By a sort of tacit conspiracy the stereoscope and its views were everywhere relegated to a cupboard in the attics. The word stereoscopic as applied to a picture was in frequent use to signify roundness and solidity of effect in a single picture, and everyone knew what it meant; but a generation has arisen—nay, two generations—who have never even seen a stereoscope, and to whom it is nothing but a name. Advantage was taken of this prevailing ignorance a few years ago by a small band of business experts, who seemed to be travelling the country through. They worked most of the towns of any size, and made such a scoop as would make an ordinary business man's mouth water. Orders for £2, £5, £10 worth of views were common. They carried a stock of views and a cheap skeleton stereoscope with a fancy description and an equally fanciful price. It was so easy to get enthusiasm out of a man who had never looked through a stereoscope in his life, nor ever, perhaps, heard of one. They roused the enthusiasm and pocketed the dollars.

The point we wish to make, and to which we have endeavoured to cause our remarks to lead up, is this: If, as we have just shown, it has been possible to create a demand in certain directions, and to make money out of it, does it not seem probable that a combined effort among photographers and dealers to interest and inform the whole of the public, and not a limited selection, would meet with success? Among our non-technical friends we could name half a dozen who have never looked through a stereoscope, or even seen a stereoscopic view. The open form of the instrument now in favour lends itself to ready viewing, and changing views, though the joys of a transparency view such as forty years ago Ferrier and Soulier produced, and which were retailed at five shillings each, are best realised with a closed-in stereoscope. It is the transparency type that is most in favour among amateur photographers; and those who produce them usually are—and have justification for it—enthusiasts in their hobby. Process blocks have by degrees reached such a point of perfection that it would be quite possible to make them fine enough to prevent any coarseness of texture being discernible, even under the slight magnification of the twin lenses, and with stereo views from process blocks an immense number could be had for a small price, and still leave a good margin of profit.

Side by side with these, of course, would be on sale direct prints, bromide or P.O.P. or collodion, or transparencies on glass or celluloid.

But the greatest spurt of all would be given by a general introduction of a postcard stereoscopic view, in bromide or print-out. If these were made and printed on stiff board, and stereoscopes stocked for sale at every shop where the views were dealt in, there would be such a revivification of the demand for stereoscopic views as to remind one, if only distantly, of the great boom of 1862.

COLOURED PICTURES ON THE LANTERN SCREEN.

DURING the infant years of photography, when the optical lantern was little more than a toy, coloured pictures were all the rage. Such lanterns as were used for public exhibition purposes were rather ponderous in build, for the condensing lenses would measure a foot in diameter, and everything else had to be in proportion. The reason for this was that the pictures, drawn and coloured by hand, were some 8 in. or 9 in. across, for in less space the artist could hardly be expected to find room for that elaboration of stippled detail necessary to the work.

Then came the photographic slide, with its wealth of microscopic detail which put the artist to shame, and a 3-in. picture and a 4-in. condenser at once reduced the weight and the cost of the lantern, so that it quickly became popular. The painter of lantern pictures had seen his best days, and the art—so far as large pictures, hand-drawn and hand-painted, were concerned—ceased as an industry. Coloured lantern slides came to be tabooed, and it was a hackneyed remark, constantly heard, that a photograph coloured was a photograph spoilt. Like many another hackneyed saying, this was not altogether true, and was probably started by some one who had only seen the worst kind of slide painting. In the hands of an artist who cared to master the technical difficulties of applying colour to such small surfaces, a lantern slide would be immensely improved by the process. Later on, when aniline tints came to be employed, and the process of painting simplified, first by the Japanese, and subsequently by several workers in this country, the coloured lantern slide once more came to be tolerated. Now that such pictures can be produced in a more scientific manner by the trichromatic processes, lantern pictures in colour are becoming all the rage, and we may reasonably look forward to a revival of interest in lantern exhibitions on this account.

The principal reason why the coloured lantern slide has been hitherto treated with contempt is because the colouring has generally been so very bad. It was sufficiently good for the children, for bright colours are pleasing to little folk, and gaudiness with them is not a term of reproach. Skies are sometimes blue in Nature, but they were always blue in lantern pictures, *very* blue—*Prussian* blue—and the trees also were *very* green, and generally of that arsenical green never seen in natural trees. The reds, yellows, and other tints of a secondary nature used by the slide painter were equally gorgeous in hue, and were slapped on to the picture regardless of truth and discretion. The fault was with the public; they would not pay more than a certain sum for a coloured slide, and the dealer could not afford for that sum to engage the services of competent colourists. The best dealers would say, as they say to-day, "Pay me a fair price and you shall have well-coloured pictures."

The most effective coloured photographs ever shown were without doubt those exhibited by Ives in his "Kromskop," and those projected by him on a screen by means of a

lantern built on the same general principle as the "Kromskop." But the pictures had the great disadvantage of being extremely limited in size. With a powerful arc-light the pictures could not be effectively shown more than 4 ft. in diameter. This was good enough for a room holding 100 people, but quite inadequate for a large hall. The same objection applies to the very beautiful pictures shown by Sir William Abney at the Camera Club the other night, with an apparatus somewhat like that of Ives. The one arc-light split into three beams to serve the three positive images with their colour filters lost so much of its radiance in the process that the pictures had necessarily to be of small area, and even then many of the spectators crowded close to the sheet in order to appreciate the beauties of the pictures, which otherwise they would have lost. We fear, therefore, that this trichromatic method of showing pictures is not suitable for public exhibition, but must be confined to the studio or laboratory. Ives's trichromatic lantern has for a long time been on the market but for the reasons stated is not often seen in the lecture halls.

The simpler method of superposing three stained positives upon one another and binding them up as one lantern slide, as practised by Sanger Shepherd and by Lumière with such success, has a far larger number of adherents, and is being practised by many workers with good results. And as apparatus and methods of working get simplified, as they always do by a sort of evolutionary process, this system of obtaining coloured pictures for the lantern will grow in favour.

There are, however, numbers of persons in this world who hate to take trouble about anything; they will look at a good process like this, will shake their wise heads, and will say: "No, life is too short." The bare idea of taking three negatives and three positives to produce one lantern picture, to say nothing of the three staining operations, frightens men of this sort, and they will have none of it.

Hence it seems to us that there is scope for hand colouring of lantern slides, of a better kind than we have of late years been accustomed to, and in such work many students of our art schools might find a profitable outlet for their energies. For many good colourists are turned out year after year by these schools, who find the greatest difficulty in finding work. Possibly many of them have mistaken their vocation; they may not possess that gift of originality which fits them for illustrating books and periodicals, but at the same time they have a keen sense of colour, and could, when once the technical difficulties were mastered, turn out admirably coloured lantern slides.

That such work can be carried to the highest pitch of artistic perfection is proved by the Japanese examples to which we have already alluded. We also remember that the "Travelogues" at the Queen's Hall last year were illustrated on a big scale by excellent coloured pictures. But the most recently shown pictures of this kind are, perhaps, the best of all. We mean the photographs projected by the lantern at the Coronet Theatre, and more recently at the Camera Club, illustrating the architecture and art treasures of St. Peter's and the Vatican. These splendid pictures are by Signor Inguibert, who must have devoted many years to their production. The projected pictures measured, at the Camera Club, 18 ft. by 12 ft., the largest screen which the room would accommodate; but in spite of the great magnification, and the closeness of the spectators to the sheet, there was no sign of flaw or blemish in any of the photographs. The colouring of the landscapes was quite true to nature, while that of the interiors of the palatial rooms at the Vatican was so perfect that one seemed to be looking inside the apartments themselves rather than at a painted picture. The original slides, we learn, measured 9 by 12 centimetres,

i.e., a trifle larger than the familiar quarter-plate. This increase of area over the usual lantern slide, the opening of which does not measure more than $2\frac{1}{2}$ in., is distinctly in favour of the colourist, and it becomes a question for consideration, if coloured slides are coming once more into vogue, whether it would not be better to increase the area of our pictures. The change would not be easy, and would possibly be resented as greatly as a change of pitch in musical instruments, for it would necessitate so many alterations. Still, very good brush work can be done by a competent hand on a slide of the standard size. From the warm reception which the Italian pictures met with, even by such a conservative body as the Camera Club, it is clear that coloured slides are no longer regarded as "photographs spoiled," provided that the colouring is artistically done, and the fact should be noted by those whom it may concern.

THE Committee of the Gloucester Public Library have decided to commence the collection of photographs of objects of interest situated in the County and City of Gloucester and the neighbourhood, as a means of securing records and supplementing the existing collection of printed matter relating to the county. Promises of assistance have been received from the Gloucestershire Photographic Society, the Stroud Photographic Society, and the Bristol and Gloucestershire Archaeological Society. The proposal has also been received very favourably by the Council of the Cotteswold Naturalists' Field Club, who have decided to bring the matter before the members. The committee hope to obtain the help of all persons interested in the historical features of the district, and will welcome the contribution of prints. There is no stipulation as to size of plate, process, etc., and the Committee will arrange for and bear the cost of mounting; if possible two copies of each photograph should be contributed. Those who may have negatives of interest which they would allow to be reproduced for the purpose of the collection, but have not time to make prints therefrom, can help by communicating the subjects they represent. The following subjects are suggested as being within the scope of the collection:—Churches (interior and exterior), ecclesiastical ornaments and fittings, domestic architecture, village crosses, stocks, old furniture, early forms of domestic utensils, vehicles and agricultural implements, the physical features of the county, dress and customs, and all objects of general archaeological interest.

A PARISIAN Tragedy. — According to a Paris correspondent, a tragedy, which recalls one of Edgar Allan Poe's most notable stories, has just been enacted near the Vincennes Gate. Jules Hardouin, an old showman, had conceived for Abraham Franck, who followed the same calling, a violent hatred. Franck was engaged in selling photographs at the fair on the Boulevard. Richard Lenoir and Hardouin invited him to pay them a visit. "I will initiate you into a new photographic process invented by an American, who is a friend of mine," he said. "The invention concerns the employment of radium and X-rays. You will make a fortune by it. You will find me a real friend, for I will give you the secret of the invention. The American will exploit the patent abroad, but you can work France." Franck smiled at first, but eventually allowed himself to be tempted, and on Saturday morning he appeared at Hardouin's wooden shanty. "You are early," said the old showman. "The American is not here, but his absence does not matter. Keep perfectly still, close your eyes, and do not move." Hardouin then fastened a high board, furnished with rings, to the wall, and invited Franck to stand against it. Instantly rope was passed through the rings, and Franck found himself bound. Hardouin next took a razor and a revolver from a black box. "Choose," he said. "How do you wish to die? By the blade or by the bullet? You made me suffer a long time, but the hour of revenge has struck for me. Commend your soul to God." A shot rang out. The bullet grazed Franck's ear. He shouted for help and made frantic efforts to free himself. The rope proved to be rotten and broke, and Franck, seizing hold of the revolver, snatched it from the old showman's hand. He belaboured the skull of Hardouin with the weapon until the latter escaped, covered with blood. The neighbours, seeing him pursued by Franck, interfered and disarmed the pursuer. Hardouin returned to his house, and a few moments later another shot was heard. The madman, for mad the old showman was, had blown out his brains with a carbine.

SOME NEW RESULTS WITH RESPECT TO THE PRINCIPLE OF THE CONSERVATION OF ENERGY.

1.

OF late years, the photographic method used in the discovery of the Röntgen, Becquerel, and Curie radiations have, so to speak, forced this important branch of physics on the notice of photographers. And the discovery of radium, which arose from these researches, is apparently not incapable of applications in photography. Accordingly, it seems to me desirable in view of the fact that the properties of radium seem to necessitate the modification of some of what are regarded as the fundamental principles of science, to discuss these principles. Such a discussion is, more especially at the present time, indispensable for the scientific photographer. Indeed, it would be remarkable if it were not really to be expected that the progress of photography has required a greater and greater knowledge of subjects which appear at first sight without the province of photography. Without speaking of the rather extensive optical and mathematical knowledge required for the proper understanding of the photographic lens, we need only think of Lippmann's method of colour-photography to agree that a thorough knowledge of the wave-theory of light is essential for the scientific photographer.

Thus it has appeared to me to be useful to give the modern views on such subjects as the conservation of energy and the atomic theory in this periodical. The doing of this afforded me particular pleasure since I succeeded, about ten months ago, in remarking a fact about the principle which, to my knowledge, had not hitherto been remarked. This, together with other investigations, is of a mathematical nature, and has appeared in the "Quarterly Journal of Mathematics"¹ but here I shall try to explain my remarks in, as far as possible, non-mathematical language.² I have brought the remark in here, for there results from it the fact that the principle of the conservation of energy is not subject to the restriction which has hitherto been tacitly made.

In the first part I have explained, also in language as non-mathematical as possible, the nature and use of the principle in question; and I think the line of distinction between what is fact and what an arbitrary, though it may be a natural hypothesis—which latter may be almost expected to be ultimately contradicted by facts—is sufficiently emphasised. This is not done in some explanations of the principle, and is, I think, done in the best manner if we regard the principle of the conservation of energy as what may be shortly but mathematically expressed as *one* (we require, in general, at least two and may require four, six, . . .) of the "integrals" of the equations of motion.

We are accustomed to divide physical science into the departments of mechanics, heat, electricity, and so on. Of these that branch of natural knowledge known as mechanics is the oldest, and early (1788)³ reached a certain completeness which has not yet been equalled by any of the other branches. It was in mechanics that the first general propositions were arrived at; thus, that known as the principle of the "conservation of *vis viva*" was discovered, in a very general form, and applied by Huyghens in 1673.⁴ To explain this principle, we will begin by considering the simple case of a heavy body moving under the action of gravity near the earth's surface.

¹ "On the General Equations of Mechanics," *Quart. J.*, 1904, pp. 61-79.

² The formulae, for the most part, only require that elementary mathematical knowledge that every one possesses, and detailed reference for all mechanical concepts used, is made to the works of Mach; undoubtedly the clearest on such questions.

³ This is the date of the publication of the first edition of Lagrange's "Mécanique Analytique." In this work, the problems of mechanics were all given in an analytical (purely mathematical) form, and, though in many important cases the facts were not accurately formulated by Lagrange (e.g. the principle of "Least Action"), Lagrange first gave analytical mechanics the form it has to-day.

⁴ On the part taken by Galileo in the development of this principle, see Mach's "Die Mechanik in ihrer Entwicklung. . . ." 4th ed., Leipzig, 1901, pp. 148, 201, 266. Cf. pp. 177-182 (on the Huyghens).

When a body falls freely, the velocity continually increases, and Galileo found, by a guess followed by an ingenious experiment,⁵ that the final velocity (v) is proportional to the time of falling (t); or

$$v = gt \quad (1)$$

where g is some constant quantity. The space fallen through (s) from rest, Galileo also found by a process⁶ which is preserved in elementary works on mechanics, and which is, in reality, an integration of the above differential equation?

$$\left(v = \frac{ds}{dt} \right), \text{ to be } s = \frac{vt^2}{2} \quad (2)$$

Here the constant g is now called the "acceleration," and we have⁸

$$g = \frac{d^2s}{dt^2}$$

a differential equation which implicitly contains all Galileo's researches on falling motion.

From (1) and (2) now, by eliminating t , we get the relation between s and v :—

$$2 \quad gs = \frac{v^2}{2} \quad (3)$$

The principle of *vis viva*, now, is expressed in (3), which was extended by Huyghens to the case of many connected bodies. Huyghens had not, of course, Newton's conception of "mass,"⁹ but, supposing that we have, (3) can be written

$$mgs = \frac{1}{2} mv^2 \quad (4)$$

We now call the left-hand side the "work" (U), and the right-hand side the "kinetic energy" (T); and (4) is the principle of the conservation of *vis viva* for a single body. For many bodies under any forces (not merely gravitational, but as generalised by Newton) we write (as is evident to a mathematician):

$$\frac{1}{2} \Sigma mv^2 = \Sigma \int F \cdot ds \quad (5)$$

where Σ denotes summation for the many masses (m, m^1, \dots). We write the integral (5) as

$$T - U = \text{constant} \quad (6)$$

As to the limitations of (6), we will state these in the next paper. The extension of (6), brought about as will be shown, is the principle of the conservation of energy.

PHILIP E. B. JOURDAIN.

PHOTOGRAPHERS ALL.—The hunting and shooting season has revealed the fact that amateur photography is now more extensively practised than ever. Almost every man and woman who visits a country house possesses a hand camera, which is sedulously manipulated throughout the day. Mr. B. Alfieri, of the Kodak Company, estimated recently that, although the photographic season proper is ended, hand cameras of all makes are at present being sold at the rate of half a million annually.—"The Echo."

A LARGELY attended meeting of the Isle of Wight Photographic Society was held in the Club Room, at Newport, last week, presided over by the president (Prof. J. Milne, F.R.S., F.G.S.), who commenced the proceedings by presenting the medals won at the recent exhibition, after which Mr. S. G. Kimber, hon. sec. of the Southampton Camera Club, gave a very able and interesting lecture on Winchester Cathedral, illustrated by 100 slides made from his own photographs. The slides were of a very high order, and the sunlight effects in some of them were very pleasing. The first meeting of the Ladies' Branch was held in the club room on Tuesday last, presided over by Mr. Leonard Jordan, T.C. Mrs. Twynham, of Cowes, was elected president, and Miss E. M. P. Bowles, hon. sec.

⁵ An account of which will be found in Mach, *op. cit.*, pp. 130-137.

⁶ Mach, pp. 130-131.

⁷ Cf. Mach, pp. 143-145.

⁸ Cf. Mach, pp. 145-146.

⁹ Cf. Mach, pp. 132, 200, 202-232, 253, 263.

FOREIGN NOTES AND NEWS.

MM. RIVIERE and Bailhache have presented a report to the Academie des Sciences, Paris, in which they state that they have found from 3-5 grammes of hydroquinone in a kilogramme of leaf buds of the pear tree, and that its extraction is easy. Notwithstanding this fact, we imagine that, chemically produced hydroquinone will not suffer a slump in price.

A good non-actinic paper medium can be made, according to Dr. Castellani, by the following method, and the result is a perfectly safe, but brilliant, orange red light, which is far pleasanter than the ordinary dark-room illumination. Paper should be soaked for five minutes in

Alcohol 95 per cent. 1,000 cc.

Auramine O. (Agfa) 5 g.

Alcoholic safranin solution (Merck 0.5 per cent.) 100 cc. and then hung up to dry.

M. Millochan has, according to the "Academie des Sciences," been photographing the spectrum of Jupiter, and has proved that there is an atmosphere which gives five absorption bands. The spectra were taken parallel to the line of the poles, parallel to the equator, and also at an angle of 45 degrees. The results obtained confirm the visual observations and general deductions of astronomers generally. The width of the slit was 0.075 millimetres, and using Lumières panchromatic plates, the exposure was 90 seconds.

In a recent number of "Lechner's Mittheilungen," Dr. Georg Hauberisser details his experiences in taking theatrical scenes during the performance, and recommends a lens of 12 cm. focus, working at about $f/5$, and a plate 9 by 12. The best place is said to be the front row of the balcony stalls, and the fastest ortho plates should be used, or ordinary ones colour sensitised by bathing. For brightly-lit outdoor scenes, three or four seconds is sufficient, whilst for interiors from 6-8 seconds suffices. An edinol developer was used, and the negatives intensified with uranium.

In the "Zeitschrift für Wissenschaftliche Photographie," Herr Braun details his experiments in the direction of finding to what extent oxygen acts in the formation of the latent image and he found that a much stronger latent image was formed in oxygen than in ordinary air. Plates exposed in nitrogen showed much less density on development than those exposed in ordinary air, from which it is argued that the greater the proportion of oxygen the more vigorous the latent image. In all probability the greater activity is due to the ionisation of the oxygen, and it is no proof that there would be no chemical action in an atmosphere entirely free from oxygen.

Drs. Riebensahn and Posseldt, of Berlin, have patented a modification of the carbon process, the essentials of which are as follows:—A gelatine-bromide emulsion is mixed with a pigment and coated on paper, which is then exposed, developed, and fixed, and washed as usual, the result being a silver image embedded in a gelatine film containing a pigment. The print is immersed in solution of potassium bichromate, and where the silver image lies the gelatine is tanned or hardened. The print is then washed and developed with warm water. One may have reasonable doubts as to the validity of this patent, for Howard Farmer, 1894, pointed out the principle of the process and showed before the R.P.S. the catalytic action of finely-divided silver in the presence of gelatine and bichromate. The advantages of the new process of which exact details are not yet forthcoming are that it combines the rapidity of the bromide process, with the ordinary carbon process.

M. Loeb, following on the lines laid down by Valenta, has

been experimenting with very small quantities of alkali added to an ordinary amidol developer, in order to form a monophenolate at the base, and has found that such a developer acts very rapidly and without fog, and is useful in cases of under-exposure. The formula given is:—

Water	1,000 cc.
Sodium sulphite (anhydrous)	3 g.
Amidol	5 g.
Solution of caustic soda, 1 per cent.	30 cc.

We believe that the first suggestion for the use of an alkali with amidol was made about ten years ago by the late A. R. Dresser, and certainly for some years Dr. Stolze has used such developer, the amidol being preserved in solution by a metabisulphite, and the acidity of this being neutralised by an alkali. Our experience is that the quantity of alkali must be very exact, or otherwise fog is invariably produced.

ON MR. STRAUSS'S PHOTOGRAPHIC "OLD MASTERS."

It was not so many years ago that the professional photographic communities of this country were somewhat startled by the daring originality of Mr. J. C. Strauss, of St. Louis, Missouri, in producing his "Lytrite" portraits; if I remember rightly they were first shown here by the Editor of this paper, and caused a great deal of wonder among the more conservative photographers. It will be recollected that they were a clever combination of drawing and photography, the two being most artistically blended so as to produce almost the impression of a wash drawing.

It need hardly be said that they were subjected to a storm of criticism, some of it, indeed, being of an altogether too personal character; and were, moreover, more or less imitated by several prominent workers on this side of the Atlantic. But Mr. Strauss is not a man to rest on his oars; he has recently branched out into quite a new line, and his latest productions, when they are seen over here, will, I imagine, create an upheaval of artistic impressions compared with which his former work was as a mere breath of wind on a cornfield.

In the October number of "The Photo Era" there are some striking examples of his latest departure, and Mr. Thomas Harrison Cummings contributes an eloquent defence of his unconventionality under the title, "New Photography after the Old Masters." I cannot do better than quote Mr. Cummings in his description of these new methods:—"His latest work in photography is the making of photographic portraits of living men and women after the old masters. These pictures resemble photographs of famous paintings, with the exception that the face is a perfect likeness of the sitter for the portrait. Taking only the best portrait painters for his guides and models of composition, he makes his sitter look in the finished picture like a Rembrandt, a Sir Joshua Reynolds, a Holbein, or a Dürer painting. It is the application of the inductive process to photography, the using particular facts to reach a general result. Given a good likeness of the subject as the first requisite he then constructs his portrait and secures his pictorial effects by copying accurately the composition and arrangements of accessories, the beauty of outline, division of space, contrast of light and shade, harmony of tone and colour from some painting of recognised worth by an old master."

Such, then, is Mr. Strauss's new style. One of the illustrations to the article is a portrait of Mr. Strauss himself after the well-known painting by Albrecht Dürer in the Prado Museum at Madrid.

Here we see a wonderfully exact copy of this celebrated picture; the coat is the same, so are the vest, collar, hat, and hair. Every detail of the painting is accurately reproduced in the photograph, only instead of the face being that of some unknown person, we have presented to us the familiar features of

the great photographer himself! The transformation is remarkable; it is quite one of the most interesting examples of quick change work I have ever seen; we no longer see Mr. Strauss as a mere modern American, but as an individual arrayed in the garb of four centuries ago, and possessing all the mannerisms of the period.

There are even more striking pictures reproduced in the same number of "The Photo Era," though, perhaps, the one of Mr. Henry Pierce, of Newport, who is depicted as a seventeenth century cavalier, after the picture by Franz Hals in the Vienna Gallery, will probably attract the most attention, as it is the most elaborate one; the method adopted, though, is the same in each case, and an exact reproduction of the selected painting is produced, with the exception that the face is that of the sitter to the photographer and not the one depicted by the artist. At first sight I must confess to a bewilderment of opinion as to the qualities of these productions; a variety of thoughts chased through my mind. At one moment I admired them, but at the next a revolt sprang up at what seemed to be a desecration of the world's accepted art masterpieces. We have, indeed, come to regard the pictures which have been collected together in the numerous galleries at home and abroad with a feeling akin to reverence; and the more we get to know them, the more we study them, the more we analyse their technical and æsthetic qualities, so must we, unconsciously, if we may, place them in the position of objects of veneration in the shrine of our hearts.

It seems to me not to be possible, if we desire to act fairly, to take a one-sided view of Mr. Strauss's latest productions. As soon as we criticise them from a mere party standpoint, it is only with the greatest difficulty that we can prevent a spirit of bitterness entering into our judgment; we might persuade ourselves that such work was a gross act of vandalism, and thereby be doing a great injustice to Mr. Strauss. On the other hand by a solid defence of them we are liable to take them too seriously and to give them more credit than they are really entitled to. It is, admittedly, an original idea to block out the faces of old-time portraits and in their place to insert those of modern men and women, and it is capable of being judged as an act of homage to those past masters of the painter's art, as a slur upon present-day methods, or as evidence of the gratification of the vanity of modern individuals.

Perhaps the latter point of view is the safest to take, although on the other hand it is the most dangerous, as the ideas now started may be so extended that no picture will be safe from the hand of the photographic copyist, and ridicule will be reflected by the uncultured on the honoured treasures of different nations.

I do not think, though, that we should take Mr. Strauss too seriously; in fact, by regarding them in the light of theatrical productions we at once disarm ourselves of all weapons of hostility, and can quietly sit down to enjoy them as we would a fine setting of one of Shakespeare's dramas at His Majesty's Theatre.

The idea is one which would not unnaturally occur to an American, but it is hardly one which will find favour in the eyes of our more insular conservatism. America is a land where nearly everything is done on an ultra up-to-date scale, and where the time-honoured traditions of the past are not so capable of exerting their influence on the everyday life of cultured society as they are over here. It is not to be wondered at that Mr. Strauss, on a first intimate acquaintanceship with the old masters should have found himself transported into a heaven of delight at their artistic greatness; nor, indeed, that, in the excess of his enthusiasm, he should have instinctively drawn a comparison between modern photographic portraiture and that practised by those great men of the past.

But there, I think, Mr. Strauss should have stopped, for, in copying them to such an extent as he has done, I cannot help

feeling that he has laid himself open to be seriously misunderstood.

There is another side of the question which has, perhaps, not suggested itself to Mr. Strauss's mind; I refer to the more personal one of the sitter's individuality and status in life. In America, I believe, every man is, socially, the equal of his brother, but this is not, fortunately, the accepted doctrine in the British Isles; in fact, we regard the privacy of the individual as a matter permitting of no public intrusion. As long as Mr. Strauss chooses for his copies portraits whose sitters were unidentified, as he has done in his own case, there seems to be no grounds for objection on this score; but once let this rule be broken and unintended insults to possibly still surviving families seems to follow as a matter of course. Somehow or other the portraits of the old masters must always be associated in the mind of a cultured person with the personality of the sitter, and not merely as a surpassingly beautiful work of art, and therefore any outrage on these works is not only committed against the artist, but also against the individual represented in the picture.

In this connection I cannot help feeling that it would be evidence of very bad taste to take, for example, the son of some candy store proprietor, dress him up and make a photographic copy of the painting of Philip, fourth Baron Wharton, by Sir Anthony Van Dyck, now in the Hermitage Gallery, St. Petersburg; or some woman of ordinary bloodstock to impersonate Mrs. Hart, after the painting by Sir Henry Raeburn in Major Northcote's collection; it is carrying the thing too far. Why! we might perhaps be inflicted with a picture of the daughter of a pork millionaire with her offspring, posing as the Duchess of Devonshire and her baby after the celebrated picture by Sir Joshua Reynolds in the noble Duke's collection!

A. V. KENAH.

SOME NOTES ON ACETYLENE.

The first introduction of acetylene was welcomed by photographers generally, and particularly by amateurs, because it was thought that here was the ideal illuminant for lantern work, enlarging and reducing, and photomicrographic work, but somehow it does not seem to have quite fulfilled expectations. Why, one is not able to say offhand. My personal experience with it has been most happy, but then I have only used it for lighting two rooms in my house, that is miles away from any gas report.

A few facts, however, as to acetylene generally may not be out of place. In the first place everyone knows, I suppose, that it is produced by the action of water on calcium carbide according to the equation:



Some trouble has been caused by possibilities of explosion, from mixtures of acetylene and air, but, speaking after two seasons' trial of it, I may say that although a great smoker, and a constant smoker, I have never yet been unable to detect the presence of free acetylene in a room—its stink is characteristic; and then, again, there is a lot of misconception on this point. If there is one volume of acetylene to five parts of air, the explosion is most violent; above and below this proportion the danger of explosion diminishes, but any one who cannot detect even one in forty by his nose must be at least wanting in one sense.

If any one is wanting not in the sense of smell but in commonsense, and goes to seek for the leak with a light, as some people do even in the case of ordinary gas, then of course there is likely to be trouble, but this is not the fault of the acetylene. Explosions when filling or emptying a generator are generally caused by carelessness in doing this at night by a naked

light. I have been told that there is likely to be trouble if the light is applied to the burner before the whole of the air is driven out of the generator. I have lit my burner many a time when there certainly has not been pure acetylene issuing, but only now and then do I get a pop, and the tap can be instantly turned off and the light put out and more gas allowed to run through.

I had some little trouble at first with the sludge left in the generator, some would stick and stink, and it was a nuisance, but since I adopted the system—whose idea it was I do not know—of putting a fair amount of common brown sugar in the water I have had less sludge and a more even generation of acetylene. The action of the sugar is to form saccharate of lime, a soluble salt, and I have found this liquid, when diluted, a capital manure for my garden. The more even evolution of acetylene is of course due to the sugar forming what one might call a physical restrainer to the action of the water on the carbide.

Some scare was raised a little time back that acetylene was more poisonous than ordinary gas, but that, from experiments on animals, other than man, has been proved to be wrong. Anyway, a cat can stand a mixture of air with 9 per cent. of acetylene when an equivalent mixture of coal gas promptly poisoned the poor brute. Acetylene, too, gives just about half the amount of carbonic acid in burning that coal gas does, and there is practically no formation of the deadly carbon monoxide as is always the case with coal gas.

I do not know who the authority is, but someone has proved that acetylene is 47 per cent. cheaper than the electric light and 34 per cent. cheaper than the best paraffin, and about 40 per cent. dearer than the incandescent gas light. Anyway, my experience is that the room is cleaner and cooler with acetylene, and that one can see colours much better, and it is exceptionally useful for contact printing on bromide or gaslight papers, on account of its richness in blue and violet light.

F. BRETT.

SOME AMERICAN PICTORIALISTS AND THEIR WORK.

In the face of the somewhat conflicting statements as to the proposed exhibition of the Salon Club and the Annual American Salon, which is to be held next month in New York, the following article from the pen of Sadikichi Hartmann (which appears in the current issue of the "Journal of the Photo Society of India"), the art critic of New York, will be read with interest:—

In studying pictorial photography, it becomes evident that the most individual work has been more often than not the outcome of a well defined movement. Sometimes a single worker instructed the whole school, at others a few working in familiar intercourse acted and re-acted on each other, so that at last a distinct character was imparted to their work.

New York at present shelters the headquarters of two such groups, the Photo-Secession, under the directorship of Alfred Stieglitz, who has long held the premier position among American pictorial workers, and the Salon Club, organised by Carl Rau and Louis Fleckenstein, an association made up largely of energetic workers of the younger generation.

Although separated from each other and outside workers by the boundaries of their cliques, the aim of both societies is very much the same. The Photo-Secessionists endeavour to compel the recognition of pictorial photography "not as a handmaiden of art but as a distinctive medium of individual expression"; while the object of the Salon Club workers is to encourage "photography that gives distinct evidence of artistic feeling in subject and execution."

But the way and manner in which the two groups carry out their plans is totally dissimilar. The Photo-Secession, in whose ranks we find such well-known workers as Gertrude Kasebier, Frank Eugene, C. H. White, of Newark, Ohio, Alvin Langdon Coburn, W. F. James, of Chicago, etc., is a very exclusive organisation. Although limited to a certain style of work, their artistic standard is a very high one. They are all tonalists who favour the mysterious and bizarre. They like to suppress all outlines and details and lose them in delicate

shadows, so that the meaning and intention of their prints becomes hard to discover. They not only make use of every appliance and process known to the photographer's art, but without the slightest hesitation overstep all legitimate boundaries, and deliberately mix up photography with the technical devices of printing and the graphic arts.

The members of the Photo-Secession only exhibit lean collections and only accept such imitations as leave them a free hand in the selection of their exhibits; they insist moreover that these collections be hung together as an entirety. This sounds rather dictatorial in a democratic country like ours, but their scheme has nevertheless met with considerable success. They have held exhibitions in camera clubs and art institutes throughout the United States, and at this very moment are represented in five European exhibitions at Paris, Vienna, Dresden, Bradford (England), Haarlem (Holland).

The Salon Club works on a far more liberal basis. True to its motto: "Many Schools in Art and All Good," it tries to give everybody a chance. Their first exhibition, the Annual American Salon, will be held in December at the Clausen Art Gallery, New York. The co-operation of all artistic photographers in America and throughout the world is insisted, and it is hoped that also some of the foremost camera workers of India will respond to their cordial invitation. An exhibition of the highest order is expected, as it is the first exhibition of national scope under the control of a committee from all sections of the United States.

In the prospectus we are furthermore informed that "there will be no favours to any and no discrimination against any. All work, whether from the famous or the comparatively unknown artist, will be exhibited equally, and the jury will not know the names of contributors until after the selection has been made. No one 'school' or 'fad' will command precedence. The standard of judging will be the artistic quality of each print submitted. The jury is composed wholly of artists by profession—those who give their time and effort entirely to matters of art, and all of whom are experienced members of the jury at one or another of the American Academies."

(Copies of the announcement can be obtained by writing to the chairman of the Salon Committee, Mr. Curtis Bell, care of Lotos Club, New York City.)

The Salon Club consists at present of twenty-one active members, residing throughout the country east of the Mississippi River. The peculiarity of this club is that each member is a serious worker who has taken up photography not merely as a pastime but as a strenuous life study, and that each is so far technically and artistically advanced as to represent a distinct individuality. There are no lay members as in the Photo-Secession, with its membership list of over sixty names, of which less than one half, however, are actually engaged in pictorialism.

To get an idea of the importance of the Salon Club movement, it is necessary to mention at least the names of some of its most suitable workers. New York is represented by Zaida Ben Yusuf, the portraitist; Rudolf Eickemeyer, the most popular pictorialist in America; and Curtis Bell, the hardest worker of the Salon Club and the organiser of the exhibition; Philadelphia by Walter Zimmerman and Adolphe Petzold, an accomplished gum worker; Baltimore by Mrs. Jeanne E. Bennett, known by her depictions of the women and children of Holland and Brittany. Then there are W. G. Gosthell, of Walleston Hall; Louis Fleckenstein, of Fasibault, Minnesota, a very eccentric and promising talent; Henry Hall, a depicter of children *par excellence*; Carl Rau, of La Crosse, Wisconsin, who tries himself in symbolic genre; J. H. Field, of Berlin, Wis., one of our ablest landscape photographers, and the Parish Sisters of St. Louis, who despite their youth have already performed some excellent work.

The tendency of the Salon Club Workers is on the whole more and more normal than that of the Photo-Secessionists. They excel in landscape, popular genre and the depiction of child life, subjects which are rather tabooed by their elder colleagues. Their practice of technical devices is, however, equally open to criticism.

There is hardly a pictorialist nowadays who does not practise the trickeries of elimination, generalisation, accentuation or augmentation. They all wish their prints to look like etchings, monochromes, wash-drawings or the reproductions of paintings.

It may be interesting to investigate how this change in our photographic taste evolved. At the start it was merely the outcome of a

revolt from the conventional photographic rendering of sharp details and harsh contrasts.

This was refreshing, as the old-fashioned work had but little claim to beauty. Steiglitz, Eickemeyer, Dumont at that time, in the early nineties, did some remarkable work. Then some new technical methods were introduced which completely revolutionised photographic work. The first was the gum process introduced by Robert Demachy and carried to its utmost possible limit by several American workers; the second was the glycerine process as practised by J. T. Keiley, and the third the manipulation of the plate, the so-called process of photo-etching introduced by Frank Eugene. It is difficult to state which of the three processes has done the most mischief. In the meanwhile Alfred Steiglitz, who has become the champion of artistic photography in America, continually clamoured for more "individual expression." And, as individual expression in straight photography is extremely difficult to attain, the pictorial photographers begin to imitate the artist. Individual opinion became synonymous with "painter-like expression," and as the three processes mentioned facilitated their efforts in that direction, they were adopted by all the camera workers of the new movement. And in the highest aim of artistic photography really consists of successfully imitating the pictorial qualities of other arts, they can claim to have reached perfection.

But nearly all critics agree that the ideal of photography lies in an entirely different direction. Photography should be the record of our life and time. And if the pictorialists fall short in that, they merely show that their art is still in an embryonic state. Imitation is nothing but a step towards art, and the present accomplishment of an American pictorialist therefore merely furnish the proof that the technique of the photographer is pliable enough to produce something at once novel and, in its own way, beautiful.

"WHAT IS ART?"

On this subject Mr. R. Catterson Smith, Head Master of the Birmingham School of Art, recently gave a lecture to the members of the Birmingham Photographic Society. The lecture was based on Leo Tolstoy's recent book with the same title, and was an exposition of some of the writer's definitions of art and of the ideals it should keep in view. The question, the lecturer remarked, was no new one, yet it seemed strange that after all that had been said and written on the subject, after the life work of great teachers like Ruskin and Morris we should still be calling out, "What is art?" The fact is that art is so much a matter of personal feeling that it is extremely hard to give a definition which will suit us all and at all times. What satisfies to-day we cast away to-morrow. That this should be so shows how little grasp the majority have of the subject. It was Morris who said that we talk about art because we do not know anything of it. If we "felt" it as an inspiration, made it an act of worship, so to speak, we should know by instinct what was art. This was the spirit of the Middle Ages—before the revival of learning—that time when those glorious tributes to the spirit of religion—the cathedrals were being built, and the art galleries of the world being enriched by some of their choicest treasures. Then art was a serious business, it was a reality, bound up with the daily worship of God. These old painters and sculptors put their whole soul into the visions which they tried to work out on canvas or stone; they were as real as a dream often is to us. But in time, with the greater spread of learning, there came an increase of ease and of luxury, with increased wealth, and this brought a serious degradation in the ideals of art, which has gone on through the centuries, the bad oftentimes almost choking the channels through which good art was trying to spread its quickening impulse. And so to-day we have an art in which the lower influences seem to be uppermost. Art has lost its seriousness and become an affair of pleasure and amusement, of the drawing-room rather than of the sanctuary. It is well, therefore that some prophet should now and then point the way to better things. Such a prophet is Tolstoy; strenuous in all he undertakes, he is not the least so in his championship of a noble ideal in art. He draws a distinction between two classes of pictures, those painted solely with an idea of pleasure of beauty, and those which bore a definite message, which had in them lessons drawn from the heart of the painter. The lecturer gave illustrations from modern paintings, and placed in forcible contrast

"The Emigrants," by Madox Brown, and "The Dreamers," by Albert Moore; the former charged with grim reality in every line, the latter reveling in pure luxuriousness and pleasure. The contention of Tolstoy is that those pictures which are painted solely to give pleasure are bad; the aim of the artist should be to give some expression of his individuality, some fragment of his experience for a lesson to others. Let us get back to the ideals of the old-time painters, and let us have a vision and seek to express it the best we can. In a word, it is not colours only we must put on the canvas but a little bit of ourselves, and if we can do this there is no need to trouble about perfection in workmanship, for we have achieved something far greater than this can ever be. All this is not meant to imply that an artist may not have pleasure in his work. Tolstoy himself would say that the more the artist gave expression to his feeling the more pleasure he would have in his work. This then is his first ideal of art—seriousness. Closely connected is truthfulness. All art is in need of this virtue, both in conception and execution. To each subject there must be its proper treatment, or a jarring discord is produced, where harmony was intended. To tell a lie on canvas is as bad as to utter it with the lips. First, we must have convictions and then be true to them. Third, art should have simplicity. There seems in many quarters an idea that only great themes should be attempted, if one wishes to achieve anything in the world of art. No greater mistake could be made, for it will always be found that the simpler the subject the wider is its application. The most universal subjects are those which by their simplicity can reach the greatest number, the heroic finds a much more limited auditory. Again, we must not be imitators or copyists of another's work; too much of present day art is borrowed, sometimes whole themes being thus pilfered and dressed up to appear as new. True art has to pass the test of originality. Perhaps greater than all it must be closely bound-up with morals. There is no divorce between art and morals, as those seem to believe who talk of art for art's sake. There is a saying of Goethe's that he who would paint for princes must live like a prince. Now, as princes have not always been remarkable for the virtue of their lives, this is equal to saying that in art morals do not count, a suggestion which Tolstoy repudiates. All that has been said applies, of course, to any expression of feeling, of which photography is but one mode. Surely here also we can apply Tolstoy's rules. We can seek to be serious, to work with a higher aim than merely pleasure. We can try to be something better than mere "recorders." We can be simple, not striving beyond the obvious limitation of our craft. We can be universal, owning no school or cult as our master, seeing that all methods are but differing means to the same end.

THE FUN OF VELOX PRINTING.

(From the "Velox Manual.")

The fun was not on my side. Oh, dear, no; it was the other way about. I got laughed at, but I am not the first parent whose children have made him feel small. It happened in this way. A sample Velox Printing Outfit came one day from Messrs. J. J. Griffin and Sons with a polite request that I should try it and report. This outfit lay on my table a long time—over a year, to be precise—and might have been there yet if one of my children had not come into the studio one day when sitters were scarce. "What," she exclaimed, "have you begun to use Velox?" I thought you only did your printing in carbon and platinum." I explained that this was only a sample, but that I would show her how it was worked if she liked to stay.

We took the box into the room where the frames are filled, pulled down the yellow blind, and lit the gas. While opening the box and mixing the developer I said to my little girl that most of these new-fangled printing papers professed to save a great deal of time, but that really they did nothing of the kind, and that the prints they gave were not worth looking at. Then I picked out a good strong negative and opened the packet of paper, which was marked "carbon." Keeping away from the gas, I "filled in" the frame, and exposed the paper and negative to the flame at a distance of five inches for sixty seconds, and, returning into the corner of the room again, I began to develop; at least, I mopped some developer over the paper with cotton wool for a minute or two, but no sign of any

image appeared. Eventually a ghost-like picture did come. "This paper is evidently very much slower than they make it out to be," I said. "Or maybe you were in too big a hurry, you dear old fidget," was the reply. Then I pointed to the instructions, where it said the image would appear suddenly, and asked her if she called five minutes sudden. A second exposure of two minutes brought up the image quicker, but one so black and so white that it was thrown into the waste-paper basket after its first brother. Four more attempts were all equally bad, for after the second I had mixed a developer which I thought would give softer images and more half-tone, but which only fogged the image entirely. "Come and have some tea now; if you have twopence I will go buy buns," said my little girl. Then she added, "After tea I will show you how to use this paper." I smiled an incredulous smile, for I knew she had never made a print of any kind, not even a silver print. The tea was an unusually quiet one, for the little girl devoured the Velox instructions as she ate her buns and drank her tea.

"When you are quite ready we will go and make some beautiful Velox prints," woke me from my reverie.

"We will not try to make any more from that negative," said my little girl; "it is too hard and much too yellow. We will try tins one of the ducks."

"That!" I exclaimed. "That won't print; it is much too thin."

"Hush. Seventeen, eighteen, nineteen, twenty. Done. Now come and watch me develop it. Is this the developer that came with the paper which you mixed first?"

"Yes."

"You are quite sure you threw that last lot you made out of your own head away?"

"Yes."

"Then look here."

Deftly slipping the print into a dish of water for ten seconds, she then emptied the water out and poured on an ounce of developer; at once the image appeared. And in a few seconds she poured the developer off and rinsed the print with water, and put it to fix. Seven other negatives did she pick out, all of which I had put on a shelf to be intensified and made fit for printing some day. From each of these came a print, strong in the dark parts, pure in the high-lights, with abundant half-tone.

"There, you dear old fossil, what do you say to these? Are they worth a penny each?" So I had to give her eightpence. "You stay here, I'll be back in a minute." In a few minutes she came running upstairs with another packet of Velox in her hand. "Where is that dense yellow negative you tried at first?" she asked.

I pointed to it.

"How long did you give that first print which was so pale?" she inquired.

"Sixty seconds," I answered.

Then, putting a new piece of paper in the frame beside the yellow negative, she exposed it for the same time.

"Come along and see some more magic." I went and saw, I am ashamed to confess it, a fine, soft print develop up quickly, suddenly I should say, in my child's hands. Reader, if you have never felt small you belong to that class I have no wish to talk to. If you have, you will sympathise with me. Did not I get laughed at?

"Now, you dear old dad, when your printers go on strike whistle for me, and I will do your prints all on Velox in less than a quarter of the time they do them in, and as for wages, let me see, I'll come for sixpence a day; and I want a new hat, and I should like a blouse, too. I am quite old enough to wear one, don't you think so?"

FRANK M. SUTCLIFFE.

P.S.—I learnt afterwards that the second packet of Velox was of a different make from the first. It was labelled "Portrait." The baby had bought it with the eightpence at the chemist's opposite.

THE Grand Prix at the St. Louis International Exhibition has been awarded to the well-known photographic optician, Mr. C. P. Goerz, of London, Berlin, Paris, and New York, for excellence of manufacture. The exhibit of the firm comprised their photographic lenses, cameras, and the Trieder Binoculars; and they also constructed the apparatus used for the projection of Dr. Miethe's three-colour photographs.

ON PICTORIAL PROTECTIONISM.

ONCE exclusiveness gets a hold in a society or association, it seems to flourish upon itself until a time arrives when the exclusive dwindle down to one individual, who, unwilling to exclude himself, suffers his own presence. Have we not the classic instance of the Scotch minister who doubted the saving grace of all his flock excepting one, and even of him he had his doubt?

These reflections arise out of the Photographic Salon; one exhibition controlled by a brotherhood which, originally founded to merely exclude the show-case and its smooth-faced abominations, has since been steadily squeezing out all whose photography is too light, or too sharp, or too "literal" to please the standard of the Linked Ring. Names might easily be mentioned, but had better not.

At the moment of writing some of the outcasts are roaring and ranting at a fine rate, and amongst them are men whose reputations stand very high in general esteem. This, however, is no recommendation to the inner ring, for anything which is popular is, *per se*, cheap; only that which is beyond the comprehension of the multitude is profoundly clever pictorialism. Thus it is that all England cannot supply the Salon with more than about 100 prints, which will pass muster. Even so, it is an open secret that some of the "uncogude" would, if they could, have excluded many of those which have found a place on the walls.

If the rumours I hear are true, a time is at hand when the exhibition will be run by something in the nature of a council of three, which, I suppose, will ultimately come to a dictator and two secretaries. Should he chance to be, say, a platinotypist, woebefitting any hapless gumists who should send travesties of photography or any "artists in boiled bromide" who should dare to offer their prints for hanging alongside of Mr. Steichen's dainty deeds of darkness. Of course, societies devoted to the encouragement of art cannot in the abstract have too high an ideal, but in practice it often means a gradual narrowing, not broadening, of aims; as the Royal Academy found by its virtual exclusion of Burne-Jones, Albert Moore, Whistler, and the rest. Young artists—or let us say pictorialists—are many of them exceedingly nervous and diffident. They shrink from a rude rebuff, which they not unreasonably might consider the rejection of all their prints to be. Those who have been through the mill take their exclusion less tragically. A talented man not long since tried his fortune at a certain exhibition with a score of his best works, every one of which "came back." Did he grieve? Not much. Perhaps he put it down to a personal objection the society had to him. Maybe he deplored that they should be so crassly ignorant as to be blind to his examples of the coming pictorialism. Who knows? Anyhow, he smiles. But the pale, young enthusiast, terribly earnest neophyte, who cannot sleep o' nights for wondering how his prints will look, and what the people will say when his pictures hang at the Salon, is completely knocked out of time when the ruthlessly exclusives give his gems "the chuck."

Some of this species never get over it; others boycott the Salon for eternity. A clever young man who was too impressionable, to whom befell the unpleasantness of getting back five important, or at least he considered them so, "nocturnes" and "symphonies" was only saved from throwing up the sponge by a broker. His frame bill came to over £2, what his prints cost it is impossible to compute; anyhow, determined to make an immediate end of his photography and shut it out of his memory, he called in a dealer in second-hand goods. On looking them over, the man considered that his prints were absolutely valueless, he however offered 3s. for the frames and glass! The shock steadied the neophyte; he dismissed the art-less dealer, and kept his photographs by him to be used as occasion arose for birthday presents. Not long after a painter of considerable ability, chancing to see them, fell into ecstasies with one, which was, however, the worst of the five; moreover, a knowing friend pointed out that if the broker and the hanging committee were of one mind the latter must have been a very poor lot. And so the young man took fresh heart, tried his fortune with the five at an important provincial exhibition; got a second-class medal, and so started on a moderately successful career, which was almost nipped in the bud by photographic protectionism.

It is true that to this day I myself do not think much of his form, and so he would have been no great loss, but I think just as little of not a few of those who are regularly hung on the line at the big exhibitions. I daresay my opinion is not unshared by others, but it would be hardly polite to give such thoughts words when, at the

very least, an expression of praise couched in non-committal platitude is expected by all concerned.

Not long since, being with some photographic critics at an exhibition, three of us came to a picture which was a regular "eye opener."

"Who is it by?" asked one of them.

"By the late Park-Blank," said I, reading from the catalogue.

"Then, thank goodness, I am not obliged to notice it."

This fancied obligation to notice everyone's works is carried out to the extreme by some of the photographic journals, which in the case of the "Salon," undertakes to butter or slate everything on the walls. The main effect of which is to feed the vanity of the weaker vessels, who are encouraged to go on perpetrating prints which are possibly hung on sufferance, or as foils to other photographs. The encouragement of the incapable is one of the serious troubles which stands in the path of pictorial progress. Men of small parts, but of huge patience and determination, peg away at picture-making and grope for masterpieces. A certain kind of photography notably a lottery, tempered by selection of subject, trimming print, and diligence in technical practice. The Homunculus habitually pecksniffing subjects and their treatment; constantly taking "counsel's opinion" upon his prints; continually waiting to "assess" late someone's "happy thoughts." And so, some day, having been medalled at the "Royal" and discovered by the technicals, "arrives." From which time forth he becomes an insufferable nuisance; a man who can brook not one word of truth; who finds even honied praise insufficient, nothing less sweetly intoxicating will serve than a long adulatory drink of chartreuse.

None the less we put up with him; that is to say, so long as he is moderate in his abilities. So long as he makes no overdraft on our intelligence we are content to humour Mr. Small Part. He is, to speak, one of us; a lucky dog who, after all, has only done what we ourselves are capable of rivaling, if not excelling. But once Mr. Small Part belie his name; once let him try and humbug with his newfangled and obscure experiments, then with one voice we denounce him as ignorant or a charlatan. Whatever we do not know or cannot see or do not enjoy, is wrong, base, and must be stamped out. Those who hold such opinions may be numbered by the hundred. They flourish on their lack of knowledge, of sympathy and of innate capacity. Show them pictorial something to which they are unaccustomed and they will not be able to tell you whether they are pictorial sublimities or artistic jokes.

There are, of course, some few people who really are judges, people who will freely give an opinion and a reason for it without waiting to hear the opinion of the crowd, or fearing to express unambiguous terms what they actually think. These are the people who ought to write critiques, but who, as a rule, do not do so. Perhaps they would damage the circulation of the average publication or create a little shindy amongst the societies. Of such was amateur who, a few days ago, exclaimed in a fury of indignation at certain prints which had found a place at the "Photographic Salon"—"Had I known these would have passed the hanging committee, I would have travelled a thousand miles to prevent such a degradation of the display."

This is the kind of whole-hearted, hard-headed, outspoken, "know what I am talking about" kind of person whose influence is to be kept out pictorial imposters, and let in those who dare to affront the mediocrities with innovations and refinements which are, sometimes, as caviare to the multitude.

Let me not be misunderstood, not everything that is good is appreciated or jeered at. Some things which reach the heights of pictorial empyrean are acclaimed by the multitude. This is, however, generally an accident. The photograph is not admired for its artistic superabundance, but for some secondary feature which it happens to possess, and which the ordinary crowd is captivated by. Take the Salon, for instance, what there is in it that is strenuous and lofty conception, the pictures which have, by dint of huge efforts, pushed on the course of photography in the direction of its recognition, a branch of pictorial expression worthy to be placed in the company of mezzo-tint or etching, have been but coldly received. The people have been told that they are phenomenal, and have, with due obedience, mildly admired them, much as the gallery boys of the Galerie might listen to the "Dream of Gerontius." But the real sympathy and appreciation of the visitors who have thronged the Salon are bestowed on "Currants" and "Cats"! The former is a splendid

example of the F64 photograph, such as may be met with in florists' catalogues, and is twice as natural as nature. The second, well, it is an excellent photographic photograph of two kittens. Both these exhibits have their frames studded with red wafers, signifying that copies have been ordered. Let there be no mistake, other prints, some of which deserve every distinction they are likely to receive, have found buyers; but that there should be such a rush upon cats and currants, and similar productions, and that, moreover, the elect of the select should have hung this type of photograph in a collection purposely designed to show that Art can glorify Photography, baffles the mind."

If in the beginning of these rapidly-penned reflections I seem to object to exclusiveness, it was not the exclusiveness which is born of narrow views or jealous dispositions, but the exclusiveness which would keep out anything banal, trite, poor, or puny; which would, without fear or favour, turn every single print which did not bear on its face a signification that its claim to enter was that it was a child of Art, is to be hoped for, if not expected. Having written so much, let me add that I do not consider all exhibitions should be run on such a line. There are minor poets who sing very sweetly, and there are also minor photographic artists who turn out splendid "dying swans," sweet "kissy-mummy" children, accurate copies of picturesque buildings, and so forth. These productions give the greatest delight to thousands of people, and exercise a most elevating influence upon the amateurs who produce them; indeed, in some cases, they may be considered "stepping-stones to higher things."

Besides which, photographic technique is a thing which requires looking after; for what the technician or craftsman finds out to-day to-morrow in the hands of an artist produce a graphic miracle. For which, and a good many other reasons, let us have not only "secessional," but also plenty of ordinary exhibitions where we may all learn to walk before we attempt to run.—"Journal Phot. India."

HECTOR MACLEAN, F.R.P.S.

Exhibitions.

SHEFFIELD AND HALLAMSHIRE SOCIETY'S EXHIBITION.

Last week the third annual exhibition was opened, in the Lecture Hall, Cemetery Road Baptist Chapel. The exhibits of work done by the members numbered about 250, a decrease as compared with last year's show, but this was compensated for by the superior quality. The members are aiming at effect, and the result is that some artistic photographs, worthy of professional skill, are on view. Discarding the old-fashioned silver and P.O.P. prints, the ambitious amateurs are resorting to matt-surface and carbon. Mr. C. D. Rose has obtained the society's bronze medal offered for the best print taken on the Saturday afternoon excursions. It is a very pretty landscape, artistically composed. The bronze medal offered by Mr. G. H. Bagshaw, for the best set of three prints taken on the annual excursion, which this year was to Worksop, has been awarded to Mr. C. H. Tomlinson, for two views of Worksop Priory Church and one of the ruins of the Priory Chapel. They are very creditable works. A prize is also given to the member who wins the most certificates in the monthly progressive competitions. The subjects during the session have been:—a study of a portrait, pictorial postcards, mounted print, cloud studies, landscape, woodland scenery, architecture (interior), general study, portrait by flashlight. In these subjects the members have distinguished themselves, and the prize for the possessor of the most certificates has also gone to Mr. C. H. Tomlinson. His cloud study is particularly creditable production. A silver medal is given by the president for the best print in the exhibition, but the award has not yet been made. Mr. S. Taylor has some beautiful photographs of the interior of Ely Cathedral. An interesting series of photographs taken by the president (Mr. F. Mottershaw), showing the daily work of the Sheffield Fire Brigade, is on view. The pictures are wonderfully clear, and are in every way excellent.

HUNTINGDON AND DISTRICT AMATEUR PHOTOGRAPHIC SOCIETY.

The second annual exhibition in connection with the Huntingdon and District Amateur Photographic Society, which was formed in 1902 with the object of encouraging the art of photography among its

members, was held on Wednesday last week at the Volunteer Headquarters, Huntingdon, by kind permission of Colonel Linton. In point of size the exhibition was about the same as that of last year, but the amateur work sent in for competition showed considerable improvement, all classes being remarkably good. There was also a fine collection of photographs and other pictures not for competition, lent by members and friends of the society, and the work of the members done for the monthly "portfolio" also created a good deal of interest. There was a large attendance of visitors during the afternoon and evening. We append the prize list:—

Class 1.—Architectural Subjects: 1, Mr. E. Trench Smith; 2, Mr. H. Goggs; c., Mr. H. Dawson.

Class 2.—Landscape or Seascape: 1, Mr. H. Goggs; 2, Mr. E. Trench Smith; h.c., Rev. G. R. Holt Shafto.

Class 3.—Instantaneous Photos: 1, Mr. E. Trench Smith; 2, Rev. G. R. Holt Shafto; v.h.c., Mr. Dalgleish; c. Mr. H. Goggs.

Class 4.—Portraiture or Figure Study: 1, Rev. G. R. Holt Shafto; 2, Mr. E. Trench Smith.

Class 5.—Lantern Slides: 1, Mr. H. Goggs; 2, Mr. H. Dawson; h.c., Mr. J. W. Tysoe.

Mr. W. C. Bernard offered as a prize a "Gilvus" and "Absolutus" Light Filter for the best photograph of a "Sky and Water," and the Rev. G. R. Holt Shafto was adjudged the winner.

SUNDERLAND CAMERA CLUB.

The following were the awards of the judges, the Rev. F. C. Lambert and F. M. Sutcliffe, at this exhibition held last week:—

Class I.—Landscape or Seascape: Silver plaque, "Borderland," Arthur Payne, Gateshead; bronze plaque, "A Misty Morn," W. Clayden, Plymouth.

Class II.—Portraiture and Figure Study: Silver plaque, "As He Sowed," E. T. Robson, West Cramlington; bronze plaque, "The Gum Splodger," Miss A. B. Warburg, London.

Class III.—Members: Silver plaque, "A Manx Glen," R. Chalmers, Sunderland; bronze plaque, "Study in Pose," B. Jackson, Sunderland.

Class IV.—Societies in Northumberland and Durham: Silver plaque, "Durham," F. Harrison, Fulwell; bronze plaque, "Evening in the Woods," N. Bradwell, Sunderland.

Class V.—Lantern Slides: Silver plaque, "An October Morning," W. A. Clark, Birmingham; bronze plaque, "In the North Choir Aisle, Ely," H. Wormleighton, Leicester.

Class VI.—Architecture, etc.: Silver plaque, "Chillion! Thy prison is a holy place, And thy sad floor an altar," P. W. Crane, Heanor; bronze plaque, "Notre Dame," Caudebec, W. S. Corder, North Shields.

FORTHCOMING EXHIBITIONS.

November 21-26.—Sheffield Photographic Society. Joint Secretaries, J. W. Charlesworth, J. W. Wright, 62, Vale Road, Sheffield.

November 23-26.—Hove Camera Club. Hon. Secretary, A. R. Sargeant, 55, The Drive, Hove.

November 24-25.—Isle of Thanet Photographic Society. Hon. Sec., G. W. Simmers, Aberdeen House, Ramsgate.

November 25-26.—Ilford and District Photographic Society. Hon. Sec., W. N. Beal, 155, Thorold Road, Ilford.

November 26-December 3.—Glasgow Eastern Amateur Photographic Association. Secretaries, John Brough, 68, Dalmarnock Street, Park Head, Glasgow; and Geo. R. Johnstone, 591, Alexandra Parade, Dennistoun, Glasgow.

December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.

December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104, West 101st Street, New York.

December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.

December 12-17.—Sefton Park Photographic Society, Liverpool. Hon. Secretary, H. E. Cubley, 3, Langdale Road, Sefton Park, Liverpool.

December 13-20.—Southampton Camera Club. Hon. Secretary, S. G. Kimber, Oakdene, Highfield, Southampton.

December 23-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 133, Glasgow Road, Wishaw.

January 12-14, 1905. Boston Camera Club. Hon. Sec., H. M. Hames, 65, West Street, Boston.

January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.

January 20-21, 1905.—South Essex Camera Club. Hon. Secretary, T. Michell, 180, Browning Road, Manor Road, E.

January 28-February 12, 1905.—Photographic Society of Marseilles. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.

February 6-11, 1905.—Blairgowrie and District Photographic Association. Hon. Secretary, Wm. D. M. Falconer, James Street Cottage, Blairgowrie.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

February 25-March 4, 1905.—Birmingham Photographic Society. Hon. Sec., Lewis Lloyd, Norwich Union Chambers, Congress Street, Birmingham.

March 4-11, 1905.—South London Photographic Society. Hon. Sec., H. Creighton Beckett, 44, Edith Road, Peckham, S.E.

March 7-14, 1905.—Brentford Photographic Society. Hon. Secretary, F. H. Read, Ferndale, Clifden Road, Brentford.

March 20-25, 1905.—The Cripplegate Photographic Society. Hon. Sec. John B. Parnham.

June, 1905.—Northern Photographic Exhibition. Secretary, F. G. Issot, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

December 31.—Barnet. Nineteen classes. Prizes valued at £500 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

March 31, 1905.—Ilford. £750 in cash prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

New Books.

"The Ancient City of Canterbury." Published by the Canterbury Chamber of Trade, and Cross and Jackman, Canterbury.

This work has been published with a view of making generally known and inducing travellers to visit "Canterburie, the head citie of all that countrie." The literary matter, which is extremely interesting, was written by Dean Farrar, Canon Routledge, Sebastian Evans, and Francis Bennett-Goldney, hon. directors of the Royal Museum, and these names are at once guarantees of the correctness of the information given. The work, which is handsomely bound, is unusually rich in half-tone illustrations.

"Inks, their Composition and Manufacture." By C. Ainsworth Mitchell and T. C. Hepworth. Published by Chas. Griffin and Co., Ltd., Exeter Street, Strand. Price 7s. 6d.

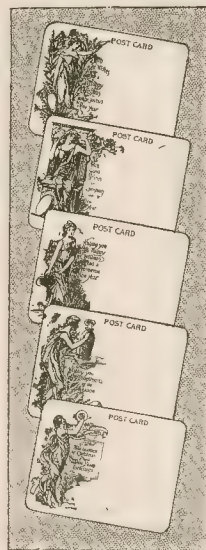
The value of this work to all those interested in the subject will, we think, be at once admitted on perusal, but to the photographer it possesses but a minor importance, except as regards the section on three-colour printing, which, however, is singularly incomplete. Again, we would like to point out a complete omission of Professor Valenta's invaluable researches on the stability of aniline dyes in the form of printing inks, and of Haruza and Hruza method of making the same, and some notable papers on this subject by the head of the Vienna State printing works.

We are not sufficiently masters of the subject to speak as to the general information contained in this book, but it shows evidences of careful research and work, and is rendered all the more useful to the technical ink-maker by the inclusion of a complete list of English patents. It is somewhat curious to find the authors stating in their preface they are indebted to an artist "for the excellent drawings of the various galls, the details of which could not have been nearly so well shown by photography."

New Materials.

Seltóna and Leto Gaslight and Bromide Sensitised Christmas Cards. Sold by the Leto Photo Materials Co., Ltd., Rangoon Street, London, E.C.

The ingenious idea of combining a seasonable greeting with pictorial postcard craze, as embodied in these cards, strikes us as an exceptionally happy one, for it enables one to save considerable outlay on a too frequently unsatisfactory card and yet send something which will be a kindly reminder and please some one, for there



so many now who collect picture postcards that there can hardly be a house without a collector. These cards are to be obtained in the self-toning, gaslight, or bromide varieties, and in three sizes: the "Mikro," $3\frac{1}{2}$ by $2\frac{1}{4}$, the Court, quarter-plate size, and the ordinary size, $3\frac{1}{2}$ by $5\frac{1}{4}$. All have rounded corners, and each packet contains two masks, and, for the development varieties, strips of paper for trial exposures. We have utilised our samples for making Christmas and New Year cards that many of our friends will receive.

"Lumières Chromogènes." Sold by the Lumière N. A. Company, Bloomsbury Street, London, W.C.

These are small glass tubes containing mixed powders of uranium, iron, and copper compounds and are intended for toning bromide and gaslight papers and lantern slides, and also may be used in the case of uranium and copper, for intensifying negatives. Each bottle is a small spoon, which holds two and a half grains, which is sufficient to make up about two ounces of the desired solution. The method of using them is precisely the same for practically a five per cent. solution being made, and the print or lantern slide after being well wetted, is immersed till the desired tone is reached, and it need then only be washed for about a quarter of an hour, or till the whites are pure. The convenience of having constant and freshly-made solutions which act well, will be appreciated, and with a set of three tubes we have obtained tones varying from sepia to blood-red, blue, green to violet, brown, and crimson.

The "Silentus" Shutter. Sold by the Altrincham Rubber Company, Altrincham.

This shutter is specially devised for studio work, but is applicable in all cases in which absence of noise is a desideratum. The chief features about it are that it requires no setting, and by aid of exposures from about one-eighth of a second to any period of time can be given by merely pressing on a rubber ball, which raises a curtain, and for prolonged-exposures an ingenious metal clip grips the tube, keeps the lens-exposed till the required exposure

It is so noiseless in action that it can be operated without the photographer's knowledge, and can be fitted before or behind the lens, or inside the camera. It is made in all the usual sizes, and is a well-made and efficient instrument.

Magnesium Powder. Sold by A. E. Staley and Co., 19, Thavie's Inn, Holborn Circus, E.C.

The well-known photochemical works of Dr. Krebs, for whom Messrs. Staley are the sole English agents, have issued a series of papers containing pure magnesium powder in various degrees of fineness, and which is specially intended for blow-through lamps. The necessity of magnesium powder for flashlight, free from grease and mechanical impurities, is generally acknowledged, and the advantage of being able to obtain the same in varying degrees of fineness, as to make it suitable for all styles of lamps and varying pressures, is obvious, as the more free the particles are from one another the more perfect must be the combustion and, therefore, the better the light.

"Tyo" Bromide Toning Solutions. Wells and Co., Southgate, London, N.

Toned bromides are now very much in evidence, and here we have a solution for producing the popular brown tone easily and with little, if any, chance of going wrong. It is sold in two solutions, the first bleached in one, rinsed in water, and then placed in the No. 2 solution until the desired brown tone has been secured. On enamel paper brown tones very closely resembling ordinary P.O.P. can be obtained by bleaching and then developing with any ordinary developer weakened considerably. Bromide prints can, by the use of "Tyo," be reduced, also negatives. Altogether the solution is a very handy one for all photographers to always have at hand.

"Royal Standard" Plate. Cadett and Neall, Limited.

Examples of these new plates have been sent us by the manufacturers, Messrs. Cadett and Neall, Limited. They are made in two kinds, one for giving black tones and the other for giving warm tones by direct development. The black tone plates, we find, give a sufficient range of tones for all ordinary purposes. The plates are extremely easy to use both for contact and reducing, they develop easily and quickly with any ordinary lantern plate developer, but we give below the formulae specially recommended:—**Metol Developer**—A.: Metol, 40 grains; sodium sulphite (cryst.) 2 ounces; potassium bromide, 10 grains; water 20 ounces. B.: Washing soda, 5 ounces; water, 20 ounces. This developer works more slowly than the next, about one and a half to three minutes giving brilliant slides. **Hydroquinone Developer**—A.: Hydroquinone, 124 grains; sodium sulphite (cryst.), 100 grains; potassium bromide, 16 grains; potassium metabisulphite, 10 grains; water to 20 ounces. B.: Potassium hydrate, 180 grains; water to 20 ounces. Equal parts of A. and B. at a temperature of 60° will give black images of medium density; development will take about half a minute. If the developer should work too quickly, it may be diluted with an equal quantity of water. Or, the Ferrouranilate developer may be used:—A.: Neutral oxalate of potash, 1 part; dist. water, 4 parts. B.: Sulphate of iron, 1 part; citric acid, one-hundredth part; dist. water, 3 parts. C.: Potassium bromide, 1 part; dist. water, 100 parts. A. 100 parts, B. 25 parts, C. 10 parts. This will give grey-black images, and medium density. For long exposure and the use of the following developer, warmer tones can be obtained:—A.: Pyrogallie acid, 90 grains; potassium metabisulphite, 90 grains; ammonium bromide, 360 grains; dist. water to make together, 20 ounces fl. B.: Ammonium carbonate, 20 grains; liq. ammonia .880, 380 minims; dist. water to make together, 20 ounces fl. Equal parts of A. and B. to make developer. Development will take about three minutes. This will give you rich brown images. The instructions are very fully set out, and full particulars for exposing, intensifying, toning, clearing, etc., being given. Now that the lantern season has commenced these plates should at once become very popular.

CAMERA HOUSE JOURNAL is just to hand for this month. W. L. Butter and Sons' little monthly trade organ keeps up its bright and interesting character.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Nov.	Name of Society.	Subject.
28.....	Camera Club.....	<i>Experiments with Liquid Air and Boiling Iron.</i> Mr. Claude Vautin, M.I.M.E.
28.....	Society of Arts	<i>Musical Wind Instruments.</i> Mr. D. J. Blackley.
28.....	Southampton Camera Club	<i>The Photography of Colour.</i> Illustrated. Mr. Charles B. Howdill, A.R.I.B.A.
28.....	Luton Camera Club	<i>Carbon Printing.</i> Demonstrated. Mr. John H. Gair, F.R.P.S.
28.....	South London Photo. Society	<i>Lantern Slide Making.</i> Mr. E. R. Bull.
28.....	Hackney Photo. Society	Members' Auction.
29.....	Nelson Photographic Society	<i>Across Siberia.</i> Mr. John Foster Fraser, F.R.G.S.
29.....	Brentford Photo. Society	<i>On the Use of the Lens.</i> Mr. Hilton Grady.
29.....	Devonport Camera Club	<i>The Focal Plane Shutter and its Use.</i> Mr. Walter Klibbey.
29.....	Birmingham Photo. Society	<i>Photography Prize Slides.</i>
30.....	Everton Camera Club	Members' Lantern Slides and last day for all Competitions.
30.....	G.E.R. Mechanics' Institution	Judging of First Set of Slides and Prints in Members' Competitions.
30.....	Boro' Poly. Photo. Society	First Social Evening.
30.....	Cricklewood Photo. Society	Beginners' Night.
30.....	Society of Arts	<i>The British Canals Problem.</i> Mr. Arthur Lee, M.P.
1.....	Dec.	
1.....	London and Prov. Photo. Assn.	Paper by Mr. W. T. Wilkinson.
1.....	Camera Club	<i>British Rainfall.</i> Mr. H. R. Mill, D.Sc., LL.D.
1 to 3	North Middlesex Photo. Soc.	Annual Exhibition.
1.....	Liverpool Amateur Ph. Assn.	<i>Winchester.</i> Dr. J. W. Ellis.
1.....	Hull Photographic Society	<i>Hypo-Alum Toning of Bromides.</i> Demonstrated. G. F. Bristow, Jun.
1.....	Gateshead Camera Club	<i>Lantern Slides.</i> Demonstrated. Mr. A. B. Gardiner.
1.....	Richmond Camera Club	Lantern Night.
1.....	Watford Camera Club	<i>Gunn Dichromate.</i>
1.....	Rontgen Society	Paper: Dr. W. Cotton.
1.....	Southport Photo. Society.....	Exhibition of Prize Slides and Demonstration of Various Photographic Apparatus. Thornton Pickard Manufacturing Co.
1.....	Leigh Photographic Society	<i>Rising to the Occasion.</i> Illustrated. Mr. W. D. Welford, F.R.P.S.
2.....	Glasgow Southern Ph. Assn.....	Social Evening.
2.....	Boro' Poly. Photo. Society	<i>Reduction and Intensification.</i> Mr. A. Beeding.
2.....	Oroydon Nat. His. and Sc. Soc.	Exhibition of Photography Prize Slides, 1904.
2.....	Aberdeen Photographic Assn.....	Enlarging Demonstration.

KINGSTON PHOTOGRAPHIC SOCIETY.

THE annual general meeting of the society took place at the Sun Hotel on Monday last week, the Rev. G. I. Swinnerton (president) in the chair. All the old officials were re-elected with the exception of Mr. W. F. J. Hodgson, who, much to the regret of the members, is leaving the neighbourhood. The vacant place on the committee was filled by the election of Mr. A. J. P. Hayes. Mr. J. Schlittie will occupy Mr. Hodgson's place on the committee of the Photographic Record. It was proposed by Mr. W. Montague Robertson, seconded by Mr. B. G. Cooper, and carried unanimously, that Mr. Benjamin Carter be elected an honorary member of the society. Mr. Robertson took the opportunity of expressing the feeling of the members with regard to the unfailing exertions of Mr. East on behalf of the society in the past, and pointed out that it was mainly due to these exertions that the society was in such a flourishing condition at the present time; also how much his absence in South Africa would be felt. It was unanimously agreed to send a message to Mr. and Mrs. East, on behalf of the society, wishing them a very prosperous journey and safe return. Referring to the summer excursions, Mr. Hayes said he wished that more members would avail themselves of these opportunities for picking up hints from other workers with regard to photography, and Mr. Robertson remarked that he had learned many valuable lessons from past excursions with the Camera Club. The remainder of the evening was occupied by a show of interesting slides by various members of the society.

DEVONPORT CAMERA CLUB.

LAST week Mr. J. Batten, a member of the club, gave a lecture on "Stereoscopic Photography." The lecturer remarked that he considered that stereoscopic photography represented the highest development of the realistic side of the art. Compared with the stereoscopic

slide, an ordinary picture, however well made, looked flat and lifeless. Viewed in the stereoscope, photographs stood out in relief, and it was sometimes difficult to persuade themselves that they were not looking at solid reality. Mr. Batten described the methods of producing stereoscopic photographs, and exhibited a number of interesting specimens, as well as a camera of his own construction. The lecturer was heartily thanked, and the president was congratulated on his success at the Hackney Photographic Exhibition and at the Crouch End Social Union's exhibition.

WOODFORD PHOTOGRAPHIC SOCIETY.

NOVEMBER 16.—Mr. H. Wilmer, F.R.P.S., in the chair. Mr. H. Main, B.Sc., F.F.S., gave his lecture on "Insect Photography." Mr. Main commenced by urging the need of specialisation in photographic work, his own particular line being that of the photographing of insects, chiefly butterflies, moths, and their ova, larvæ, and chrysalides, in their wild state, i.e., not merely when dead and set in a collection.

Mr. Main showed a series of 120 most remarkable lantern slides, many of which evoked hearty applause, and all of which were followed with keen and intelligent appreciation and interest, owing to the manner in which Mr. Main infused the breath of romance and popular interest into the dry bones of his science, for it must be remembered the evening's lecturer holds a very high position in the world of entomology, whilst his hearers were mostly laymen in this respect.

LEWES PHOTOGRAPHIC SOCIETY.

A MEETING of the Lewes Photographic Society was held at the Town Hall last week, when the President, Alderman G. J. Wightman (Deputy-Mayor) delivered his annual address. The president said it must interest all photographers in England to know what a very large number of awards had been won by their country in the St. Louis Exhibition, and it must be very satisfactory to them in Sussex to know that Mr. Job, of Hove, had been awarded a gold medal there. One could not take up the daily or weekly newspapers without being very much struck with the wonderful amount of process work—of which photography was the basis—there was to be seen, and there was no doubt a very large field for this kind of enterprise, and the future, he thought, would show a greatly increased amount of it. Alderman Wightman commented on the absence of artistic effect in some of the illustrated papers—"It is a photograph and in it goes." He regretted he had not been able to attend the London photographic shows; there seemed to be a good deal of difference of opinion about the quality of them. There was a good deal, he believed, in what was said about giving a picture a good frame, and also a lot of truth in the assertion that portraits exhibited were simply pictures showing little white noses coming out of great black backgrounds. As to the picture postcard passion, this was being taken up to a startling extent, and the postcard makers must be reaping a very rich harvest. Touching on the kind of camera of the future, the president commented on the reflecting camera, the chief point of which was that they got a reflected image of the exact size and subject that they were about to take, up to the very moment of exposure. To him it was just the thing that they wanted, and was one which must hold the field in the future. In conclusion, he hoped they would have numerous entries in the competitions and a successful year.

CROYDON CAMERA CLUB.

NOVEMBER 16.—Mr. Sellors having originated a gum-bichromate competition of a somewhat novel nature, the evening was devoted to judging the entries sent in and to a general discussion. Under the rules the competitors had to mount side by side a straightforward print on platinotype, P.O.P., or the like, and a gum picture from the same negative. A specially made graduated slip was supplied, from which a print had also to be made. Technical merit alone was to be considered, irrespective of any artistic qualities, which for once in a way had to take a back seat. Mr. Hugh Allen was adjudged the winner, Mr. Lepine Smith being a close second. Certainly Mr. Allen's gum reproduction was remarkable for gradation and detail, and close resemblance to its P.O.P. neighbour.

Mr. Packham, one of the judges, congratulated all on the excellence

of the results sent in, and Mr. Allen in particular. He well remembered, when the process was revived, with what laughter it received by the scientific photographer. It had, however, managed to survive, and the fact that artistic results were possible from photographic basis was, in his opinion, a sufficient justification for its existence. He thought, moreover, that all credit should be given to the worker who, by "faking," produced results definitely aimed at.

In the conversation which ensued Mr. Terry said that, fired with ambition to obtain the medal offered, he purchased the necessary appliances, coated his own paper, and set to work. At the start he obtained two very creditable pictures. One, for instance, could be seen at a glance which was the right way up. These two were, however, last, for on all subsequent occasions the gum and pigment dissolved away, leaving the nice clean paper behind. He somehow felt he was not worthy of the process and was going back to carbon and platotype. With Mr. Larkin the case was different. He had scrupulously followed all instructions, but the pigment coatings in every place refused to budge; he could wish for nothing more adhesive.

ATTERCLIFFE PHOTOGRAPHIC SOCIETY.

THE annual general meeting was held last week, Mr. A. Birtles being in the chair. The secretary's and treasurer's reports showed the society to be in a flourishing position, both numerically and financially. The following officers were elected for the ensuing year:—President, Mr. F. H. Barnsley; vice-presidents, Messrs. A. Birtles, W. Driess, W. J. Mills, and J. H. Gosling; treasurer, Mr. S. Hughes; Council, Messrs. J. R. Whitehouse, G. Armitage, A. Groves, J. Moxon, F. Butcher, M. W. Tallent, J. M. Newman, L. Havenhand, and Osborne; secretary, Mr. G. Walton, 57, Ditchingham Road; assistant secretary, Mr. H. M. Fisher, 37, Cruise Road, Ranmoor. The programme for the next session, of which a forecast was given, promised an excellent course of lectures and demonstrations.

WHITBY CAMERA CLUB.

NOVEMBER 15.—Mr. Brown, in the absence of Mr. French, presided over a well attended meeting. He first called upon the Hon. Secretary, Mr. Parkinson, to read the result of the first club competition. Mr. F. M. Sutcliffe said in his award (writing to Mr. Parkinson):—"I think you will agree with me that there is a great improvement in the work sent in by the members of your camera club this month. No doubt the fine summer has had something to do with this improvement, but, after all, the sun does the work; our cameras and ourselves are the tools. It is very difficult to say which of the prints is the best. Nos. 24, 25, 18, 17, 1, 7, 2, 14, 18, 21, 22, and 5 are all good. Of these I place Nos. 24 and 25 first, because they are more original in treatment than any of the others. The photographer who did these chose the subjects for their beauty of line and beauty of mass, not because they were considered good stock subjects. In each case the dark mass of the tree in leaf stands out vigorously, and in each print the red makes a pleasing mass of white as a contrast. The prints are neither quite as perfect as they would have been had the high lights, sky, and the road been rather lower in tone. It is difficult nowadays to buy a printing paper which does not render the highest light falsely. The paper-maker seems to cater for the beginner, who makes his negatives perilously thin. No. 18 is almost as good as 24 and the taste shown in the mounting is to be commended. What it misses is concentration. There is no part of the picture which calls the attention of our eye. It is like a sermon which sends us to sleep. It is weak where 24 and 25 are strong, and it is harmonious where the two are hard. No. 17 is very poetical, but suffers from too much mount. Imagine this without its grey surrounding and white line—how much sweeter would it not be! The photographer is to be congratulated on the clever way he has put the falling water to one side of his picture, and on the amount of subject included. The dome is in exquisite taste, and but for the Christmas-cardy style of mounting I should have put this higher." Mr. Sutcliffe went through the whole of the twenty-five prints submitted, dealing out words of help, praise and blame, which, no doubt, the members will put to good use. Mr. Brown then, amid applause, handed Mr. Gray the telescope tripod given as a prize by Mr. Bruce. He then called upon Mr. Slater to address the meeting. Mr. W. F. Slater, F.R.P.S., who was demonstrating Messrs. Beck's specialities, then gave a most interesting and useful explanation of the principle and uses of various

lenses, beginning with the simplest lens of all, which, by the way, is the pinhole. From this he went to the spectacle lens, the biconvex or meniscus lens, and the symmetrical or rectilinear lens. The effect, and functions of stops were explained; the various defects of lenses; the principles and uses of the telephoto lens were dealt with; and Messrs. Beck's lenses were explained and their properties described. The lenses shown round; also the most up-to-date cameras made by Messrs. Beck were fully explained and passed round for examination, and, finally, a series of slides from negatives by various Messrs. Beck's lenses were shown. The proceedings, which lasted two and a half hours, were of the greatest interest throughout. The Chairman tendered Mr. Slater the heartiest thanks of the club for his endeavours to instruct them.

BURTON-ON-TRENT PHOTOGRAPHIC SOCIETY.

On the 7th instant Mr. Fred W. Edwards gave a lecture and demonstration before the members of the above society at the Y.M.C.A., on "Evolution of Photography—a marvel of Science." Mr. Edwards said they had to hark back several centuries to discover the germ from which photography sprung. In the thirteenth century Albertus Magnus, experimenting with the metal silver, noticed that when he rubbed some nitrate of silver on his skin it was soon stained a dark brown when exposed to daylight. Magnus merely observed this fact, and offered no explanation, and was apparently ignorant of the light passing the silver nitrate to discolour the skin. For nearly 300 years after this the subject lay dormant, until Fabricius, in the sixteenth century, observed that chloride of silver darkened the surface, but he, like Magnus, never suspected the reason. In the seventeenth century Robert Boyle (the discoverer of Epsom Salts) and Robert Boyle, working independently, observed the changing of chloride of silver, but neither of them knew the reason. No further advance was made until 1727, when a German physician, Schultz, observed that the darkening of silver was due to the action of light. In 1777 a famous Swedish chemist named Scheele took the matter up and made observations as to the effect of light upon silver chloride. In 1804 Thomas Wedgwood, son of the famous potter, published an account for copying drawings on glass. He took a solution of silver nitrate, poured it in a dish. He floated the paper for a few minutes and dried it in the sun. He then placed a leaf on the top and exposed it to the light, and he had to exhibit his pictures by artificial light because he could not fix them. The next person who took the subject up and carried it forward was a Frenchman named Niepce, who made paper negatives, but was unable to make a positive from them as the negatives went black all over, being unfixed. To Louis Daguerre, another Frenchman, is given the chief honour in connection with the discovery of photography. He started with iodide of silver, and one day made a most wonderful discovery. He had previously placed in a cupboard with other chemicals some plates which had been under-exposed and with no visible image on them, but looking at them later on he found a picture on every one. He immediately came to the conclusion that the effect must have been produced through the operation of some chemical substance which was lying in the cupboard, and by investigation he found that the cause was a dish of mercuric iodide. He also discovered the secret Wedgwood failed to find—how to fix a picture in ammonium salt. In 1839 Sir John Herschel applied hypo-sulphite of soda for the fixation of Daguerre's picture—a marked advance in photography. Mr. Edwards dealt at length with the discoveries made by Fox Talbot and Frederick Scott Archer, who worked out the beautiful wet plate collodion process in 1850. Many busy hands were at work to produce a collodion dry plate, prominent among them was our great local scientist, Sir William Abney, of Measham Hall, whose list of discoveries would occupy a whole lecture. Perfection with collodion dry plates was, however, found an impossibility, and the gelatine emulsion process was introduced by Dr. Maddox, of Southampton. This process, with improvements, is still used to-day. Mr. Edwards, before concluding, dealt with colour photography, the

discovery of the wonderful X-rays, and the latest wonder of photography—that of telegraphing a photograph.

Commercial & Legal Intelligence

BEFORE Mr. Registrar Hope last week a sitting was held for the public examination of Mr. Charles Hicks Eykyn, described as of Eaton Terrace, S.W., process engraver, and the debtor stated, in reply to Mr. W. P. Bowyer, assistant official receiver, that on coming of age in 1892 he received £10,000 from the trustees of his grandfather's will. He then contributed £300 towards the expenses of an unsuccessful attempt to exploit a patent invention for the cold storage of meat, and in 1893 he went to Algiers and invested £8,000 as partner in a firm of foreign coaling agents. In 1897 the debtor returned to England, and he had since been engaged in various undertakings, his insolvency being attributed to loss in connection with the Direct Photographure Company, also to other losses, and to his expenditure having exceeded his income. He returned his expenditure since October 9, 1900, at £5,423. The examination was closed, the ranking liabilities being returned at £1,061 and the assets at £65 10s.

THE photograph of a letter decided a case at Birmingham last week, when Mrs. Robinson obtained an order for maintenance against her husband, a brewer's clerk. The couple led a happy life, said counsel, until last July. The husband had been absenting himself from home, but he explained that business had kept him, and the wife believed him. One night, however, Mr. Robinson sat up very late. He wrote a letter, and then fell asleep. Mrs. Robinson came downstairs, read the letter and, realising the importance of it, had it photographed. It was to Mr. Robinson's mother, and ran:—"Mother mine,—I sometimes think that I am an out-and-out rotter. . . . I have met a girl that was made for me, and God help me. I hope it is not blasphemy. I don't know what to do. I suppose I ought to know what to do, and that is to put all these thoughts from me; but the spirit is not willing in this case, and the flesh does not run counter. My darling girl knows how I am situated, and pities me in my fate." A separation was arranged, but Mrs. Robinson forgave her husband, and took him home. The infatuation, however, was too strong, and Mrs. Robinson was subsequently compelled to take proceedings. When the photograph of the letter was handed up to the Bench for examination, Mr. Robinson said, "You need not trouble about it. I wrote it."

SENTENCE on a Canvasser.—Sydney John Halse, thirty-five, canvasser, was indicted for embezzling £2 2s. belonging to Alfred Joseph Hall, of the Western Enlargement Company, Fore Street, Exeter. On the case being called, prisoner made application for the assistance of counsel, as he had no means to engage one. His Lordship said that applied to nine of ten people who entered the dock. He could not interfere in the matter. Mr. Dunnett prosecuted. According to the case for the prosecution, prisoner was engaged in January to canvass Exeter and district for orders for the enlargement of photographs, and to receive moneys from customers. His wages were 10s. a week and commission, and he averaged £2 a week. On September 19, Mr. Newton, a publican of Newton Poppleford, settled an account of 30s. with the prisoner for an enlargement, in respect of which the prisoner only paid the prosecutor 25s. Prisoner also received £5 from Mr. Parsons, of Newton Poppleford, for an enlargement, but he only accounted for £4 10s. Another order was obtained from Miss Smale, of Newton Poppleford, who paid 7s. 6d. on account. Prisoner took the photograph to prosecutor, and said it was that of his wife's mother, asking him what he would enlarge it for. Prosecutor said that as he was an employé he would enlarge it for 6s. Prisoner went to Miss Smale, and said he was very sorry he had broken the enlargement on his way out. He obtained, however, a balance of 13s. 6d. due from Miss Smale. Prisoner did not return to his employment, but sent a letter in which he said he was unable to make up the orders as he was in drink at the time. Prosecutor could keep all commission that was due to him to settle the matter. Prisoner, however, had no running account with his employer, and it was his duty to pay the

money in as he received it. Prisoner alleged in defence it was a matter of account. The jury returned a verdict of guilty, with a recommendation to mercy. Accused was sentenced to four months' hard labour.

News and Notes.

MESSRS. RUSSELL AND SON, of Baker Street, and Mr. W. S. Stuart, of Richmond, have had the honour of taking photographs of their Majesties the King and Queen of Portugal.

The annual report and balance sheet of the Glasgow and West of Scotland Amateur Photographic Association just to hand shows a most promising state of things, and there are few societies with an existence of twenty-one years that can show a bank balance of close on £400.

THE monthly catalogue of secondhand and shop-soiled photographic goods and special bargain list are to hand from the Tella Camera Company, 110, Shaftesbury Avenue, London, W. Some scores of really good bargains are offered at very cheap prices. The company also make a speciality of exchanging cameras, and also of supplying every kind of apparatus on easy terms as well as for cash.

It is with regret that we have to announce the death, on the 11th inst., of William Middleton Ashman, of Old Bond Street, Bath. Mr. Ashman was a well known and prominent figure in the photographic world for many years, and was one of the founders of the old Benevolent Association, the founder of the Bath Photographic Society, and well known at the Photographic Convention. He was a frequent contributor to our pages, and was associated with Mr. Offord in a long series of researches on the manufacture of gelatino-chloride printing-out papers at a time when little was known of the manufacture of the same. These papers are still valuable for reference to all experimenters.

THE Southampton Exhibition. The Southampton Exhibition will be held from December 14 to 21, and comprises the usual classes, with the addition of a special post-card class, for which no fee is required. The judges are Messrs. F. H. Evans, J. C. S. Mummery, F.R.P.S., and H. Snowden Ward, F.R.P.S. Special plaques (size $7\frac{1}{4}$ by $3\frac{3}{4}$) have been designed for the awards, and, as in previous years, it has been arranged for exhibits entered at Hove and Southsea Exhibition to be forwarded carriage free to Southampton, and a special award is offered for the best work at all three exhibitions. Full particulars and entry forms may be obtained from the hon. secretary, Mr. S. G. Kimber, Oakdene, Highfield, Southampton.

PHOTOGRAPHING Trawlers by Searchlight.—H.M.S. "Hebe" arrived at Great Yarmouth last week for the purpose of carrying out an important and interesting experiment in connection with the investigation into the North Sea outrage by the Russian Baltic Fleet. It will be remembered that it has been alleged that there were no hostile warships in the North Sea, and that the Russians mistook the Hull trawlers for Japanese torpedo boats, even after the latter had been illuminated by searchlights from the Russian fleet. After dark, the "Hebe" turned her searchlight upon a steam fishing drifter of the Hull type, which was in motion, and simultaneously a photograph was taken of the little craft, which it is understood will in due course be submitted to the International Commission of Inquiry. The experiment was conducted about a mile off the harbour, and viewed from the shore the drifter bore no resemblance when illuminated to a torpedo boat.

At the last meeting of the British Optical Association, held on Wednesday, at the Mount Vernon Hospital, Fitzroy Square, with Mr. M. W. Dunscombe, of Bristol (president), in the chair, several ideas of importance to sight-testing opticians were discussed. This association was formed in 1895 for the purpose of examining opticians, in order that the public might be protected in some manner from the swarms of unscrupulous men who were selling spectacles existent in this country. The president reported that they had had an exceedingly good financial year, and a large increase of membership, which is obtainable by examination only. They had decided to use the word "Optologist," as meaning one who practises sight-testing as a special feature of his business. A significant inference might be drawn of the power possessed by good organisation from the fact that at this meeting the possibilities of obtaining a charter were discussed, some of the gentlemen present practically guaranteeing the financial support that such a measure would require.

Correspondence.

- * * Correspondents should never write on both sides of the paper, notice is taken of communications unless the names and addresses of the writers are given.
- * * We do not undertake responsibility for the opinions expressed by correspondents.

THE METRIC SYSTEM.

To the Editors.

Gentlemen,—I was very pleased to see your article on "The Metric System," on the 11th inst. There is no doubt that this subject can be too widely discussed, and perhaps you will be good enough to allow me space for a remark or two.

In your article you refer to the "imperial system, and its practicable units and multiples." These units, I take it, are the inch, pound, and gallon, which are in themselves serviceable enough, what of their multiples? To quote only our tables of lengths sufficient to show that our multiples are very far from serviceable, and if anyone is satisfied with our table of square measure I would merely suggest that he work out any ordinary sum of compound multiplication, say 16 square yards, 7 square feet, 32 square inches by and compare the labour with that involved in a similar computation under the metric system.

Or, again, are our tables of capacity satisfactory, with a bus varying in value all over the kingdom, and abounding in similar anomalies? The British Weights and Measures Association admits absurdities in our present system, and it seems only a question whether we shall embark on the process of "patching up," or adopt a system that is now in vogue in so many civilised countries.—I am, Sirs, your obedient servant,

E. JOHNSON, Secretary.

The Decimal Association, Oxford Court, Cannon Street, London, E.
November 16th, 1904.

PACKING DRY PLATES

To the Editors.

Gentlemen,—I have had in use for some time a method of packing dry plates, which is very similar to the one advocated by Dr. Mietz, noticed by you in this week's Journal, and find that it answers admirably. I take large sheets of thin glazed cardboard, about two-thirds thickness, and coat them with a thin solution of brown shellac methylated spirit. When dry they are well rubbed with a clean dust to remove any adhering particles that might abrade the film, and cut up to the required size. Some 10 x 8 plates packed months ago with this cardboard show no traces of reduction due to the packing material such a familiar sight with some commercial plates. I also use the same sheets with additional coating of the varnish in lieu of rubber sheet when platinum printing.—Yours faithfully,

S. T. HARRIS

November 18th, 1904.

THE ANTINOUS RELEASE.

To the Editors.

Gentlemen,—As it will probably interest your professional readers we should be glad if you will kindly mention in your columns that we can supply our Antinous Release, 6ft. long, of a pattern suitable for use on Houghton's studio shutter, at a cost of 5s. The Release, of course, does away entirely with the necessity for constant renewal of perishable rubber parts and the attendant expense of same.—I am, dear Sirs, yours faithfully,

W. WATSON AND SONS.

313, High Holborn, London, W.C.
November 19th, 1904.

THE TRAIL TAYLOR MEMORIAL LECTURE.

To the Editors.

Gentlemen,—I shall be much obliged if you will inform the readers of the BRITISH JOURNAL OF PHOTOGRAPHY that the subject chosen for the seventh Traill Taylor memorial lecture, by Dr. R. T. Glasbrook, Director of the National Physical Laboratory, is "Mode

Physics in Relation to Photographic Optics." Dr. Glazebrook will specially deal with the testing of photographic lenses, and the new optical bench constructed by Messrs. R. and J. Beck, for the National Physical Laboratory, will be shown. The lecture takes place on December 15th, at 8 p.m., at the rooms of the Royal Photographic Society, 66, Russell Square, and Mr. Conrad Beck has kindly consented to take the chair.—Faithfully yours,
P. EVERITT, Hon. Sec.
88, Evering Road, N.
November 19th, 1904.

DUTY FREE ALCOHOL.

To the Editors.

Gentlemen,—I, as manager of this association, have been in correspondence with the Industrial Alcohol Committee appointed by the Chancellor of the Exchequer, with the result that Mr. H. Entwistle, one of our members gave evidence before them on Wednesday last. I think the trades who use collodion to a large extent have not yet realised the importance of this commission to their respective businesses, and therefore thought a copy of Mr. Entwistle's letter to me as to the evidence he gave might be of interest to you, with your paper, circulating, as it does, among such users, and might create an interest in the question.—I am, dears Sirs, yours faithfully,

FRANK BIRD, Manager.

(The Manchester Process and Wood Engravers' Association, 51, Atlantic Chambers, 7, Brazennose Street, Manchester.
November 19th, 1904.

EXTRACT FROM MR. ENTWISTLE'S LETTER.

Dear Mr. Bird,—As arranged, I gave evidence before the above committee on the 16th inst. I was asked for what purposes alcohol was used in the process trade. Of course, I told them chiefly for the manufacture of collodion for negative making, collodion for stripping purposes, as a constituent of developers, as a thinning medium for collodion which has become too thick for use, and as a dehydrating agent in the case of the rapid drying of dry plate negatives. In answer to a question as to the objections to the use of mineralised spirit, I stated that the impurities caused fog, and generally upset the silver bath. Dr. Thorpe did not appear to think, however, that unmineralised spirit, which can be obtained under special Excise regulations was detrimental. I, however, quoted Sir Wm. de W. Abney, who states that methylated alcohol of any kind is not suitable for use in collodion.

I also pointed out the great saving in cost if we were allowed to use absolute alcohol duty free, giving the price for methylated spirit at about 3d. per pound, and the price of absolute alcohol as 4s. 6d. per pound, nearly all of this difference being accounted for by the Excise duty. Dr. Thorpe asked me why I objected to the use of methylated alcohol, and did not object to use Mawson's collodion, which he inferred contained methylated ether? I told him that if the duty on alcohol was done away with there would be no inducement to use methylated solvents of any kind, and that therefore there was less likelihood of anything going wrong with the silver bath, which at present is by no means a rare occurrence. I will, however, let you have a copy of the evidence immediately it comes to hand, as promised per telephone.

BORDER CITY CAMERA CLUB (Carlisle).—The opening meeting of the Winter Session was held at the Liberal Club, Lowther Street, on Tuesday evening, November 8. Mr. R. H. Bevan presided, and read to a fairly representative audience of members Messrs. C. P. Goerz's lecture "What can be done with a Hand Camera," illustrated by 107 excellent slides, showing a large variety of subjects, and capabilities of the hand camera.

Patent News.

The following applications for patents were made between November 7 and November 12, 1904:—

- Cameras.—No. 24,036. "Improvements in photographic cameras." Edgar Samuel Hunter, and William Edward Hanchard.
Cameras.—No. 24,183. "Improvements in or relating to photographic cameras." Alfred Julius Boulton.
Photography.—No. 24,235. "New method of photography and means therefor." Samuel Henry Crocker.
Printing Frames.—No. 24,246. "Improvements in or relating to photographic printing frames." Kodak, Ltd.
Printing Frames.—No. 24,247. "Improvements in or relating to photographic printing frames." Kodak, Ltd.
Coloured Photographs.—No. 24,290. "Process for producing coloured photographs." Gustav Koppmann.
Photography.—No. 24,311. "Improvement in the art of photography." Arthur Henry Gittings.

Answers to Correspondents.

- *** All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.
- *** Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.
- *** Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.
- *** For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

- A. Walker, 29, Plymouth Street, Lower Broughton, Manchester. Photograph of John Byrom's House, near Manchester.
A. G. Marshall, 43, Bridge Street, Morpeth. Photograph of High Church Cottages, Morpeth, as a Snow Scene, with Design and Christmas Greetings in Top Corners. Photograph of Lady's Chapel in Bothal Woods, Morpeth.
F. G. Steggle, Stanley House, Midsomer Norton, near Bath. Photograph of the Paulton Rovers Football Club.
G. Cross, 86, Sussex Street, Preston. Two Photographs of Views in Moor Park, Preston.
J. Davidson, 7, Ibrox Terrace, Govan, Glasgow. Photograph of Clyde Steamer "Duchess of Hamilton" in a Storm.

EXPERIMENTER.—The paper you require is known as ferrogallic, and can be obtained from Marion and Co., Soho Square, W.

H. MARTIN.—The book is published in America, but you could obtain it from Dawbarn and Ward, 6, Farringdon Avenue, E.C.

"A SUBSCRIBER."—The paper you used is a collodio-chloride; therefore, when you flooded the print with collodion, it naturally partially dissolved the image-bearing film, and caused it to run into the ridges or streaks.

H. HALES.—If you have copyrighted the negatives you must assign the copyright to purchaser; this would not prevent you selling other negatives. Purchasers of negatives or prints could not copyright unless you gave permission.

ARTIFICIAL LIGHT.—"STUDIO" asks: "Is there a book published on 'Artificial Light for Portraiture in the Studio'? If so, you

will greatly oblige by letting me know where it may be obtained." In reply: See answer to "Inquirer."

"SPES."—Yours is such a purely trade matter that it does not come within our province to advise. We may, however, say that the best way of getting your paper on the market will be to advertise it in the journals. Most professional photographers will test it, and give you a report—of course, for a fee.

A. M. MACDONA.—We are sorry we mistook the purport of your query. Obviously, we cannot know the exact formula, but you probably know Wellington's formula for chloro-bromide emulsion; if not, we will give it you, and this we should advise you to use.

"A. B. C."—Either you did not wash sufficiently between the gold and platinum baths or else the temperature of your solutions varied too much. The defects are the all too familiar blisters which are often met with just at the commencement of the cold weather.

LINE SCREENS.—"BROMIDE" asks: "Will you kindly let me know where a photographic positive of a half-tone process screen may be obtained? Also the probable cost of same?" In reply: The screens may probably be had from Messrs. Penrose and Co., Farringdon Road. If they supply them they will quote prices. We do not know them.

ARTIFICIAL LIGHT IN STUDIO.—"INQUIRER" asks: "Would you be so good as to advise us as to the best book to get on 'Portraiture and Groups by Artificial Light'?" In reply: The late Mr. Slingsby issued a work on flashlight photography (Marion and Co.) some few years ago. "Photo Miniature," Nos. 29 and 31, also deal with the subject.

CELLOID.—"D. D." says: "The paragraph on 'The Manipulation of Celluloid' (issue November 11) is interesting. Now, will you kindly let me know where it can be purchased in sheets, about 1-100th of an inch in thickness? I am in want of a number of sheets 3 ft. long, 5 in. wide." In reply: Sheet celluloid of various thicknesses is supplied by Messrs. Guiterman and Co., Aldermanbury, E.C.

DEVELOPING AND FIXING.—"G. A. D." writes as follows: "A friend informs me that there is a combined developing and fixing solution for plates. Do you know of such a mixture? If so, I should feel greatly obliged if you will kindly favour me with a recipe for same." In reply: The following may be used: Stock solution. Sodium sulphite, 4 ounces; caustic potash (in sticks), 480 grains; Kachin, 480 grains; water, up to 10 ounces. For fully exposed plates take stock solution, 6 drams; hypo solution (one part hypo to five of water), 10 drams; water, 15 drams.

SPOTTY PRINTS.—"TROOPER" says: "I shall esteem it a favour if you can tell me the cause of spots showing on enclosed matt P.O.P. print. They appear directly after toning and fixing, when beginning to wash, and my printer cannot account for them. I am of opinion it is carelessness in manipulation, but I fail to detect precise cause." In reply: If you, a professional photographer, seeing the work done, cannot detect the cause of the spots, we can scarcely be expected to do so by merely looking at the finished print. Evidently they are due to something in the manipulations, which you should be able to detect yourself.

LANTERN LAMPS.—"LANTERN" says: "If the query comes within the scope of your column, I shall be greatly obliged if you can tell me why in oil lanterns the wicks are placed end on to the condenser? Would the light not be greater if the wicks were placed with their broad sides parallel to the condenser, and a further increase of light obtained by arranging them in the form of a flight of steps?" In reply: With the wicks arranged as shown in your sketch (No. 1), the light is far more brilliant, and in every way better, than it would be if they were arranged according to your second sketch. This you can prove for yourself by trial.

BICHROMATED GELATINE.—"PHOTOPHIL" writes: "In making plates for a photo-mechanical process by bichromated gelatine I find

since the cooler weather that in development, no matter what the temperature of the water, the gelatine 'frills' and quits glass. What is the cause? Is it due to the cleaning of glass? Hitherto, I have not used any substratum, as it is very desirable to have absolutely naked glass in the shade and gelatine will sometimes adhere so fast as to bring a flakes of glass rather than separate. Can you suggest a remedy?" In reply: The gelatine film will certainly not adhere to the glass unless the latter is made thoroughly clean. The surface of it should be ground to give the gelatine a hold.

COPYRIGHT.—"OPERATOR" writes: "Two years ago, while operating for a firm of photographers, I took a 12 by 10 negative of a very popular singer. It is the lady's favourite portrait, is constantly being reproduced. It was copyrighted at the time, but the business has passed into other hands and I know the copyright was not transferred. I have prints of the picture, and want to know if I can copyright it afresh in my own name, as I was the actual author. Your kind opinion will greatly oblige, as the same applies to other pictures I have produced." In reply: If the copyright has not been assigned, it is still the property of your former employer. You certainly have no claim whatever to it, as you were paid for doing your work.

MARKED PRINTS.—"PRINTS" writes: "Will you kindly give me a little help upon the following? When fixing enlargements by spray, am much troubled with fixative drying in spots, spoiling the enlargement. Have tried best fixatives, sprays, also spraying at different distances, but to no purpose, so am obliged to stop them instead; but understand there is a slight risk in this, would therefore be pleased to be able to spray satisfactorily. Will you also kindly inform me if plates and carbons can be steamed satisfactorily?" In reply: We scarcely understand what you mean by fixing by steaming or spraying. The proper way to fix bromide pictures is by immersing them in a solution of hyposulphite of soda. In future write on one side of paper only, please.

VARIOUS QUERIES.—"CELLOIDINE" asks: "1. Do you use the weight of celloidine in making up collodion as given in pyroxyline? 2. Which would you choose for illuminant in a large, (a) duplex oil, (b) incandescent gas, (c) plain burner? I have been using acetylene (which is very reliable) but in new premises not convenient; (a) seems reliable more trouble, (b) light value so variable. 3. Re Mr. Farmer's article in the issue for October 23, can you inform where suitable positives from screens can be obtained, what the probable cost for, say, 20 by 16?" In reply: Celloidine is put up in packets, the contents of which, whatever its weight, represents one ounce of pyroxyline. 2. They should employ incandescent gas lights. 3. They may probably be had from Messrs. Penrose and Co., Farringdon Road, London. We do not know the price.

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EX CATHEDRA.

Unfair Competition in the Photographic Industry.

With reference to our apology to Ilford, Limited, which appeared, under the above heading, in our last issue, we much regret that, through a desire to give it prominence, we did not make it clear that it was from the editorial chair, and should have appeared under the heading of "Ex Cathedra." We hasten to rectify any misunderstanding on this point, and to remove also any suspicion of a desire to shelter ourselves by the publication of the letter from Herr F. Dyck, which appears on same page. We again express our regret that we should have been the means of giving any further publication to the misrepresentations that appeared in the "Photographisches Wochenblatt" in the case of Ilford, Limited, v. Westendorp and Wehner, and in which the real decision was exactly reversed, which was in favour of Ilford, Limited, both in the lower and upper courts, and against Westendorp and Wehner, who were the ones found guilty of an improper infringement of the label and trade mark of Ilford, Limited, and condemned in damages and costs accordingly, with an injunction restraining any further continuance of the offence. And we regret still more that, based upon that report, we should have made the remarks we did, entitled "Ilford and German Injustice," and which we admit were quite unwarranted. We offer our fullest and sincerest apologies, with every expression of regret, to Ilford, Limited, for this unfortunate occurrence, and hope it will now be quite understood by our readers that instead of there being any pretence of a ground of complaint against Ilford, Limited, or any foundation for the unjust imputations made upon them, they have been the ones entirely in the right in the matter, and so completely so, that when taking proceedings in German courts against German subjects, they both in the court of first instance and again on appeal, obtained decisions in their favour, with substantial damages.

tations made upon them, they have been the ones entirely in the right in the matter, and so completely so, that when taking proceedings in German courts against German subjects, they both in the court of first instance and again on appeal, obtained decisions in their favour, with substantial damages.

The Illness of Mr. F. J. Mortimer.

Many of our readers will be glad to hear that there is a considerable improvement in the condition of Mr. F. J. Mortimer, the sub-editor of the B.J., and although his recovery from the very serious operation which he underwent about a month ago is likely to be somewhat tedious, we are hoping to see him back in his accustomed chair before the close of the year.

A Lovely View Saved.

There are probably very few photographers who do not by repute or actually know that particular region of which Bettws-y-Coed is the centre, and which is so rich in work for the camera user, and therefore they will be glad to hear that as a result of the resistance offered by local authorities, on the score of danger to scenery, to the projected railway from Snowdon to Bettws-y-Coed, a compromise has been arrived at. With regard to the Swallow Falls, it is agreed that the proposed tunnel of 155 yds. should be increased in length to 275 yds., the line to be laid for the remainder of the distance in a cutting to be screened by planting and rough walling. This, it was claimed, would protect the cliffs from disfigurement. The District Council asked for a level crossing over the road near Pont-y-Pair, in the village, rather than a bridge 20 ft. high and an embankment, and this the promoters agreed to. The Board of Trade afterwards accepted the settlement of the parties, subject to clauses to be drafted.

The British Science Guild.

Under the above title an organisation has recently been established, the objects of which are briefly: (1) To enforce the necessity of applying scientific method to all branches of human endeavour; (2) to bring before the Government the scientific aspects of all matters affecting the national welfare; (3) to promote and extend the application of scientific principles; and (4) to promote scientific education. Sir Norman Lockyer is the President of the Organising Committee, Lord Avebury the Treasurer, and Lady Lockyer the Honorary Assistant Treasurer. The Guild has already been joined by a considerable number of Fellows of the Royal Society and other influential persons. The contribution required from subscribers is merely nominal, 2s. 6d. per annum, with an entrance fee of like amount. Further

information as to its aims, objects, and organisation, can be obtained on application to the Honorary Secretary of the Guild, Mr. C. Cuthbertson, 9, York Terrace, London, S.W.

* * *

Failure of an Art School. Many will remember that some twenty years ago Professor Herkomer established a school of art for students of both sexes at Bushey. At first the school was, we believe, a success, but of late years it has not been, and a year or so back it was found necessary to close it, as it was no longer a paying concern. It was alleged at the time that the students spent more time in studying Nature in the open than they did in studying art in the studios. Be that as it may, the property, which covers about half an acre, was sold at auction last week by order of the trustees for the debenture-holders, and realised £1,300. The starting of a private art school on the lines of that at Bushey was a bold venture on the part of Professor Herkomer, and was deserving of better success than it met with. There are now so many public art schools under Government and municipal auspices that we are afraid private schools on the lines of Herkomer's will meet with but little success from a commercial point of view.

* * *

Cinematograph Accidents.

It is seldom now that one hears of accidents with cinematograph films as compared with what used to be the case when the instrument was first introduced, although there are probably more shows now being given than at any other time. This may be attributed to two reasons: one that the operators with them now know better the nature of what they are dealing with than they did at first; the other is the conditions imposed by County Councils and others with regard to the exhibition of cinematograph pictures. One noteworthy thing at the present time is that when, perchance, there is a "blaze-up," the audience seem to keep their heads instead of being panic-stricken, as used at one time to be the case. This applies equally, we are pleased to say, when there is an alarm of fire in a theatre and other crowded assembly. Last week we read that while a cinematograph show was being given at the Royal Assembly Rooms, Woolwich, the films became ignited and blazed up, and the operator was badly burned about the head and hands. There was no panic, however; the audience left the place quietly, and the fire was quickly extinguished. Still, a film of a non-inflammable nature, as thin and flexible as celluloid, is yet a desideratum—accidents are better avoided than remedied afterwards.

* * *

Exports to Egypt.

In these days of continuous complaint concerning British exports, the following figures will be a surprise to many who are in alarm at the supposed decadence of the country. They are taken from "Export," a Berlin newspaper. They relate to the imports by Egypt of scientific instruments and astronomical and optical appliances. The totals are given in Turkish pounds, the value of which is about $2\frac{1}{2}$ per cent. more than English sovereigns:—

	1901.	1902.	1903.
France	10,533	8,283	12,914
Great Britain...	5,643	7,773	9,014
United States...	4,478	3,201	856
Germany	4,054	3,456	6,147
Austria-Hungary	2,166	1,750	1,554
Turkey	1,214	833	574
Italy	719	868	2,773

It will be seen that England's exports to that country in

1903 exceeded those of 1901 by about 60 per cent. With the exception of the small figures marked down to Italy the exports by Great Britain have been really the most progressive of any country on the list. Even the decline in values in 1902, which is observable for almost every other country, did not take place in the case of Great Britain, but the figures show an advance of 40 per cent. on the previous year. Why should so many Englishmen disparage their countrymen?

* * *

Duty-free Alcohol.

It has long been a crying grievance that the manufacture of certain chemicals and dye-stuffs in this country is heavily handicapped where pure duty-paid alcohol has to be employed, as the methylated spirit will not answer the purpose; whereas in Germany pure alcohol is allowed to be used for manufacturing purposes, upon which no duty is imposed. Some time back a Committee was appointed to inquire into the use of duty-free alcohol, and last week it met, and several witnesses were examined. The permission of the use of duty-free alcohol for industrial purposes would not be the boon to photographers that it would have been when the collodion process was the process of the day. Still, it would be a boon now to many. Some look upon the collodion process as being an obsolete one, but they will possibly be surprised to know that it is still extensively, if not universally, employed by process workers and those who produce commercially enlarged negatives for carbon and platinumotype enlargements. In the manufacture of the collodion ether made from methylated alcohol answers quite well, and its cost is roughly about a shilling a pound; whereas the alcohol costs about three times, or more, this sum. Methylated spirit would do quite well for negative collodion but for two reasons. First, that it is not strong enough—60 deg. to 64 deg. O.P. equal a S.G. of about .830—and it is not allowed to be strengthened by redistillation. When the spirit was first allowed to be sold it could be had of the strength of .805 (commercial absolute) but that was afterwards prohibited. The second reason is that the wood naphtha used for the methylated is very impure. If a pure, or refined, wood naphtha could be used, it would not be harmful. But all samples of the wood spirit for methylating have to be submitted to the Excise authorities before they are used, and if they are found to be anything but of a quite crude nature the use is prohibited.

* * *

Toned Bromide Prints.

In the "Photographische Correspondenz" this month a very pleasing toned bromide print is published which must attract the admiration of most, if not all, photographers. The subject is modern Sappho, leaning against a tree in contemplation. The negative is one of Reutlinger's, of superb finish, which displays the whole range of gradation in the paper, which is manufactured by the Neue Photographische Gesellschaft, Berlin-Steglitz. It is known as the Matt N.P.G. No. III. The tone of the print particularly interests us, as it is of a rich, warm sepia shade, obtained by sulphur toning. As it may be possible to produce similar effects upon other makes of bromide paper, we give our readers the particulars of the process. The pictures are developed with ferrous oxalate, well fixed and washed. The toning bath is fixed as follows:—50 grammes of hyposulphite of soda; 300 c.c. of hot distilled water, to which 5 grammes of powdered alum is added; $1\frac{1}{2}$ to 2 c.c. of 10 per cent. solution of silver nitrate; it is only necessary to make this addition to a new, fresh bath, as its purpose is to diminish the rapidity of action. Such a bath is preferable in all cases, and it is indispensable to heat the fresh bath two or three times to 122 deg. or 140 deg. Fahr.

allowing it to cool after each application of heat. The solution should have a temperature of from 100 deg. to 120 deg. Fahr. for use. Toning occupies from fifteen to twenty minutes, but the time is more prolonged with cooler solutions. Any deposit should be removed from the prints with a brush or pledget of cotton wool. A preparatory bath of 20 grammes of common salt per 20 c.c. of water at 70 deg. Fahr. will produce redder tones. Prints which have to be developed with organic developers, such as metol-hydroquinone, show a greater tendency to reddish brown in toning. Old baths, before further use, should be freshened by the addition of an equal quantity of new toning solution.

* * *

A New Electric Light Lantern.

At the last meeting of the Physical Society a new form of optical lantern for use with the electric current was exhibited. The particular instrument shown was designed specially for science lectures. The novelty consisted in the use of three Nernst filaments arranged closely together. It is provided with a long range of adjustment for focusing, and can be instantly changed for throwing the picture horizontally or vertically. It can also be fitted with a reversing prism where necessary. We may say *en passant* that the Nernst lamp has not, at any rate among photographers, earned the popularity it deserves. It is capable of giving a light of far greater brilliancy than that obtained from the ordinary incandescent lamps. It has much greater actinic power, and can be had of such size as to compare with the smaller arc lights. Its drawbacks are slight, mainly centring upon the original outlay for the complete lamp, which is much in excess of the cost of the incandescent bulb lamp. Next the light does not instantly appear at its brightest the moment the current is switched on. It takes a matter of twenty to forty seconds to arrive at its full brightness, and this—such is the impatience that characterises modern workers—is considered a great drawback. It can be switched off instantly, however. We reserve to the last a most important characteristic—the cheapness of the lamp in use. We were recently discussing the matter with a manufacturer whose current bill averaged £22 per annum. He had recently had all his incandescent bulbs taken down, and he calculated that the economy of current would in nine months' time cover the cost of his alterations. He would then have his future current at a great reduction of cost. Where lights are intended to be kept continuously burning there can be no doubt of the advisability of adopting the Nernst lamp.

* * *

Brass and Copper Half-tone Blocks.

Some years ago, at the Colonial Institute Photographic Exhibition, some half-tone blocks on brass were shown, and since then, brass has been occasionally used for this work, but zinc or copper have practically been held to themselves. Herr Fleck, who is well known as a practical photo-mechanical writer, points out in the "Photographische Chronik" that zinc becomes crystalline and brittle when subjected to the necessary heat for burning in of the enamel print, and that copper, which is not subject to this defect, is much dearer, and that the best etch for this, ferric chloride, is by no means the ideal one. Now he states that the hard brass metal in 0.4 to 0.5 millimetre thickness is the most suitable substitute, and that the etching is quieter and more even than with copper, and, therefore, the dots do not lose in sharpness, and that the burning-in takes place more quickly and more certainly. Further, that a thicker ink may be used, and, therefore, very clean, sharp pulls

are obtainable, which are quite satisfactory. In consequence of the less thickness of the metal, better contact is obtained between the negative and the metal, and, therefore, sharper results are obtainable. Although ferric chloride is an excellent etch for brass, it is not so satisfactory as the following, as this enables one to see perfectly the progress of the action, and does not affect the skin of the operator's hands at all:—

Water	450 parts.
Hydrochloric acid	300 parts.
Potassium chlorate	180 parts.

The mixture should be allowed to stand for a night in the open air and used the next morning, and it may be repeatedly used as long as it remains colourless. We have not actually tried this, but the etch is nothing more than the old solution for making euechlorine, which is an extremely unpleasant gas that at once attacks the mucous membrane. Possibly, however, allowing the mixture to stand twelve hours may improve matters.

* * *

A New Rival to Postcards.

In no business or profession is there a better exemplification of the modern axiom that there is no finality in business methods. The photographer with a good business, good returns, and good profits, who thinks he has struck a gold mine, will find before many years are over, if he keep in the same groove, that the lode has given out, that his luck has turned, that his once grand business is dying out. In photography, as in all other modes of business, there is no "resting on one's oars." As we once heard a smart business man say, "You never get there, and the moment you rest, down you go, and rarely come up again." We recently commented on the stereoscope, but that is not an isolated example. Many of our readers will remember the rage there was for cartes de visite: they are now rarely taken at all at some leading studios. If there was one class of business more firmly established, to all appearances, than another, it was the sale of local views, which were stocked at every stationer's shop in the country; process prints and collotypes have killed it. There must be hundreds of thousands of pounds' worth of stock in these shops at the present time the owners of which would be glad to dispose of for so many pence. The postcard mania has now had a good innings, and we must expect a diversion of some kind if it is to retain its popularity. Happily, the photographic view postcard still seems to hold its own, though we learn from the stationers that they already have "bad stock" of many other types of picture postcards. The latest rival is a penny-in-the-slot arrangement for sending not a photograph of a place or a person, but a phonographic record in the sender's own voice. The invention comes from Vienna, and we learn that by dropping in the penny the purchaser can obtain a record of his own voice on a thin gramophone disc, which, under Continental postcard rules, may be fixed on a card and forwarded as a postcard. It is claimed that the disc is made of a newly invented material which is so tough that it will pass through the post uninjured. Of course, the difficulty is the reproducer to enable the recipient to hear his message. This is to be met by a new phonograph, which is to be put on the market for a price not exceeding ten kronen (8s. 4d.). If once this invention proves a success there can be no doubt it will be a serious rival to photo-picture postcards. Our very strong advice is to anticipate it by carrying out our recent suggestion of stereoscopic postcards and cheap stereoscopes, which, if carried out on business principles should, we repeat, lead to a "boom."

PHOTOGRAPHS ON WATCHES, CIGARETTE-CASES, AND THE LIKE.

THERE is evidently a growing taste for photographic portraits on such articles as watches, gold or silver cigarette-cases, matchboxes, etc., and the jewellers who undertake to get this class of work done usually charge a pretty good figure for it. A little while ago we were shown a watch on the dome of which was a portrait for the production of which guineas had been paid. Of course the jeweller did not do the work himself, but clearly he knew where to get it done, and exceedingly well done it was. Some year or more ago we saw a similar picture on a watch case which, it was alleged, had to be sent to Switzerland by the London jeweller for the work to be executed there, because it could not be done here. This picture and the other referred to were unmistakeably by the carbon process.

It may be remembered that in 1901 we published a method of producing photographs on jewellery, trinkets, etc. (see page 451 of the volume for that year). The method then described was by the collodio-chloride process, but there is no question that pictures by the carbon process are, theoretically, at least, more permanent than those by any silver one.

As the carbon method of producing pictures of this kind may be of service to many of our readers, we shall here describe it in detail. We shall assume, at once, that the reader is already quite familiar with the practical working of that process, for we may here say that any one who takes up the working of this process for the first time, and attempts to apply it to the present purpose, must not expect to meet with any great success in his first few essays. It goes without saying that it is the double transfer system that must be employed—the picture being developed on a temporary support, and then transferred to the article desired. It will at once be seen by practical workers that the ordinary commercial flexible support is not suitable for the work, for the reason that it is too thick and unyielding to be pressed into sufficiently close contact on a convex surface, such as the dome of a watch-case, for example, to obtain a perfectly finished transfer. It may, however, sometimes be successfully used for quite cylindrical articles.

For the above reasons it will be obvious that a more flexible and yielding support must be employed. One is the indiarubber support as first used by Swan; another is a film of collodion. We will deal with the former first. Some thin "foreign post" paper, the thinner the better so long as it will withstand the warm water in the development, is coated with a solution of indiarubber about the consistency of thin treacle. The best way of obtaining this is to get a tin of solution from the rubber stores and thin it down with benzole to the required consistency. It is poured into a dish and the paper floated upon it and then hung up for the benzole to evaporate. The paper had best be coated a few days before it is required for use, so as to ensure that all the solvents of the rubber have thoroughly evaporated.

This indiarubber support is used in precisely the same way as the ordinary flexible support—the exposed tissue is squeegeed upon it, developed, and then allowed to dry. The picture need not be alumed, indeed, it will be better

for our present purpose if it is not. The picture is now ready for transferring to whatever may be required, which for the moment we will assume to be the dome of a watch-case. It is unnecessary to mention that it must be removed from the watch, this a neighbouring watchmaker will do for one. The dome is then cleaned with benzole to remove all traces of grease or dirt. It is then coated on the outer side with a solution of gelatine containing a little chrome alum such as that used for double transfer paper. The following is a good formula to employ:—

Nelson's No. 1 gelatine $\frac{1}{2}$ oz.
Water 10 oz.

Chrome alum, dissolved in 1 oz. of water, 6 grains.

The dome is evenly coated with this and allowed to dry. To make the transfer neatly, trim the print to the required size and put it and the watch dome in cold water for ten minutes or so. Next put the latter in warm water at about 105 deg. to 110 deg. Fahr., until it just feels slimy. Then take the print, having previously marked it as a guide to position, and put it into the warm water and bring it in contact with the dome, of course avoiding air bubbles, and remove the two and press in close contact with a soft dry handkerchief, gently rubbing towards the edges with the fingers so as to remove all superfluous water. It is then allowed to become thoroughly dry spontaneously. When dry, the back of the paper is moistened with benzole, and after resting for a minute or two the paper can be slipped off, leaving the picture firmly attached to the metal. Should any rubber remain on the picture it may be rolled off with the finger, or removed with benzole. It now only remains to varnish the work. The proper varnish for the purpose is the "Zapon No. 3 enamel," as supplied by the Fredk. Crane Company, 22, Newhall Street, Birmingham. This is practically a cold lacquer, and when dry is as hard and durable as the lacquer on our lenses. It is simply flowed over and drained off, and it dries in a few hours.

We mentioned just now that collodion might be used as the temporary support, and perhaps on the whole it is the best to employ. Here is the method with this. A glass plate, after being waxed, or prepared with French chalk, is coated with ordinary enamel collodion thickened with two or three grains per ounce of pyroxiline, so that it yields a thick film. After the collodion has thoroughly set the plate is put into a dish of water to soak, and is afterwards washed under the tap to get rid of the solvents of the collodion. The exposed tissue is then squeegeed on that, developed in the ordinary manner, and allowed to dry. When dry the film can be stripped off and trimmed, and then mounted on the metal as just described. It is a good plan to trim the picture while it is still on the glass—a wheel trimmer and zinc shape is convenient for the purpose. The collodion film has an advantage over the rubber support, inasmuch as it is transparent, so that air bubbles can be seen, and the picture the better arranged in position. After the transfer, the collodion can be dissolved off with a mixture of ether and alcohol.

In conclusion it may be mentioned that for carbon pictures on metal a tissue should be selected that contains a large proportion of pigment to gelatine, and should also be printed from a tolerably thin negative, so as to avoid a high relief in the image, which is objectionable in this class of picture, and, moreover, it serves to indicate the method by which it has been produced, which, in some instances, it is not desirable to do.

The current number of the "Practical Photographer" is devoted to retouching, and contains many practical and helpful wrinkles from some well-known professionals.

NOTES AND NOTIONS.

BY THE AMATEUR OPTICIAN.

FLASH-LIGHT photography is not a branch of work that the average professional makes an enthusiastic study of. He does not often "run after" such work. I refer, of course, to such subjects as public dinners, dances, and such-like doings—as a lay contemporary alliteratively puts it. I have been much interested in the recent experiences of a professional friend who has been rather successful in this direction; he, in fact, got several commissions by reason of the satisfaction given to a certain club whose annual dinner he has photographed for three years in succession, but all these have been done in one large room or hall. He made a preliminary trial, and by the lesson thus learnt has been able to take groups there since with unflinching certainty. So far all was well, the trouble and anxiety came when the work necessitated a total change in the quantity and distribution of the illuminant; in other words it was a new group under different conditions—size, shape, and character.

Only by the aggregation of detailed experiences do we arrive at results definite enough to be looked upon as safe guides in photographic practice, hence no apology is made for entering into a little more minutiae than might be thought necessary or appropriate. The place therefore was a public swimming bath—dimensions 40 yards by 12 yards, lighted by a number of incandescent electric lamps of no value photographically—the subject, a group of bathers, not in motion. An attempt was

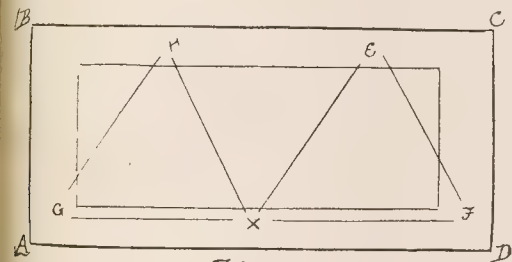


Fig. 1.

made, of course, to reproduce as far as possible the conditions to which one was accustomed, taking the precaution to add a little extra illuminant, e.g., referring to the annexed diagram (Fig. 1) a, b, c, and d, represent approximately the shape of the building. The apparatus comprised a 10 by 8 camera and rapid rectilinear lens of 11 inches focus. Well, the camera placed midway down one side of the bath; say, at the point marked X, takes in an area equal to E F or G H, and groups arranged there respectively turned out to be in every way gratifying. The illuminant, placed above and a little to the rear of the apparatus, consisted of three seven-second flash candles, and the lens was stopped down to *f*16. But with the camera placed at a or g, a group arranged about the line H to X was not nearly so good, even with an additional candle a few yards down on the right hand side and well out of the line. An inspection of the photograph taken from the point A shows that three candles (7 sec.) there, and one each at three other places down the side at equal distances, would have properly illuminated the building; by a slightly different arrangement of the bathers and careful focussing, the whole length of the bath would be taken in clearly. Short of electrical means I fail to see how all these candles are to be ignited simultaneously, it would certainly take some drilling to get four persons to accurately do the trick. In order to test the matter, the more readily as the material was in evidence, I rigged up the wires—enough for the purpose—and found that to ensure the ignition of four pieces of touch paper simultaneously, it was necessary to use a battery repre-

senting 6 volts, i.e., three large bichromate cells. The arrangement was as in Fig. 2, the line wires (ordinary bell wire) were bared at five different points, and between the points 1, 2,, 4, 5,, short (one inch) lengths of fine platinum wire, No. 26 S.W.G., were inserted as shown. Connection to the battery was then made as in the figure, and on making contact at C the platinum wires immediately became red hot, sufficiently so to light the gas, a cigar, or the touch paper aforesaid.

I use a 50-c.p. lamp now and then for the purpose of charging a small accumulator, recently it came in very usefully when I happened to be photographing a rather dimly lighted interior where, however, electric lamps of the ordinary candle powers were installed; the dodge was to get a few yards of the silk-covered twin wire used by electricians, connect one end to the lamp and the other end to a plug, this done, one of the small lamps, out of the view, was removed and the plug inserted in its place. The 50-c.p. lamp was then arranged in the position required and served its purpose very well indeed.

A good quantity of blotting paper is used by photographers for the purpose of backing up the negative in the printing frame, interposing a comparatively soft, and certainly an absorbent, packing between the print and the hinged back of the frame. Few people, I imagine, are aware of the amount of moisture which ordinary, everyday, commercial white blotting paper habitually contains. Just lately, preparing some blotting paper for work connected with induction coils, I cut a number of sheets into squares, made them into a parcel, and weighed the package and found it to be 13½ oz. The parcel was placed

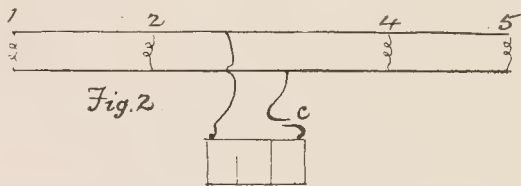


Fig. 2.

on the rack over the kitchen stove and allowed to remain there for a few days. When again weighed it was found to be exactly 10 oz., and to have lost 3½ oz. of moisture. This seems a big percentage, but the weights were carefully checked and recorded. It is clear that blotting paper is not nearly so dry as it appears to be, and that for use in the printing frame other materials—thin felt for instance—might be preferable. Best of all is no doubt sheet rubber. It is evident that blotting paper used as indicated requires to be dried occasionally.

I find that our mutual friend "Free Lance" has not quoted me correctly; he refers to photographs, whereas I distinctly said *negatives*, and I certainly think that 3s. 6d. for a half-plate negative, i.e., for post-card printing, is not good enough. Then with regard to the stereos, I said nothing about eighty prints; the quotation was for taking twenty stereoscopic negatives and supplying one print and one transparency from each, at the price of twenty shillings per set. Here one may say that the prints would count as small value compared to the transparencies, and I hardly gave them a thought. Twenty shillings each, therefore, for taking a negative and printing therefrom a transparency and one print mounted; twenty pounds sterling—that is to say—for the lot was, considering all things, reasonable (?).

The use of isochromatic plates is certainly on the increase, but results are very disproportionate, even more so than the average amongst amateurs. This means very little after all,

for I have only six customers, all told, for these plates; one of them occasionally shows me a result which pleases him—so I suppose there is nothing more to be said—but it is evident that the man is easily satisfied. On the whole one is inclined to think that the use of isochromatic plates may become indiscriminate; that for most purposes users would fare better—and oftener—with ordinary dry plates. One of my customers, who likes to do everything connected with photography in a scientific way, never by any chance uses any other than isochromatic plates; he uses an actinometer, and a screen, and affects “time” development, with, on the whole, rather surprising results; he seems to be working in the dark all the time and takes what the gods send him in the semblance of a negative as, apparently, the best possible. There are so many factors bearing upon the production of a good negative that a calculated exposure by actinometer, and so many measured minutes in a developer, does not, perforce, bring about the anticipated. However, this is not what I started out to write. One of those clever and versatile writers on the art and practice of photography in the lay press, refers to the subject and gives a formula for the preparation of isochromatic plates, which may be found in several of the more recent “British Journal Almanacs”; as thus:—

PRELIMINARY BATH.

Ammonia	10 minims.
Distilled water	1 ounce.

Bathe the plate in this for two minutes, then immerse for the same period in:—

Erythrosine soln. (1,500)	30 minims.
Ammonia	10 minims.
Distilled water	1 ounce.

Having properly effected this, the writer goes on to say, “*set up on end to drain and dry in the dark room*” (the italics are mine). One wonders, considering the absence of further particulars, whether this writer owns, what may be termed, the average dark room, and whether he has ever tried to dry isochromatic or any other sort of plate in the manner suggested. For my part, with memories of plate making and coating and attempted drying in nearly a dozen different dark rooms, I should hesitate to recommend any such unprofitable procedure. Sensitive films on any kind of support can only be effectively dried in a drying closet of proper—not to say scientific—design and construction, such as may be seen described and illustrated in many back volumes of this JOURNAL. Let the amateur first make something in this way, then with the necessary enthusiasm he will get many hours enjoyment, and, may be, profit out of it; any work which properly requires the equipment of a light-proof drying cupboard is only very ineffectively done without it.

PHOTOGRAPHIC Society of Ireland.—A lecture entitled “The Evolution and Symbolism of the Irish Wheel Cross” was delivered last week by Mr. P. J. O'Reilly at a meeting of the Photographic Society of Ireland, in the Lecture Theatre of the Royal Dublin Society, before a rather small audience, which was no doubt attributable to the inclemency of the weather. Professor J. A. Scott presided. The lecture, which was illustrated by some fine lantern slides, worked on the theory that certain designs were used by the pagan Irish as sepulchral symbols. These designs, or combinations of them, were found to be continued in the Christian era, and were to be seen on Christian Irish sepulchral leacs, or flagstones, of comparatively recent dates. In Irish pre-standing crosses also many examples in support of the theory were to be found, and the lecturer was of opinion that the “cut-out” wheel cross, which is essentially Irish, was, in its perfected form, not the result of artistic effort alone, but had gone through a process of evolution, possibly of many stages, which had for its base the symbols or designs in use long before the adoption of Christianity in Ireland.

PICTORIAL POST-CARDS.

BUSINESS has been bad, not only in our particular line, but every other, and, in fact, the first is but the corollary of the second, the average business man, being pinched, naturally cutting down expenses, and the absolutely unnecessary photograph is the first to be dropped. If one also dabbles in photographic dealing, the depression must have been more forcibly brought home to one; because the average amateur has not had the usual amount of spare cash, and he has been content with his old camera, fewer plates, and fewer chemicals this last summer, and, so far as I can see, there is not much prospect of improvement. When 12 by 10 bromide enlargements are freely advertised in the local papers for eighteenpence, and these by a local professional and dealer, who thus gets better terms than others, and the enlargements are made from any print, there is little chance for the order which but a few years ago was the customary thing with us, namely, one or two good enlargements from the negatives we took for contact prints.

I am not prepared to advance or support for one moment the statement that the pictorial or picture post-card is going to be the saviour of a business, but I can say that it will lead to the business of an extremely profitable character if properly pushed, and one that does not need much brain, supervision, or outlay. I am not going to teach others their business; I am not arrogant enough to assume that I know so much better than they do, but I can merely retail my experience, and possibly others may learn from it.

Some two years ago a local stationer brought me some post-cards of local views, and asked me whether I could not turn out something of the same sort, only of better quality, for which he could get a better price, and which could be his, and his alone. The cards, when examined, I found to be collotype printed in Saxony, and neither superb in quality as collotype nor the most striking in selection of the subjects. Having a good collection of local views, and knowing those which sold best, I promptly set to work and reduced a complete set of one dozen whole-plates to the regulation size, and, printing them in glossy gelatino-chloride, offered a set to my stationer friend. They were so different to what he had been selling that he hesitated not only to give me an order, but even to show them, but when I told him that he might have one set for his window and another set to sell free, he somewhat grudgingly accepted my offer. Within a week he had taken orders for over a hundred sets, and since then I have turned out an almost incredible number of picture post-cards, and it has become such an important section of my business that I have now a competent printer, whose sole business it is to superintend the post-card department, and this now includes gelatino and collodio chloride printing, bromide and gaslight cards, and quite lately a plain paper card of thin texture with rough deckle edge, which has promptly caught on. The post-card department now employs as many hands as the portraiture and outdoor department, and it is, if not quite so profitable, at least a big help.

I may be a present example of the old adage of teaching my grandmother to suck eggs; but, having gone through the mill till the printing of a picture post-card has become purely mechanical, some few hints of how we work may be useful. In the first place, there are very few negatives which are just the correct size, or which will even allow of masking down to the correct size; any way, all my negatives require reducing, except those which have been specially taken for post-card work, and have found that reducing the negatives in the camera to positive of the regulation size, and then making a negative by contact is the most satisfactory. Of course one may have negatives ranging from half-plate to 15 by 12, and it is necessary to reduce these in the regulation size of 5½ by 3½. Obviously, if the dimension is right the other is wrong, and one must sacrifice something. First of all, I merely reduced the whole negative on to a half-plate, keeping the longer base within the 5½ in

but I soon abandoned this, and now every negative, no matter what its size is masked before reduction, so that when reduced the best picture is shown.

For masking I use the black paper as is used by film manufacturers for rolling up with cartridge films. I was able to get some of this from a film-maker whose cartridges I stock. This is absolutely opaque, and gives one a perfectly clear rebate that saves a lot of trouble. This, cut to the necessary width, was temporarily fastened with a touch of gum to the film side of the negative, and so adjusted that when one dimension was correct the other would be also. I use always 'half-plates' for making the reduced transparency, and use a slow or ordinary negative emulsion, and not a transparency. The plates are all backed, and this is very important, and the character of the transparency is kept as nearly like a negative as possible; extreme density and absolute bare glass are avoided. A non-staining developer, adurol, in fact, is used, and, time development being adopted, a whole series of transparencies are obtained of absolutely uniform density.

The actual negatives are made by contact printing, after each transparency has been most carefully examined for spots, etc., and carefully retouched. In order to get clean, sharp edges, the negatives are again masked with lantern-slide binding strips on the film side. At first I had some difficulty about the titling, and each one was titled by painting on with a brush, but this was not very successful; sometimes the title showed clear, and others quite indistinct, according to the density of the negative. When in London one day I saw a German card in which the title was beautifully printed, and showed clear white on a perfectly black ground, and I promptly bought several, and, after consideration, I came to the conclusion that the negative was here bleached, or any deposit dissolved away, and the title printed on either directly or by transfer. Several experiments were at once carried out, and I found that cutting extremely narrow strips of hard fluffless blotting-paper of the required width, and soaking them in a saturated solution of potassium cyanide in water, mixed with an equal quantity of glycerine, gave the best results when applied to the dry negative. This dissolved out the silver, and when washed left a clear strip on which the title was very distinct.

The title was put in by means of transfer, and whilst I am not anxious to give anyone a free advertisement, I found Richard's rubber type the best. The title was set up from one of these founts, and an impression taken on the special paper supplied, which is, I believe, merely a gelatine coated paper, and the narrow strip of the negative having been gently rubbed with finely-powdered resin, the title was laid down and rubbed into contact with an old agate point that was found handy, though a bit of smooth wood would act as well, then the paper is removed and a mixture of lamp-black and dragon's blood, intimately ground together, was dusted on, and then dusted off, with the result that the letters stood out perfectly clear and absolutely opaque. No doubt others have other methods, but this satisfies me.

The ordinary post-card at the present time measures $5\frac{1}{2}$ by $3\frac{1}{2}$; and whilst some pictorial post-cards that I see have a space on the back for writing, I have found that it is quite enough to leave the front only for this purpose, and to mask the negative down so as to fill the whole of the back. Opinions, of course, will differ on this point; but I always leave one-eighth of an inch at the top and two sides, and one-quarter of an inch at the bottom of the picture, which bottom is obviously either the longer or shorter side.

I have fairly rung the changes on all the commercial cards, and have found that keeping one particular series to one particular printing process is a mistake, for the post-card enthusiast is prepared to purchase duplicates of the same card in various colours and surfaces.

I have tried P.O.P. cards, matt., and glossy, collodio chloride cards of both kinds, plain paper cards, and all colours, but I

have not yet been able to get a ferro-prussiate card which would be useful sometimes. At the present time I am pushing the plain paper card with deckle edge, for the simple reason that I can obtain any colour from bright red to black by faintly printing and development. The ordinary post-card is difficult to treat in this way, because it is so difficult to wash out the whole of the developer, so that when one comes to tone, the gold is reduced, and the card turns a faint purple tone all over. Bromide cards are, of course, mere child's play; one has merely to find the exposure, and from actual working data two operators can turn out one hundred cards per hour, exposed, developed, and fixed.

Using negatives on half-plates, whole-plate printing frames, with a sheet of glass in, are used, and the negatives are fastened down with half-inch rubber plasters, and then an accurately-cut frame of six-sheet Bristol board is fastened down in the same way, so that all the operator has to do is to drop the post-card into the aperture of the Bristol board, and it is exactly in position to print properly. These little points seem trivial; but whilst they may be, and take some little time in adjustment, a negative properly masked with its card-frame can be handed to the printer with the definite order for a certain number of post-cards in a certain process, and the order is almost automatically executed.

There may be nothing new in the above notes, but they are the outcome of experience, and may be helpful to some of my brother professionals.

T. C. GRAYDON.

STUDIO EMPLOYERS AND THE PHOTOGRAPHIC EMPLOYEES' ASSOCIATION OF N.S.W.

INDUSTRIAL AGREEMENT.

THE following, which we extract from the "Australian Photographic Journal," will, we think, be read with interest in England:—

Agreement made the seventh day of October, one thousand nine hundred and four, between Charles Henry Kerry, trading as Kerry and Co., Photographers, George Street, Sydney, hereinafter called Kerry and Co., of the one part, and the Photographic Employees' Association of New South Wales, Industrial Union of Employees, a Union registered under the provisions of the Industrial Arbitration Act of 1901 (hereinafter called the Employees' Union), of the other part.

Whereas the said Kerry and Co., and the General Committee of Management of the said Employees' Union have lately met in conference and agreed on certain matters affecting the industry or trade of a photographer, and for the purpose of carrying the said agreement into effect, it has been further agreed that these presents shall be executed and filed as an Industrial Agreement under the provisions of the above-mentioned Act.

Now these presents witness and it is hereby mutually agreed by and between the said parties hereto as follows:—

Classifications and Definitions.—(1) Any person whatsoever shall—under this log—be deemed a photographic employee who is engaged in any photographic work, namely, developing, operating (outdoor or indoor), retouching, printing, enlarging, finishing, trimming, mounting, spotting, burnishing, enamelling, sorting, or making up orders, attending to negatives in any way, working up in black and white, monochrome, or colour. (2) Employees shall be classified as follows:—Probationers, Apprentices, Junior and Seniors. (a) Probationers shall mean any person who, with a view to legal apprenticeship, shall enter the photographic profession. (b) Apprentice shall mean any person legally indentured. (c) All apprentices shall, after or without a probationary employment of not exceeding one (1) month in finishing department and three (3) months in any other department, be legally indentured. (d) Junior shall mean any persons who have served their apprenticeship. (e) Senior shall mean any person who has served his apprenticeship and juniorship, or has attained seniority, as provided by the following Clause:—(f) All assistants who prior to the enactment of this log have not attained their seniority shall in relationship to their previous term of service be rated thereunder; but when the term of service has been less than that herein-after provided shall complete the said term as indentured apprentices

or juniors in accordance with the provisions herein set forth. Nevertheless all assistants who by virtue of their value, have previously attained junior's or senior's wages shall be rated under this log according to wages previously received.

Apprentices.—(1) The term of apprenticeship for mounting, finishing, and spotting, including care of negatives, shall be two (2) years. (2) The term of apprenticeship for retouching negatives shall be three (3) years. (3) The term of apprenticeship for operating, developing, retouching, printing, and enlarging shall be five (5) years. (4) A clause in apprentices' indentures shall state specifically department or departments (and branches therein) in which apprentices shall serve and be instructed. (5) A copy of the indentures of each apprentice must be lodged with the Secretary of the Employees' Association within three (3) months of the date of the signing thereof.

Juniors.—(1) The term of juniorship shall be two (2) years in finishing and retouching departments and three (3) years in general photography.

Proportion of Apprentices and Juniors.—(1) Only one (1) apprentice and one (1) junior shall be allowed to each senior assistant employed, such apprentices and juniors to be distributed in departments as terms of indentures or necessities of business may require.

Wages.—Finishing and Reception Room: Apprentices, first year, 5s. per week; second year, 10s. Juniors, first year, 15s. per week; second year, 20s. Seniors' Minimum Wage, 25s. per week. Retouching Negatives: Apprentices, first year, 5s. per week; second year, 10s.; third year, 20s. Juniors, first year, 30s. per week; second year, 40s. Seniors' Minimum Wage, 50s. General Photography—Operating, Printing, Enlarging, and Developing: Apprentices, first year, 5s. per week; second year, 10s.; third year, 15s.; fourth year, 20s.; fifth year, 25s. Juniors, first year, 30s. per week; second year, 40s.; third year, 50s. Seniors' Minimum Wages, 60s. per week. Artists—Working up in Black and White, Monochrome or Colour: Minimum Wage, 50s. per week. Operator: Senior Minimum Wage, 70s. per week. (1) Any one employed as manager, or any one employed as head of department or branch, and having under his or her supervision at least one senior, shall, in every case, receive an advance on minimum wage of not less than 20 per cent. in finishing room and reception room and 30 per cent. in other departments, or any retoucher having two or more employees under his or her supervision shall receive a 30 per cent. increase on the senior minimum wage. (2) Any old, infirm or partly incapacitated member of the Association may be employed at a rate subject to the approval of the Committee of Management of the Association. (3) No senior shall rank as junior and be employed at junior's wages. (4) This rate of wages applies to a week of six days excluding Sundays. (5) All temporary employment of less than one week shall be paid 25 per cent. in advance on these rates.

Payment of Overtime.—(1) All work after 6 p.m. shall be paid for as overtime at the rate of time and half up to 10 p.m., after 10 p.m. double time. Sunday work, double time.

Hours. Reception Room: 8.30 a.m. to 6 p.m., October 1 to March 31; 8.30 a.m. to 1 p.m., weekly half-holiday; 8.30 a.m. to 5 p.m., April 1 to September 30; 8.30 a.m. to 1 p.m., weekly half-holiday. Retouchers and Artists: 9 a.m. to 5.30 p.m., October 1 to March 31; 9 a.m. to 1 p.m., weekly half-holiday; 8.30 a.m. to 5 p.m., April 1 to September 30; 8.30 a.m. to 1 p.m., weekly half-holiday. Operators: 9 a.m. to 5.30 p.m., October 1 to March 31; 9 a.m. to 1 p.m., weekly half-holiday; 9 a.m. to 5 p.m., April 1 to September 30; 9 a.m. to 1 p.m., weekly half-holiday. Printing Room, Contact Printers, Enlargers, Finishing Room, Dark-Room Hands, and Apprentices: 8.30 a.m. to 5.30 p.m., October 1 to March 31; 8.30 a.m. to 1 p.m., weekly half-holiday; 8.30 a.m. to 5 p.m., April 1 to September 30; 8.30 a.m. to 1 p.m., weekly half-holiday.

Lunch.—Three-quarters of an hour shall be allowed for lunch in every case, except to operators, who shall have 30 minutes in winter (April 1 to September 30) and 45 minutes in summer (October 1 to March 31).

Holidays.—(1) All employees shall have one half-holiday per week. (2) The following days shall be public holidays within the meaning of this Log:—New Year's Day, Anniversary Day, Good Friday, Easter Monday, Prince of Wales' Birthday, Eight Hour Day, King's Birthday, Christmas Day and Boxing Day, and shall be paid for at full rates. (3) Any employee working on a public holiday shall have

one day off within 7 days in lieu thereof. (4) Every employee, after working 2 years consecutively in the same establishment, shall be entitled to one week's holiday annually on full pay.

Piece Work.—Retouching Panels: Evening dress, bust head, 2s. extra figure, 1s. Ordinary dress, bust head, 1s. 6d.; extra figure, 1s. Evening dress, three-quarter figure, 1s. 6d.; extra figure, 6d. Ordinary dress, three-quarter figure, 1s.; extra figure, 6d. Evening dress, full length, 9d.; extra figure, 6d. Ordinary dress, full length, 6d.; extra figure, 6d. Cabinets: Evening dress, bust head, 1s. 3d.; extra figure, 6d. Ordinary dress, bust head, 1s.; extra figure, 6d. Evening dress, three-quarter figure, 9d.; extra figure, 4d. Ordinary dress, three-quarter figure, 6d.; extra figure, 4d. Half-price each additional head. Full length, 4s. per dozen all round. Babies' nude panels, 1s. 6d. each; cabinets, 1s. each. Midgets; 10 midgets, on whole plate, 2s. per plate; 4 York panels, on whole plate, 2s. per plate; 2, 3, 4, or 8, on cabinet plate, 1s. per plate. Groups—Studio or Outdoor: Whole plate, 2s. 6d.; 10 x 8, 3s. 6d.; 12 x 10, 4s.; 15 x 12, 6s. Printing and Enlarging: Baker and Rouse's quotation nett, in 1904 catalogue. Working up Enlargements. — Monochrome or Black and White: 10 x 8, 4s.; 1s. 6d. extra each figure; 12 x 10, 4s.; 1s. 6d. extra each figure; 15 x 12, 5s.; 1s. 6d. extra each figure; 17 x 23, 10s.; 1s. 6d. extra each figure. Oil or Water Colour: 10 x 8, 7s. 6d.; 12 x 10, 7s. 6d.; 15 x 12, 10s.

General.—(1) Seven (7) days' clear notice shall be given on both sides for termination of engagement. (2) A book shall be kept in each establishment showing wages paid to each employee. (3) Each establishment shall be registered and a return furnished to the Registrar of the hands employed therein and the wages paid thereto, classified in accordance with the provisions of the Shop and Factories Act. (4) The Secretary of this Association shall have the power to inspect time-books and wagesheets, and in the case of any dispute arising as to the ratio of apprentices and juniors to each senior hand in any establishment to have the right to count the number of apprentices and juniors as well as the said seniors at any time during working hours. (5) The Association shall be allowed to appoint stewards in any establishment to facilitate the collection of contributions. (6) Members of this Association shall receive preference of employment, all things being equal. (7) Subsequent to the enactment of this log every non-member employed in any establishment shall become members of this Association within one month. (8) This agreement, and every clause, matter, and thing herein contained shall (subject to the provisions of the said Act as to the rescinding or varying the same) remain in full force and effect for a period of three years from the first day of November next. (9) The said Employees' Union shall at once apply to the Court of Arbitration that this agreement may be declared to be the award of the Court, and a common rule of the trade as against all masters, photographers, and employers carrying on business in the State of New South Wales. (10) That either the said Kerry and Co., or Employees' Union breaking this agreement or any term thereof, is liable to a penalty not exceeding £100 (one hundred pounds), and individual members thereof committing a breach are liable to a penalty not exceeding £5 (five pounds).

In witness whereof the signatures and seals of the parties hereto have been hereto affixed the day and year first before written.

Signed by the said Kerry and Co., in the presence of the General Committee of Management of the said Union.

The Common Seal of the Photographic Employees' Association Industrial Union of Employees was hereto affixed by the General Committee of Management of such Union in the presence of

JAMES CHARLES CRUDEN, President,
THOMAS CHARLES CLEAVE,
FREDERICK JOHN JENKINS,
ALBERT HATTON,
WALTER R. SMITH,
HAROLD BRADLEY,
ANDREW MORRISON,
JOHN STEWART, Jun.,
WALTER DAVIES, Secretary,

Members of the
General Committee
of Management.

Received into the Industrial Arbitration Office, at Sydney, this twelfth day of October, 1904, at fifteen minutes past two of the clock in the afternoon, from Walter Davies, of Wemyss Street, Stanmore, photographer, a true copy of the within industrial agreement, veri-

by the oath of the said Walter Davies, and now numbered forty-one (41).

E. W. WICKHAM,
For Registrar, Industrial Arbitration Act.

Exhibitions.

THE HOVE CAMERA CLUB.

The club held their exhibition last week. This was the first of the South Coast exhibitions—Hove, Southsea, and Southampton—which are being carried on with the same arrangements as in previous years. The judges were E. R. Ashton, H. Horsley Hinton, and C. Job, and the average work in the open classes was of such high quality that they had no hesitation in awarding all the thirteen prizes placed at their disposal.

The following is a complete list of the awards:—

OPEN CLASSES.

Class A.—Landscape: Plaque, "Reflections," W. A. I. Hensler; plaque, "Shadows," A. Marshall; plaque, "Desolation," J. M. Whitehead; plaque, "The Vesper Hour," B. C. Wickison; hon. mention, "The far off sun darts his slant beams on unobeying clouds," H. A. Game; hon. mention, "Threshing Thro' It," F. R. D. Croogss.

Class B.—Portraiture: Plaque, "The Student," A. Marshall; plaque, "The Modeller," C. B. Howdill; plaque, "Waiting," R. Forbes; hon. mention, "May," Miss Hilda Stevenson.

Class C.—Architecture: Plaque, "St. Mark's, Venice," F. J. Phillips; hon. mention, "Kirkstall Abbey, across the Nave," John Mackenzie; hon. mention, "A Flood of Light," W. A. Clark.

Class D.—Flowers, Animal Studies, etc.: Plaque, "A Marten," Douglas English, F.R.P.S.; plaque, "Nettles," G. Seymour; hon. mention, "Peonies," D. W. Kyle; hon. mention, "A Rose," Miss M. C. Eames.

Class E.—Lantern Slides: Plaque, "On the Hillside," W. A. I. Hensler; plaque, "Roses," R. Burnie; plaque, "Male Reed Warbler," W. Farren; hon. mention, "Figure Studies at Night," Ellis Kelsey; hon. mention, "Architecture," H. Wormleighton; hon. mention, "Theatrical Groups taken during Performance," E. F. Grün.

CLUB CLASSES.

Challenge Salver, for Best Picture in Club Classes (Presented by W. A. Hounsom, J.P.): "A Portrait," Mrs. A. O. Jennings. (Note.—Mrs. Jennings now becomes the absolute owner of this salver, having won it three times during the last six consecutive years.)

Class J.—Landscape: Plaque, "A Sandy Track," F. J. Phillips; plaque, "Evening Mists and Mountain Torrents," W. White Palmer; hon. mention, "Homeward by the Evening Light," A. H. Avery; hon. mention, "In the Valley," V. G. Young.

Class K.—Portraiture and Animal Studies: Plaque, "A Portrait," Mrs. A. O. Jennings; plaque, "Figure Study at Venice," Miss M. Cotesworth; hon. mention, "Shrimpers," L. J. Steele; hon. mention, "A Marten," Douglas English, F.R.P.S.

Class L.—Architecture: Plaque, "Winter Sunshine," C. C. Cook; plaque, "The Sanctuary Temple of Luxor," L. J. Steele; hon. mention, "South Aisle, Chichester," V. E. Morris; hon. mention, "Cottages at Rye," F. R. Richardson.

Class M.—Lantern Slides: Plaque, "Across the Nave, Chichester," V. E. Morris; plaque, "Evening Mists and Mountain Torrents," W. White Palmer; hon. mention, "Theatrical Groups," E. F. Grün; hon. mention, "Figure Studies," Col. Crawley.

Class N.—Novices: Plaque, Miss M. Reeves; hon. mention, H. N. Kinton.

SHEFFIELD.

The Sheffield Photographic Society's annual exhibition of photographs was held at the Montgomery Hall, Sheffield, from November 21 to 26. The judges (Messrs. C. Barrow Keene, Alex. Keighley, and Frank M. Sutcliffe) made the following awards:

OPEN CLASSES.

A.—Champion Class: Silver gilt plaque, "In Pensive Mood," John Spark.

B.—Landscape, Seascape, and River Scenery: Silver plaque, "Shadows," A. Marshall, A.R.I.B.A.; bronze plaque, "Britain's Bulwarks," Chas E. Wanless; Extra bronze plaque, "Desolation," J. M. Whitehead; certificates, "Woodlands," Arthur Black; "A Seat of Industry," Will H. Foxall; "Close of an Autumn Day," Daniel M. Filshill.

C.—Portraiture, Figure Studies, and Animals: Silver plaque, "The Modeller," Chas. P. Howdill, A.R.I.B.A.; bronze plaque, "A Study," A. Marshall, A.R.I.B.A.; certificates, "A Countenance in which did meet Sweet records, promises as sweet," John Spark; "A Cornish Fisherman," Dr. C. F. Grindrod.

D.—Architecture, Interior or Exterior: Silver plaque, "The Close of a Summer's Day," Wm. A. Clark; bronze plaque, "The Marble Arch," Miss A. B. Warburg; certificates, "A Street of the Past," C. C. Cook; "Torcello Cathedral," A. De Silva.

E.—Flowers, Fruit, and Still Life: Silver plaque, "Decorative Study of Tulips," John M. Whitehead; extra silver plaque, "Briar Roses," John M. Whitehead (debarred); bronze plaque, "Currants," E. Seymour; certificate, "Poppies," Dan Dunlop.

F.—Lantern Slides: Silver plaque, "Reed Warbler," Wm. Farren; bronze plaque, "A Woodland Glade," J. W. Charlesworth; extra bronze plaque, "Emperor Moth (male)," B. H. Bentley; certificates, "Wood Anemones," B. H. Bentley (debarred); "Fusus Colus," Dr. G. H. Rodman; "Lightning Flash," John Stabb.

SPECIAL CLASSES.

G.—For Members of Photographic Societies in Yorkshire: Silver plaque, withheld; bronze plaque, "An Olde Doorway," W. Wadsworth; certificate, "Conway," Miss F. Ashton.

H.—For Scholars attending any Day School within the City of Sheffield: Silver plaque, "The After Glow," Tom Robertson; bronze plaque, "In Whiteley Woods," W. Warner; certificate, "The Old Abbey Stairway," Harper Seed.

MEMBERS' CLASSES.

I.—Landscape, Seascape, and River Scenery: Silver plaque, "The Dell," J. Gilbert Jackson; bronze plaque, "September," Dr. H. G. Paterson; certificate, "On the Sand Dunes," Harold Hill.

J.—Architecture, Interior or Exterior: Silver plaque, "Through an Open Doorway," Harold Hill; bronze plaque, "From Transept to Nave, Ely," John W. Barnes; certificate, "Corner of Banqueting Hall, Haddon Hall," T. G. Hibbert.

K.—Any Other Subject: Silver plaque, "The Pearl Sorter," Dr. H. G. Paterson; bronze plaque, "Lightning," F. J. Cribb; extra bronze plaque, "Study of a Head," Hy. S. Nutt; certificate, "Peeling Potatoes," John W. Barnes.

L.—Lantern Slides: Silver plaque, "The Halut of the Moorhen," W. H. Barraclough; bronze plaque, "Chapter House, Lacock Abbey," J. R. Wigfull, A.R.I.B.A.; extra bronze plaque, "The Sturdy Oak," Dr. H. G. Paterson; certificates, "Through the Doorway, Haddon," T. G. Hibbert; "Near Wadley," G. A. Seed.

ILFORD AND DISTRICT PHOTOGRAPHIC SOCIETY.

The following were the awards made by the judges (Messrs. J. T. Ashby, F.R.P.S., and Furley Lewis), and it was held last week:—

OPEN CLASS.

Gold medal, "The Vesper Hour," B. C. Wickison; silver medal, "The Soothing Weed," E. H. R. Hillsworth; silver medal, "Cobbling," W. Pickering; bronze medal, "Currants," E. Seymour; bronze medal, "From Transept to Nave," S. G. Kimber.

MEMBERS' CLASSES.

Class 1.—Silver Medal, "Sunshine and Shadow," D. S. Whitelaw; bronze medal, "Sunshine in the Forest," H. R. Hill; highly commended, "Nature's Wealth," D. S. Whitelaw; highly commended, "After a Shower," C. G. Jones; commended, "In October," D. S. Whitelaw; commended, "On a Cornish Moor," H. R. Hill.

Class 2.—Silver medal, "Entrance to Choir, Rochester," C. G. Jones; bronze medal, "At Rochester Cathedral," A. Frost; highly commended, "A Norman Relic," D. S. Whitelaw; commended, "The Font, Rainham," H. Gulliver.

Class 3.—Silver medal, "Rhododendrons," E. W. Perrett; bronze medal, "Breakfast," H. Cole; commended, "John Bull," H. Cole.

Class 4.—Beginners: bronze medal, "Choir Screen, Rochester," H. C. Frost.

Class 5.—Lantern Slides: silver medal, "Margate Lifeboat," A. R. Mann; commended, "Southampton Water," W. N. Beal.

Class 6.—Hand Camera Work: silver medal, "Off to the Fishing Grounds," D. S. Whitelaw.

We are glad to hear that the exhibition was such a success that it was found necessary to keep it open for another day.

GLASGOW.

THERE was a very large collection of pictures at the annual exhibition of the Glasgow Eastern Amateur Photographic Association, opened last week in the Club rooms, Landressy Street, Bridgeton. The judges of the relative merits of the exhibits were Messrs. Wm. Crooke and Archibald Cochrane, who made awards as follows:—

MEMBERS' CLASSES.

1. Any subject: silver plaque, W. S. Crocket; bronze, M. Crosbie; certificates, John Brough and M. Wilson.
2. Portraiture: bronze plaque, G. R. Johnstone; certificates, Alex. Gault and W. S. Crocket.
3. Club outings: silver plaque, John Brough; bronze, M. Crosbie; certificate, W. S. Crocket.
4. Novices: silver plaque, J. G. S. Sproul; bronze, James Bicker; certificate, Jas. Watson.
5. Lantern slides: silver plaque, W. S. Crocket; bronze, Andrew Walker.

The special prize for the best picture in the above five classes was awarded to Mr. W. S. Crocket's picture, "Twixt Spring and Summer," a charming little woodland scene.

OPEN CLASSES.

6. Any subject (open to Federation Associates only): bronze plaques, A. W. Hill, M. Warnock, and W. Milroy.
7. Any subject (open to all): silver plaques, R. Forbes and A. Allan; bronze, S. G. Kimber and J. A. Angus; certificates, E. J. Jarvis and J. S. Andrew.
8. Lantern slides (open to all): silver plaque, R. Ure; bronze, F. G. Tryhorn; certificates, John Hobbs and G. A. Booth.

IPSWICH.

THE Ipswich Camera Club's first annual exhibit was opened on the 22nd ult. Award list:—

Section A (Open).—Class I.—Landscape, etc.: Silver medal, Mr. T. Jackson; bronze ditto, Mr. W. Clayden; gold medal for best picture in exhibition, Mr. T. Jackson. Class II.—Figure Studies and Animals: Silver medal, Mr. S. Foster; bronze ditto, Mr. G. Johnson. Class III.—Architecture: Silver medal, Mr. W. A. Clark; bronze ditto, Mr. A. E. Wiggins. Class IV.—Lantern Slides: Silver medal, "Sunshine and Shadow," Mr. H. Wormleighton; bronze ditto, "Childhood's Joys," Mr. Graystone Bird.

Section B (Members' Classes).—Division I.—Class I.—Enlargements.—Landscape, etc.: Silver medal, Mr. P. W. Elkington; bronze ditto, Mr. R. H. Sutton; h.c., Mr. R. H. Sutton and Mr. A. Leathers; silver medal for the best picture in the Members' Section, Mr. P. W. Elkington. Class II.—Architecture: Silver medal, Dr. Francis Ward; bronze ditto, Mr. A. J. Leighton. Division II.—Class I.—Landscape: Silver medal, Dr. J. Hossack; bronze ditto, Rev. N. J. Raper; h.c., Mr. R. H. Sutton. Class II.—Seascape and River Scenery: Silver medal, Mr. P. W. Elkington; bronze ditto, Rev. N. J. Raper and Mr. R. Dixey; h.c., Mr. R. H. Sutton. Class III.—Architecture: Silver medal, Mr. R. H. Sutton; bronze ditto, Mr. E. Braddell; h.c., Mr. E. Braddell. Class IV.—Figure Studies and Animals: Silver medal, Miss M. L. Steward; bronze ditto, Mr. E. Fry; h.c., Mr. R. H. Sutton. Class V.—Flowers and Still Life: Silver medal and h.c., Dr. Francis Ward.

In Section C, not for competition, several beautiful enlargements are kindly exhibited by Mr. A. B. Corder, Mr. F. W. Goffin, Mr. A. F. Penraven, Mr. J. Fenn Cole, Mr. B. Harris, and thirty pictures sent by the Royal Photographic Society.

BRAINTREE.

THE second annual exhibition of the Braintree and Bocking Camera Club took place Thursday week. A very creditable show was made, especially in the local classes, which were a decided improvement on last year. Altogether there were over 250 pictures on view, the prizes being fifteen silver and bronze medals, which were given by the president (Mr. E. B. Knobel, M.R.P.S.). Artistically-prepared diplomas were also awarded for creditable exhibits. Awards:—

Open Classes.—Landscape, River Scenery, and Marine: Silver

medal, "A Sussex Village," H. C. Bird; bronze medal, "Old and Twisted," E. B. Wain; diploma, "A Gleam of Light Duplicates," W. Clayden. Portraiture and Figure Studies: 1st, "Sea Urchins," S. J. Steele; 2nd, "An Ancient Mariner," W. H. Foxall; 3rd, "The Student," Architecture: 1st, "The Crypt, Winchester," T. Weaver; 2nd, "Transept to Nave," S. G. Kimber; 3rd, "A Norman Procession," Flowers, Still Life, and Animal Studies: 1st, "Chrysanthemums," E. Seymour; 2nd, "Daffodils," F. W. Beken; 3rd, "Geranium," A. W. Walburn. Set of Four Lantern Slides: 1st, bronze medal, W. H. Guy; 2nd, diploma, J. E. Tyler.

Club Classes.—Landscape, etc.: Bronze medal, "Pines," E. Malvern; diploma, "Ventnor," H. T. Lawson; h.c., "Silver Birches," H. Cole, and "Through the Avenue," the Rev. A. Curtis. Portraiture, etc.: 1st, "Breakfast," H. Cole; 2nd, "Age," H. Cole; 3rd, "A Portrait" (Mr. S. C. Parmenter), W. H. Tilston. Architecture: 1st, "Norwich Cathedral," H. Cole; 2nd and medal, "Old Lucerne," the Rev. A. Curtis; 3rd, "Where Time Moves Slowly," W. H. Tilston; h.c., "Breton Church," H. S. Tabor. Still Life and Animal Studies: 1st, "Chrysanthemums," H. Cole; 2nd and medal, "Animals," J. E. Tyler; 3rd, "Perfect Twins," F. Hayward. Lantern Slides: 1st, H. G. Lawson; 2nd, C. A. Carter; 3rd, J. E. Tyler. Snapshots: 1st, "Outward Bound," E. E. Malvern; 2nd, "A Street Scene," E. E. Malvern; 3rd, medal, "Uphill," H. Wardlaw Fuller; h.c., "With Wind and Tide," H. S. Tabor; "The Starter," Mrs. J. Johnson.

FORTHCOMING EXHIBITIONS.

December 2-8.—Southsea Photographic Society. Hon. Secretary, F. J. Lawton, 20, Clarence Square, Gosport.

December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-10 West 101st Street, New York.

December 8, 9, 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayr View, Muirkirk.

December 12-17.—Sefton Park Photographic Society, Liverpool. Hon. Secretary, H. E. Cubley, 3, Langdale Road, Sefton Park, Liverpool.

December 13-20.—Southampton Camera Club. Hon. Secretary, G. Kimber, Oakdene, Highfield, Southampton.

December 23-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 133, Glasgow Road, Wishaw.

January 12-14, 1905. Boston Camera Club. Hon. Sec., H. J. Hames, 65, West Street, Boston.

January 14-23, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

January 20-21, 1905.—South Essex Camera Club. Hon. Secretary, T. Michell, 180, Browning Road, Manor Road, E.

January 23-February 12, 1905.—Photographic Society of Marseille. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.

February 6-11, 1905.—Blairgowrie and District Photographic Association. Hon. Secretary, Wm. D. M. Falconer, James Street Cottage, Blairgowrie.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

February 25-March 4, 1905.—Birmingham Photographic Society. Hon. Sec., Lewis Lloyd, Norwich Union Chambers, Congress Street, Birmingham.

March 4-11, 1905.—South London Photographic Society. Hon. Sec., H. Creighton Beckett, 44, Edith Road, Peckham, S.E.

March 7-14, 1905.—Brentford Photographic Society. Hon. Secretary, F. H. Read, Ferndale, Cliden Road, Brentford.

March 20-25, 1905.—The Cripplegate Photographic Society. Hon. Sec. John B. Parnham.

June, 1905.—Northern Photographic Exhibition. Secretary, F. Issot, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

December 31.—Barnet. Nineteen classes. Prizes valued at 25s for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

March 31, 1905.—Ilford. £750 in cash prizes for negatives on Ilford plates. Ilford, Ltd., Ilford, E.

CHLORO-BROMIDE OR GASLIGHT PAPERS.

[Abstract of a communication to the International Union of Photography.]

The photographic print is the end, the negative but the means. We ought then to look upon all photographic operations as conducive to the obtaining of a perfect print, and we ought not, as so many do, to stop short when we have obtained a good negative.

The number of processes by means of which we can obtain a print are to-day very numerous, and some are more or less artistic and others more or less convenient. Let us then examine them with this in view.

Albumen paper certainly gives us permanent prints, but its printing is long and the manipulation complicated. Turning to the papers with gelatine and collodion surfaces, they are rather more rapid than the last and more convenient to manipulate; but this convenience of manipulation results in a very ephemeral stability inferior to that of albumenised paper. Moreover, the effect of gelatino and collodion prints, with their glossy surfaces, leaves much to be desired from an artistic standpoint. If these papers continue to be used by amateurs it must be put down to conservatism and habit. One cannot praise their simplicity of manipulation, for it is not more difficult to obtain a print by development than by printing out.

The process of printing on bromide paper is a big step in advance of printing out. The prints obtained are very permanent, if they are properly washed; printing is rapid, for one is not dependent on the caprices of the light, and instead of in the dull days having to wait for days for a complete print, it can be made in a few seconds. The manipulation is not more difficult than printing out, and the deep blacks and pure whites give the print a very pleasing effect, resembling that of an engraving.

There are certain inconveniences in bromide printing, as, for instance, it must be worked in a red light, and it is therefore difficult to see the correct moment at which to stop development. The exposure, too, must be very exact, for if the print be under or over-exposed the chances are that it will be useless; then again the black colour, which cannot be varied, is not suitable for all subjects.

Another kind of development paper is the chloro-bromide, and this possesses some advantages over bromide paper.

Chloro-bromide paper is one in which the image is latent, and the development is formed by a mixture of chloride and bromide of silver. Although so much slower than bromide paper, it can be exposed to artificial light, although daylight can be used, but it is not advisable, as daylight is so variable.

The diminished sensitiveness constitutes one of the great advantages of this paper, as it is possible to manipulate by white artificial light and the red lamp is dispensed with. This advantage is of great importance to the numbers of amateurs who have not a spacious dark room, and the paper may be printed and manipulated at about a yard from an open gas flame.

For a normal negative the exposure is from one to ten seconds to diffused daylight, two yards from a window, ten to fifteen minutes at about ten inches from a petroleum lamp, eight to twelve minutes to a kerosene gas burner, and from seven to ten minutes to a 16 candle power electric light, and about one inch of magnesium ribbon at about eighteen inches, and from half to one and a half minutes to an incandescent gas burner. Magnesium is the most satisfactory light, its cost is little, and the exposure so short. Of course, the exposure varies with the density of the negative, but it may be varied by altering the distance between negative and light or burning a longer or shorter piece of ribbon.

Unlike bromide paper, the exposure here need not be exact, and chloro-bromide paper has the useful property of giving a variation of tone with the variation in exposure. The scale starts with greenish-black, passing through black, warm black, brown, sepia, and blood-red to yellow; the shorter the exposure and the more energetic the developer the more the tone tends towards black. The table given below gives the various tones obtained with different exposures and different strengths of developer, but if the tone is not that which was desired the print is by no means useless.

Now, to obtain with certainty the desired tone the exact exposure required to give black tones should be found by trial and error, and when it is only necessary to alter the time of exposure and the developer according to the table.

The developers for these papers should always contain potassium bromide, the absence of which causes fog. This is possibly the cause

of the non-success of some amateurs with this class of paper. The best developers are hydroquinone and edinol, the others do not enable such a variety of tones to be obtained. For hydroquinone the following should be used:—

A.

Boiled water	1,000 c.c.
Sodium sulphite (cryst.)	125 g.
Hydroquinone	15 g.
Sodium carbonate (cryst.)	250 g.
Potassium bromide	10 g.

And for edinol—

Water	1,000 c.c.
Acetone sulphite (Bayer)	50 g.
Edinol	10 g.
Sodium carbonate (cryst.)	35 g.

Tone of the dry print.	Exposure.	Hydro. devel. A to be diluted with	Edinol to be diluted with
Blue black	Normal ..	undiluted ..	8 parts water + 0.3 potass. carb.
Green black ...	Normal ..	5 parts water	9 parts water.
Olive green ...	Twice normal	5 " "	
Sepia ...	Three times normal	10 " "	
Brown ...	Four times normal	10 " "	9 parts water + 0.3 parts conc. sol. of acetone sulphite or 0.15 dry acetone sulphite.
Red brown ...	Six times normal	20 " "	
Yellow brown	Eight times normal	20 " "	
Blood red ...	Nine times normal	30 " "	50 parts water + dry acetone sulphite 0.5 parts.
Red orange ...	Ten times normal	30 " "	
Yellow ...	Twenty times normal	40 " "	

By adopting this method of working identical results are obtainable every time with the greatest ease.

LEOPOLD LÖBEL.

THE DEVELOPMENT WITH AN ACID DEVELOPER.

M. MAES, the Editor of the "Journal de Photographie Pratique," points out in a recent number that having experimented with the method proposed by M. Balagny of using amidol with an acid bisulphite solution, he was led on to try other developers in similar fashion with excellent results, and possibly the following abstract of his notes may be of interest.

For some considerable time it has been obvious that photographers had gradually been led on to use far too much alkali in their developers as a rule, and that though more time was needed, yet finer results were obtainable by using an acid developer. Strongly alkaline developers not only tend to fog the plates, but also give one no time to correct errors in exposure.

The formula actually used is as follows:—

Rain water, filtered ...	1000 cc.	1 oz.
Sodium sulphite (anhydrous) ...	20 g.	10 grs.
Potassium carbonate (anhydrous) ...	8 g.	4 grs.
Pyrogallol acid ...	8 g.	4 grs.
Potassium bromide (10 per cent sol.)	48 dps	24 dps.
Glacial acetic acid ...	48 dps	24 dps.

The equivalent English measures are given against the metric, or rather, the same ratio, practically, per ounce of solution.

The development with this solution is slow; the image appears in about two minutes, and the total time of development is from ten to twenty minutes. Thus slowed, the development does not give those disadvantages which are always the accompaniment of strongly alkaline developers, such as excessive densities, fog and other known defects. On the contrary, the negative presents a fineness and a gradation which is comparable only to those obtained in the old collodion days. It is soft, full of detail, harmonious, yet vigorous without harshness. The most opaque parts yet remain permeable to light, and the half-tones and the delicate shades are completely preserved.

There is a grand margin of latitude, and there is plenty of time

to correct errors. If, for example, the image appears before one and a half minutes, one may be sure that the exposure has been too long, and two or three drops of bromide or acetic acid may be added, and this acts as a very strong restrainer. If, on the other hand, the image does not appear till after two minutes, it is a sign that the exposure was too short, and the addition of a pinch of carbonate of potash may be added.

Development with an acid possesses other properties, such, for example, as the suppression of halation to a great extent. It may be said that our formula is not actually an acid development. This is quite true. The addition of the acetic acid produces acetate of soda. This is obviously correct, but there may be other combinations formed, for a developer to which acetate of soda is added does not produce the same results.

Experiments have also been made by M. Maes of other developers with equally satisfactory results. Thus, amidol gives equally good results with bromide and chloro-bromide papers if the following formula be used:—

Water	1000 cc.	1 oz.
Sodium sulphite (anhydrous)	20 g.	10 grs.
Amidol	8 g.	4 grs.
Potassium bromide (10 per cent. sol.)	64 g.	32 grs.
Glacial acetic acid	64 g.	32 grs.

The development is less rapid than usual, but the whites remain pure and the blacks vigorous, and the tones cold.

Lantern plates give equally satisfactory results, pyro gives browns and sepias, and amidol blacks and whites. Ortol and adurol give equally satisfactory results, but pyro is the most satisfactory.

Last year Professor Valenta called attention to the use of an excessive quantity of alkali when pyro was used, as the developing agent, and proved that when just sufficient alkali was used to form a mono-phenolate of the base, a quick and clean pyro developer was obtained, which was more nearly like the rapid working developers, like metol, etc. The formula is:—

No. 1.

Sodium sulphite	80 grs.	160 g.
Pyrogallol	12½ grs.	25 g.
Water	½ oz.	500 cc.

Dissolve and make up the total bulk to 1 oz. or 1000 cc.

No. 2.

Caustic potash	5½ grs.	11.5 g.
Or caustic soda	4 grs.	8.0 g.
Water to	1 oz.	1000 cc.

For use, mix equal quantities of No. 1 and No. 2 and water.

Those who have not tried this particular formula should give it a trial, as it works quite cleanly, without any stain or tendency to fog or frilling, and gives great density with rapidity of action.

New Books.

"The Englishwoman's Year Book," 1905. Edited by Emily James and published by Adam and Charles Black, Soho Square, W.

We have been informed by certain ladies of our home circle that this is an excellent book for women, and contains all that they are ever likely to want to know, from nursing to woman's suffrage. Being, however of the opposite and less noble sex, we instinctively turned to the article on "Photography," which is included in the second section of the work devoted to employments and professions, and find there the following advice, which may be entertaining, if not useful, to our readers:—

"PHOTOGRAPHY.

"Photography as a profession offers a considerable opening to an intelligent woman with some artistic capacity. But though trained intelligence is probably the first essential to success, practical business capacity and energy are most important too. For in this, as in all other professions, the market is already overstocked, and the prizes, though large, are few. There is one serious drawback to its adoption as a business, and that is the difficulty of obtaining adequate training. The Regent Street Polytechnic advertises a 'professional course,' the fee for which is £52 10s.; but as there is no studio at the institution for the use of students, the students must, in consequence, find their own studio to practise in; the expense of such a training becomes, of course, considerable. The best way to get the requisite knowledge

and experience is probably to put up a portable studio in the back garden, which can be done for under £50, buy a shelf full of good photographic manuals, such as Wail's 'Dictionary of Photography' and the very practical little manuals on the various processes involved, published by Percy, Lund, and Company, and the work hard for a year, pressing all one's family and acquaintance into the service as sitters, and gradually getting enough paying work, as it improves in quality, to pay the necessary current expenses. But though a great deal may be done in this way, there is still much which cannot be learnt except from an experienced teacher, and no one should think of starting as a professional until they have worked for at least two or three months as a pupil in some well-known studio. In order to accomplish this would be well to fix on some really first-rate photographer in a provincial town, and then boldly write and ask if he will take a pupil. If, as we are assuming, the intention be ultimately to start in London, he will not be deterred from saying Yes by any fear of further overstocking his own market. Then when the necessary training is obtained, there is still the question of capital to be considered, and you are convinced that to start adequately in London, with a properly equipped studio, requires a sum of at least £400. But if such a sum be not forthcoming it would be much wiser for the would-be landscape photographer to give up all idea of London, and settle in some country district, where rents are cheap, and she has friends to back her, and where, if she cannot hope to rival Miss Alice Hughes, Miss Jennings, or Miss Macnaghten, she will probably be able to make enough to live upon quietly and comfortably."

"For women who undertake work for photographers at regular salaries, the average remuneration for retouching is 25s. to 40s. per week. Spotters and mounters usually earn from 15s. to 20s. per week, though an exceedingly capable woman might earn more in a good studio. For working up, salaries from 15s. to 50s., according to quality; but the profession is much overstocked."

"The Canterbury Pilgrimages." By H. Snowden Ward. Published by Adam and Charles Black, Soho Square, London, W.

Mr. Snowden Ward has now become identified with a particular class of work, in which he takes some special subject such as the life and exhausts it, and in which he is so ably seconded, as far as illustrations go, by Mrs. Ward. "Shakespeare's Town and Times" and "The Real Dickens Land" are similar and previous works by the same authors, because one must not separate man and wife. The quote from the introduction, "The interest of this book centres around two great tragedies, the fall of Thomas the Archbishop and the fall of the worship of Thomas the Martyr. These are bound up with a part of a still greater tragedy, the collapse of a grand religious movement, which, with all its human imperfections and shortcomings, had done a noble work for those who needed it most—the poor, the weak, the sorrowing."

Tracing the life of Thomas Becket through all his trials and perils, we are led up to the final causes of the catastrophe and the results that followed, and it is obvious that the information given is as reliable as it is possible for careful research and comparison of the older records to make it. The growth of the worship is described in an equally satisfactory manner, and also the tragedy of its fall, as Mr. Ward terms it.

Naturally, Geoffrey Chaucer, that most excellent chronicler in verse of the times, tales, and customs of a couple of centuries later, is largely drawn upon, and we are introduced to the several and principal characters of the pilgrimages, which had become the fashion, and each day we are led along the pilgrims' way with pleasant chat and story and excellent illustration.

We note that in dealing with that particular section of the district, Eastwell Park, a locality with which in boyish days we were so familiar, Mr. Ward suggests that what we knew as the Pilgrims' Way was but a trade road. He almost convinces us, and yet we are loath to lose one more cherished remembrance of our boyish days. Then, again, we note that the old legend as to the yaws being planted along the "Way" as way-marks, and that they were called "palms," is seriously discounted by the author, and rightly, too. The old yaws so frequently met with on the chalky downs of Kent and Sussex were undoubtedly planted to provide the necessary wood for the bow so long the weapon of the English.

The book is extremely interesting, and one gathers a very clear idea of the old times from it, and its value is much enhanced by the very large number of extremely fine illustrations provided by Mrs. Ward.

New Materials.

born Photo-Calendars and Sensitised Christmas Cards. Houghtons, Limited.

The increasing popularity of calendars as Christmas cards has led Messrs. Houghton to introduce a series of calendars mounted on cards measuring $7\frac{1}{2}$ in. by $5\frac{1}{2}$ in., provided with openings of various sizes, into which an unmounted photo can be slipped in the usual manner. The calendars are stocked in two colours, green and red.



with bevelled edges and white bevelled openings with fancy blocked design. The word "Calendar" is stamped on the tear-off portion. They can be suspended by means of the brass ring at top. The cards are supplied in shilling packets of one dozen, of four different designs, and two black paper masks. Half of the front or



the reverse side of the card is reserved for a suitable greeting, surrounded by an artistic border. At the foot of this design there is a space for the signature of the sender, while the whole of the back is coated with gaslight emulsion, on which the photographer can print one of his own pictures. The card forms at once a pleasing and dainty memorial of the festive season, and it is not likely to be thrown away as a more impersonal card.

Carbon Tissue and "Court" Postcards. The Rotary Photographic Co., Ltd.

These tissues and postcards were briefly noticed in our issue a fortnight ago; since then we have had an opportunity of using the carbon tissue, seventeen pieces of which were sent us, and of the following colours:—Pure black, engraving brown, photo brown, brown, red chalk, purple, red, dark blue, light blue, light green, dark olive, violet, sea green, transparency black, transparency sea green, warm sepia, and cold sepia. Blue, red, and yellow tissues for colour work are also supplied. The tissues are of the highest possible quality, and give us excellent results. The process of sensitising is simple, and full particulars of how to do it and many other interesting particulars for working the whole process are given in the pamphlet sent out with each packet.

The "Court" postcards are quarter-plate size, and have rounded

edges. Other sizes introduced by the Company are the ordinary size ($5\frac{1}{2}$ by $3\frac{1}{2}$), panel ($5\frac{1}{2}$ by $1\frac{1}{2}$), and midget ($2\frac{1}{2}$ by $3\frac{1}{2}$). The cards can be obtained in "Rotograph" rapid bromide and "Rotox" slow gaslight emulsions, matt and glossy. They give us excellent results; the gaslight when developed with rodinal, ferrous-oxalate, or metol-hydroquinone, and the "Rotograph" cards when the "Rotograph" special developer, iron, amidol, metol, eikonogen, or hydroquinone. All formulæ are given in each packet. We note that the Company's bromide paper is now supplied in seven grades, as follows:—(a) Thin glossy, (b) thick glossy, (c) thin matt smooth, (d) thick matt smooth, (e) thin matt rough, (f) cream tinted thick rough, (g) thick rough white.

Negative Vignettes, Masks, and Discs. Sold by Kodak, Ltd., Clerkenwell Road, E.C.

So many now use photography for the preparation of Christmas and New Year cards that this series of paper negative vignettes and masks and discs will be readily welcomed, and they act equally well with a printing-out as with a development paper, and they measure $5\frac{1}{2}$ by $3\frac{1}{2}$, so can be used for the popular picture postcard if desired. The designs are neat, and the masks of various shapes.

Cubrome. A. Edmund and Co., Ezra Buildings, Columbia Road, London, E.

Cubrome is a bleaching solution for intensifying negatives and bromide prints by the copper process, thus avoiding the use of the more poisonous mercury salts, and giving more permanent results. The negative or print to be intensified is placed in the Cubrome solution, which, by the way, may be used over and over again until exhausted, until evenly bleached, it is then washed in water for a few minutes in a subdued light or in the dark. If a plate, it is then darkened by means of a ten per cent. solution or any ordinary developer. Bromide prints are darkened by placing in a solution composed of 20 minims of the silver nitrate solution, of any diluted plate developer, then well washed and cleaned in a weak solution of nitric acid.

Instructions are also given for toning bromide prints to a sepia tone with the aid of Cubrome and sodium sulphide. Messrs. Edmunds and Co. supply the sulphiding solution for toning in bottles containing 8 oz., which, when diluted to the correct strength, make one gallon of solution, this is called Cubrome solution No. 2.

The print is first of all bleached in Cubrome, as above, and washed, it is then placed in a bath made by mixing one part of the No. 2 solution with twenty parts of water, wherein the print quickly assumes a rich sepia colour.

Prints toned by this method show no reduction of intensity in the original scale of gradations.

When bleaching with Cubrome for sepia toning only, there is no necessity to keep the dish covered to exclude light, neither is it so necessary to be careful not to wash too long before and after the short immersion in the dilute nitric acid bath, as is the case when bleaching with a view to intensification.

We have also secured some very good results by bleaching in Cubrome and toning in the following sulphocyanide and gold bath:—Gold chloride, 2 grains; ammonium sulphocyanide, 7 grains; five per cent. solution of .880 ammonia, 1 drachm; water, 2 oz.

In making up the above bath, add the gold to the sulphocyanide (dissolved in a little water), and make up to 2 oz. with water, and then add the ammonia slowly, stirring the while, when the solution should become colourless. Toning takes fifteen to twenty minutes, and the result is a purple to a purple-black colour.

The "Leto-Gaslight" Paper and Postcards. Sold by the Leto Photo Materials Company, Ltd., 9, Rangoon Street, E.C.

A greater variety in texture of surfaces, which is specially hard, and a great freedom from fog, are the characteristics claimed for the above. The surfaces are matt smooth, which has now a more delicate surface, and yields softer results than that of last season; glossy, rough, white, and cream crayon in both rough and smooth, give one a good choice. Any good developer may be used, but for soft effects and brown-black tones the following is suggested, and it gives excellent results:—Aduro-Schering, $\frac{1}{4}$ oz.; soda sulphite, cryst., 2 oz.; water, $12\frac{1}{2}$ oz. Potass carbonate, $\frac{1}{4}$ oz.; water, $12\frac{1}{2}$ oz. Shortly

before use mix equal parts of each. Development takes about 1½ minutes.

Special directions are issued for obtaining coloured tones on these papers by using the ordinary uranium or ammonio citrate of iron and prussiate, brown, red, and blue tones can be obtained, whilst for green tones the following is suggested:—Water, 2 oz.; oxalic acid, 90 grains; chloride of vanadium, 15 grains; sesquioxalate of iron, 7½ grains; perchloride of iron, 7½ grains; red prussiate of potash, 15 grains. Dissolve in the order named, one by one, and make up to:—Water, 35 oz. After toning, wash in water until the whites are clear. The tones given by this are very striking and satisfactory, and form a welcome change to the ordinary ones.

An Incandescent Studio Lamp. Holmes Bros., Manchester.

Messrs. Holmes Bros. have introduced a novel form of studio gas lamp for use with incandescent mantles which gives a light equal to over 700 candles. Five semi-bunsen burners are used, backed up by a 38 in. reflector, which may be raised or tilted, all complete, on a neat and portable stand. It is just the thing for the popular midget and stamp photographers. The lamp is also made with seven burners, giving a light of over 1,000 candle power, which can be used for cabinet busts. The lamps are fitted with a by-pass tap, so that it is not necessary to keep the mantles always in use, and the burners may be raised or lowered as desired. With a good portrait lens and a rapid plate good results may be obtained with about three seconds' exposure.

"Tiger Tongue" Bromide Paper. Sold by Elliott and Sons, Barnet.

To meet the demand for an extra rough bromide paper specially suitable for exhibition work, Messrs. Elliott are now issuing one under the above happy title. It has an extremely pleasing surface of rough texture, admirably suited for large work and broad effects, and the emulsion is of that high character, with rich, deep blacks and pure whites, as possessed by their other grades. Of course, any developer may be used, but the special metal developer recommended seems to suit this paper better than others. The formula is:—No. 1 Solution: Water, 80 oz. or 1,000 c.c.; metol, 400 gr. or 11 grammes; soda sulphite, 8 oz. or 100 grammes; potassium bromide, 50 gr. or 1.5 grammes. No. 2 Solution: Water, 20 oz. or 250 grammes; potassium carbonate, 2 oz. or 25 grammes. For use, take three parts of No. 1 to 1 part of No. 2. Development should be complete in about 1½ minutes. For those who desire to obtain sepia tones—which are, judging from our trials, extremely pleasing on this paper—the following is recommended:—Hot water, 70 oz., or 100 c.c.; hypo, 10 oz., or 14 grammes; dissolve and add alum, 2 oz., or 2.75 grammes. This bath must not be filtered, and can be used repeatedly. Place the fixed and washed print in the above solution for ten minutes, then raise the temperature of the solution to about 120 deg. Fahr. (about as hot as the hand can bear), and keep at this temperature until the print is toned, then immerse for ten minutes in alum bath, and well wash. Alum bath: Water, 10 oz., or 1,000 c.c.; alum, 1 oz., or 100 grammes.

A SERIES of lectures has been arranged to be given by various specialists at the London County Council School of Photo-Engraving and Lithography, 6, Bolt Court, Fleet Street, E.C., on Thursdays. Admission is free by ticket obtainable at the school, or from the Executive Officer (Technology Section), Education Department, Victoria Embankment, W.C. The following is a list of lectures, the first having been delivered last night by W. Boutall, Esq.:—December 8, Snowden Ward, Esq., "Press Illustrations, with Points about Copyright"; December 15, Major-General Waterhouse, "Making Illustrations in India"; January 26, 1905, A. G. Cooke, Esq., "The Light and Power of Modern Illustration—Electricity"; February 2, E. F. Strange, Esq., "Lettering"; February 9, Frank Colebrooke, Esq., "The Illustrator and the Advertiser"; February 16, J. A. Corey, Esq., "Duplicate Plate Making—Modern Methods of Electrotyping and Stereotyping"; February 23, R. W. Sindall, Esq., F.C.S., "How Paper is Made"; March 2, Douglas Cockerell, Esq., "The Making of a Book"; March 9, J. J. Waddington, Esq., "The Humours of Process Engraving"; March 16, W. B. Dalton, Esq., "Historic Study in relation to Modern Illustration"; March 23, C. T. Jacobi, Esq., "The Printer and the Illustrator"; March 30, C. G. Zander, Esq., "Harmony and Contrast in Colour Mixing"; April 6, W. Strang, Esq., "Etching and Engraving"; April 13, Emery Walker, Esq., "Printing as an Art." As accommodation is limited, it is necessary that application should be made, at once, for tickets to admit to all or any of these lectures. Each lecture will commence at 8 o'clock prompt.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Nov.	Name of Society.	Subject.
3.....	North Middlesex Photo. Society	Annual Exhibition.
5.....	Society of Arts	Musical Wind Instruments. Mr. Blackley.
5.....	Luton Camera Club	Exhibition of Photographs by Members of the R.P. Affiliated Societies selected from Prints sent in for 1904 Competition.
5.....	Southampton Camera Club	The Kodak in Peace and War. Lecturer, Mr. H. C. Shelley.
5.....	Camera Club	The Antarctic Expedition. Illustrated by Engineer Lieut. Reg. W. Skelton.
5.....	South London Photo. Society	Lecturette Prize Competition.
5.....	Bowes Pk. and Dis. Ph. Soc.	Mr. W. F. Whymn.
6.....	Nelson Photographic Society	Members' Lantern slide Evening.
6.....	Glasgow Southern Photo. Assn.	Gun-Bichromate Process, with illustrations by Miss Warburg, Messrs. Page, J. M. C. Grove, Jas. Gale, and prominent Gum Workers. Dr. Development. Mr. C. Vero.
6.....	Border City Camera Club	A Holiday in Swazze. Messrs. Lane, W. Selfe, J. J. Westcott.
6.....	Hackney Photo. Society	English Architecture, from the quest to the Reformation. Mr. Howdill, A.R.I.B.A.
6.....	Sheffield Photo. Society	The International Exhibition of 1904, U.S.A. Mr. Walter F. Reid, F.O.S.
7.....	Society of Arts	Architectural Photography. Mr. Bennett, F.R.P.S.
7.....	G.E.R. Mechanics' Institution	Enlarging by Artificial Light. Illustrated. Mr. W. Emery.
7.....	Cricklewood Photo. Society	Members' Night.
7.....	Boro' Poly. Photo. Society	Lantern Slide Competition.
7.....	North Middlesex Photo. Society	Lantern Night.
7.....	Redhill and Dis. Camera Club	Alpine Mountaineering in Scotland. Illustrated. Rev. Archd. E. Ross, B.D.
7.....	Edinburgh Photo. Society	Members' Folio.
8.....	Hull Photographic Society	Lantern. Lecture by Mr. Mortimer.
8.....	London and Prov. Photo. Assn.	Burma. Sir Frederic Fryer, K.C.S.
8.....	Society of Arts	Colouring Lantern Slides with Aniline Dyes, &c. Mr. W. Bagshaw.
8.....	Batley and Dis. Photo. Soc.	Hand Camera Work. Mr. C. F. Ince.
8.....	Liverpool Amateur Ph. Assn.	Platinotype. Demonstration by Platinotype Company.
8.....	Watford Camera Club	"Rotary" Bromide Papers. Demonstrated. Mr. W. A. Sims.
8.....	Rugby Photographic Society	Retouching for Amateurs. Mr. R. G. Wadding.
8.....	Ealing Photographic Society	Notes on Hand Camera Work. J. D. Gibson.
8.....	Richmond Camera Club	Fash-light Work. Mr. B. O. Pears.
8.....	Rodley and District Ph. Soc.	Week-end Wanderings. Mr. W. Paterson.
8.....	Aberdeen Photographic Assn.	The London Photographic Exhibition. Mr. H. Langford Lewis.
9.....	Watford Photographic Society	Bromide. Printing and Enlarging. Mr. F. C. Hart.
9.....	West London Photo. Society	Members' Lantern Slide Competition.
9.....	Wakefield Photo. Society	Reduction and Intensification. Mr. Bedding.
9.....	Boro' Poly. Photo. Society	

ROYAL PHOTOGRAPHIC SOCIETY.

TECHNICAL Meeting, November 22. Mr. W. Gamble in the chair. Mr. C. G. Zander read a paper on "Trichromatic Printing." He dealt in this paper only with the pigments or printing inks required. A knowledge of the principles upon which three-colour work is based was assumed, and only a brief recapitulation was given. typographical reproduction positive printing blocks are made by printing in pigments, which, broadly speaking, may be termed complementary to the respective primary colour sensations. Thus the negative block will be printed with a colour reflecting all the spectral rays except red, viz., cyan blue (peacock or turquoise blue); green negative block with a colour formed by the two sensations stopped out, viz., crimson or magenta; and the blue-violet negative block in the same way with yellow of the hue of the spectrum line. He suggested that all who engage in three-colour work should call yellow, red, and blue the primary colours, and when speaking red, green, and violet, call them the primary light sensations. Zander then dealt with the laws which govern all pigment mixtures. It was useful to arrange all the pure spectrum colours and the complementary hues of purple or magenta round a circle, thus forming a curving range of colours. It is best to arrange them so that the complementary colours are placed at the two poles of a diameter. Blue is placed in the centre, and the subdued or saddened hues result from the admixture of neutral grey to the pure colours are placed

the circle at a proper distance from the black. A coloured gram so built up was projected upon the screen, and Mr. Zander showed how, within certain limits, it was possible to reproduce all primary colours used in the graphic arts, painting and printing. There were, however, numerous bright colours which cannot be obtained by any possible mixtures of the three primary colours, viz., scarlet, orange, emerald green, ultramarine blue, and the brilliant hues of the aniline violet. Here one perceives at the limits of three-colour work. The assertion that three-colour printing can produce anything, and will ultimately entirely supersede chromo-lithography, with its numerous printings, was one with which Mr. Zander disagreed. The range of colours in the three-colour method is strictly limited, whilst that of chromo-lithography is quite unfettered. The latter had the advantage over the former that it gave homogeneous flat shades and tints, and delicate gradation with ease, certainty, and evenness through long runs which three-colour work could not hope to achieve so satisfactorily in its present comparatively undeveloped state, particularly in half-tone printing. Chromo-lithography, on the other hand, could not hope to give the minuteness of detail which three-colour printing afforded through the aid of photography. Both processes, therefore, have their sphere of work. Mr. Zander pointed out, however, that chromo-lithographers had made three-colour photography serve them in the analysis of any given original, and that by its means they had been able to reduce the number of printings which would result from an ordinary colour analysis made by the unaided eye of the artist. Mr. Zander then defined the ideal inks for three-colour printing as transparent in two-thirds of the spectrum, with a steep absorption band covering the third part, which corresponds with the main portion of the colour-sensation curve transmitted by the relative negative. These three absorption bands should cover, as nearly as possible, the whole of the spectrum when placed side by side. The position of the two dividing lines of the three bands should be, roughly, the "B" and "F" spectrum lines. Mr. Zander said that there was, however, a fairly great latitude permissible in the hue of the printing colours. The individuality of the printer was an important factor. With the same blocks, machine, paper, and inks hardly any two printers will produce identical results. Some use ink sparingly, others like it to run freely, some work cleanly, others like to add all sorts of concoctions into the ink. Other factors are the press, which must register accurately, the paper (note the difference caused by printing on unsized and on highly calendered paper), the blocks, and the inks. The inks which approach the ideal conditions most nearly are of aniline lakes of a more or less fugitive colour in direct sunlight. They are in consequence useless where permanence is essential. Such inks, however, besides being fugitive, have less covering power, and reflect too much white. In short, the ideal inks do not exist, and if they were available, the blockmaker still is very deficient. The commercial or permanent inks differ from the theoretic in several respects. The red and blue lack luminosity, and cannot produce such brilliant secondary colours as violet, magenta, scarlet, orange, green, peacock blue, etc. The reds are deficient in violet, and the blues in green. The yellow should be somewhat greenish, for the reason that the red has an excess of yellow and the blue too much violet. A slightly reddish yellow would therefore give too dirty a green. To produce the best possible results, however, one should choose the inks first and adapt the photographic process to them. Mr. Zander advised, therefore, that with red and blue as nearest approached the scientific ideal should be taken—the red luminous and purplish, and the blue greenish. The yellow must be of the correct hue—deviations in it are more noticeable than in the red and blue. The blockmaker must then strive to work to the selected inks, which should not be changed without ample reason. Mr. Zander expressed the belief that blockmakers themselves were largely responsible for the unsatisfactory condition of printings. The inkmaker was also no paragon, and between the two the printer's lot was not a happy one.

RICHMOND CAMERA CLUB.

On 24th ult. a discussion took place on "Animal Photography." It was opened by Dr. Rodman, who began his remarks by stating the principal requirements for success in that class of work. These he enumerated as: patience, a good and suitable light, rapid plates, and a quick lens—but, before all things, patience. It is often necessary to wait for a long time before the subject will assume a suitable

attitude for a picture. The light must be good, but not too strong, or hard pictures lacking in detail will result. Rapid plates, and a lens working at a large aperture so as to secure good results with short exposures, are indispensable.

For the purposes of the evening, Messrs. Newman and Guardia had kindly lent Dr. Rodman one of their new "Square Reflector Reflex" cameras, which are specially adapted for scientific work, such as animal photography. This is a hand camera of the highest quality as an instrument of absolute precision, and is equally suitable for the amateur or the expert. It is of the single lens reflex type, in which the image can be seen and accurately focussed right up to the moment of exposure by means of a square reflector which shows the full area of the picture, both horizontally and vertically at the same time. A special binocular focussing eye-piece can be provided for focussing critically the most difficult subjects, and a back focussing screen enables the camera to be used for stand work.

A special feature of this new type of camera is that it takes lenses of normal focus and also long focus and telephoto lenses. The camera shown was fitted with a Zeiss Double Protar, series VIIa, $5\frac{1}{2}$ in. focus, working at $f/6.3$, the back combination having $9\frac{1}{2}$ in. focus, and working at $f/12.5$, the double extensions being effected without racking. A notable feature of the camera is that all the mechanism, including the release, is on the right hand side, leaving the left hand free for holding the camera, a great advantage in slow exposures. It has a rotating back, which takes a dark slide, a changing box, or a roll holder. Mr. Guardia also procured and lent for the occasion a very fine set of photos of bird life taken by Mr. Smith Whiting, and a unique enlargement from a quarter-plate photo of a sitting hare taken by Dr. Frank Penrose with a single combination of 13 in. focal length, all of which were taken with "N. and G." Reflex cameras.

After these had been examined, a number of slides by Dr. Rodman, Messrs. Gibson, Cheese, Dale, and Major Latham were thrown upon the screen. A few members made further remarks upon the subject, and the meeting was terminated with a vote of thanks to Dr. Rodman and those who had shown the slides, and also to Messrs. Newman and Guardia for their contribution to the evening's exhibition.

ABERDEEN.

UNDER the auspices of the Aberdeen Photographic Association, Mrs. W. M. Ramsay, on Friday night, delivered a lecture entitled "With my Camera in Asia Minor." The announcement of the lecture drew a large attendance to the society's rooms, and a number of ladies were present. The lecture, though informal, was delightful. It dealt with the districts covered by the recent archaeological researches of Professor Ramsay, and the historical references were blended with many diverting reminiscences of the adventures of the party, which included Professor and Mrs. Ramsay, their son and daughter. Many glimpses were given of picturesque scenery, of mosques and minarets, of ancient monuments and temples and tombs, and there were brought into relief various racial types and native customs, while over and above all the maladministration and general incompetence of the Turkish Government were vividly emphasised. Beginning at Tarsus, the lecturer, by means of a varied and beautiful collection of slides from photographs taken by herself, took her audience over a very wide and scattered but classical region, including Iconium, the Taurus Mountains, the Cilician Gates, Smyrna, Laodicea, Philadelphia, Thyatira, Pergamos, and Sardis. The lecture was bright and racy, but full of information, and the personal allusions it contained gave it added piquancy.

CROYDON CAMERA CLUB.

NOVEMBER 23.—"The Hand Camera and How to Use It," in Mr. F. M. Sellors's hands, formed a most instructive and interesting topic, but which, owing to the extent of the ground covered, cannot adequately be dealt with in condensed form. The various types of cameras, magazine, folding, roll-holder, flat film, twin lens, reflex, including focussing cameras and those of the so-called fixed focus, were each in their turn considered, and their respective merits and demerits pointed out. A hand-camera was essentially a compromise, and a gain in one direction was almost invariably accompanied by some sacrifice in another. As to finders, Mr. Sellors preferred a full-size one, by which focussing could be done, as in the reflex and

twin-lens patterns. It was, however, 'unfortunate' that with the reflex type the release of the mirror frequently created a jar at the critical moment, rendering all but high-speed exposures out of the question. A rectangular folding wire finder, if properly used, indicated correctly, but necessitated a somewhat awkward, and invariably conspicuous, method of holding the camera. With reference to shutters, in Mr. Sellors's opinion the focal-plane undoubtedly held the premier position for all-round work, owing to its high efficiency, but whatever form of shutter was adopted, very little reliance should be placed on any speed indicator supplied with it.

In the discussion which followed, Mr. Rogers said he had found supplementary lenses, of the planiscope type, useful for lengthening the focus. Mr. Kough pointed out that the ordinary roller blind shutter gave nothing between a time exposure and a reputed 1-15th second. The slowest "instantaneous" exposure might, however, be materially lengthened, by attaching to the setting-cord small pieces of lead. During the evening a question arose as to whether the position of a light filter had any effect upon exposure. Mr. Salt said, so far as he could see, a filter stopped the same proportion of incident light whatever its position, whether in front or behind the lens, or immediately adjacent to the plate, and the necessary exposure would be the same in all cases, but this view was not shared by Messrs. Sellors, Terry, Isaac, and many others.

SIDCUP LITERARY AND SCIENTIFIC SOCIETY.

It was a large and delighted gathering that assembled at Sidcup Public Hall recently on the occasion of the annual conversation held under the auspices of the Sidcup Literary and Scientific Society. The hall had been decorated with great taste, a feature being a floral screen, composed of a series of arches arranged in front of the platform. About the platform graceful palms were arranged, and large full-blossomed plants of heather were placed along the edge. The body of the hall was prettily arranged with artistic devices. As might be expected from such a society—whose aims and objects in Sidcup are increasingly appreciated, as shown by the rapidly increasing membership—intellectual feast was on this occasion allied with social enjoyment. An excellent programme of orchestral music was rendered by members of the Sidcup Musical Society, under the direction of Mr. A. E. Butterworth, and with Mr. E. Bloxham as leader. Mr. Clayton Beadle was busy throughout the evening explaining the methods of manufacturing artificial silks from pinewood, with the aid of chemicals. Some beautiful specimens of brocade and other silken materials, which were displayed to view, demonstrated the wonderful results that can be obtained from crude firewood when submitted to chemical treatment. Mr. Beadle is one of the patentees. Dr. Stevens, his partner, rendered him valuable assistance and devoted most of the evening to demonstrating the manufacture of hand-made paper, and paper-making generally was explained with the aid of various models of machinery, chemicals, and materials. A series of photographs was also shown illustrating the development of the industry, from the tree logs to their conversion into paper. An instrument was exhibited for the first time—an invention of Dr. Henry P. Stevens' for measuring the qualities of blotting papers. Mr. Doncaster, who was representing Messrs. Sanger Shepherd and Co., gave a most interesting demonstration of colour photography with the aid of numerous lantern slides made from the actual photographs. The most beautiful colours were shown to be capable of faithful reproduction from Nature by means of the camera. In the small hall Mrs. Scott repeated to smaller but admiring gatherings her photographic illustrations of the growth of plants, as shown before the British Association this year. The gradual opening of buds and leaves was illustrated by the cinematograph. Mrs. Scott explained that some of the photographs took three weeks to complete.

At Falkirk, a man named John Patrick Ferguson, hawker, admitted having broken into a temporary booth on Callendar Riggs and stolen a camera and a quantity of photographic accessories. It was stated on his behalf by an agent that he was under the influence of drink at the time, but on coming to himself he assisted the police to recover the articles. Sheriff Young sent him to prison for sixty days.

News and Notes.

THE entries for the Southampton Exhibition close on Monday next, December 5.

WE have received a copy of the Gloucester Diary for 1905, which, as in previous years, we have no doubt will prove useful to us.

HERR MAX WOLF, director of the observatory on the Königsstuhl near Heidelberg, has discovered a new planet of the thirteenth magnitude by means of a celestial photograph.

WITH regard to the flexible screens suggested by Mr. Howard Farmer, Mr. Elea Luboshey informs us that they can be obtained from J. B. Campbell, of 163, Renfield Street, Glasgow.

A RECEIVING order was made last week at the Manchester Court on a creditor's petition against Franz Baum, who resides at Winton House, Winton Road, Bowdon, and carries on business as a photographer at 84, Deansgate, Manchester.

MR. J. ROBINSON read before the members of the Border Camera Club, on 22nd ult., a lecture lent out by the "People's Friend," entitled, "The Capabilities of the Camera," illustrated by seventy excellent slides showing various ways in which the camera can be utilised as a recorder of events, artistic composition of pictures, as well as the ludicrous production of distortionate figures.

THE eighteenth annual Grantham Industrial and Fine Art Exhibition, which is always the most looked-forward-to event at Grantham, has been fixed for January 18, 19, and 20 next. There are 12 classes for competition, including painting in oils and water-colours, photography, etc., etc. Particulars, in schedules, to be obtained from Mr. Geo. Jackson, Launde Terrace, Grantham.

WE have received a circular setting forth in detail the proposal to hold an international photographic trades, photographic art, and picture postcard exhibition at Earl's Court, from March 16 to 19, 1905. It is proposed to include every possible and existing application of photography. The organising managers are F. M. Bridgman and Geo. D. Smith, and the Hon. Secretary, Robert Hilton, of 125, Finsbury Pavement, E.C.

MR. W. S. STUART, of 2, The Quadrant, Richmond, has again been honoured with a command to attend at Windsor Castle, this being the second time within a week. On Monday last Mr. Stuart had the honour of photographing his Majesty King Edward, H.M. Queen Alexandra, H.M. the King of Portugal, H.M. the Queen of Portugal, H.R.H. the Duchess of Fife, and H.R.H. Princess Victoria. A large number of portraits were taken both separately and in groups.

THE entry forms of the Fourth International Exhibition of the Blairgowrie and District Photographic Association are now ready and can be obtained from the Hon. Secretaries, The Public Hall, Blairgowrie. Arrangements have been made whereby pictures sent to the Scottish National Salon at Glasgow, if entered for this exhibition, will be forwarded to Blairgowrie free of charge to exhibitors. If desired, pictures can be forwarded direct from the Blairgowrie Exhibition to the Glasgow Southern Exhibition carriage paid.

THE Hastings and St. Leonards' Photographic Society's Exhibition will be held at the Public Hall, Hastings, on January 11, 12, and 13, 1905. There will be six open classes, six for members' work, and one special open only for pictures rejected at the Salon and the Royal Photographic Society's Exhibition. Awards:—A silver and a bronze medal will be offered in each open class; the society's massive gold medal will be awarded to the best picture in the exhibition; in the special class there will be three awards, the president's special silver plaque and the society's silver and bronze medals. All communications to be addressed to the hon. secretary, Mr. Fred. Judge, 2, Wellington Place, Hastings.

PLYMOUTH Photographic Society.—At a meeting of the Plymouth Photographic Society, at the Athenæum, last week, Messrs. Wilfrid Grist and J. Trouern Trend gave an interesting lecture and demonstration on lantern-slide making. They made slides from about a dozen negatives, and developed, toned, and fixed them in full view of a large audience. By the process adopted by the demonstrators various colours were obtained. The slides were dried by methylated spirits, and shown on the screen within a very short space of time, some good results being secured, although the conditions under which they worked were not very favourable, the rapidity with which

had to be prepared not being conducive to the production of pictures.

The Birkenhead Photographic Association met in the Y.M.C.A. last week, Mr. R. T. Russell presiding. Dr. Harrington gave a lecture on "Etching and Engraving." He traced back the beginning of line engraving and etching to the 15th century and mezzotint to the 17th century, and described in detail the process of etching, mezzotint, and line engraving, illustrating them with a number of fine slides, detailing the various processes a plate has to undergo before the print is complete. Some fine examples of Turner's work were exhibited, and a number of slides depicting Rembrandt and Vandyke's work. Coming to a later period, many pictures were shown by Sir Seymour Haden, Whistler, Cameron, Watts, Hall, and Strang, showing the advance that has been made in art.

On an afternoon last week a series of interesting demonstrations of photography were given in the Y.M.C.A. Buildings, Aberdeen, by Mr. Burr, a representative of Kodak, Limited, and Mr. James Anderson, photographic dealer, Aberdeen. There was a large gathering of the general public. The demonstration was principally for the purpose of showing how photographs could be produced without the use of a dark room, an exhibition being given with a daylight developing machine. Thereafter about ninety slides were thrown on the screen taken from Kodak photographs. The views, which were of a very interesting and varied character, included many very fine scenes showing excellent detail and fine tone. Some of the photographs shown were awarded prizes in the recent £1,000 Kodak competition.

The annual conversazione at the Y.M.C.A. Rooms, Ipswich, on Thursday evening, was successful in every respect. No matter where turned, there was something to amuse or entertain, and the large number of people who gave their patronage were well rewarded. A photographic competition was a great attraction to the members, and over 180 entries being received for the five sections. Mr. L. Man (from Mr. Adolphus Tear's) was the judge, and he made his report from a very creditable exhibition as follows:—Landscapes: 1. C. Ridley. 2. F. A. Dent. 3. W. Goodchild. Seascapes and Scenery: 1. W. Goodchild. 2. F. A. Dent. 3. K. G. Reeve. Architecture: 1. F. A. Dent. 2. B. C. Ridley. 3. W. C. Collinson. Photographs of moving objects: 1. F. A. Dent. 2. B. C. Ridley. 3. W. C. Collinson. Picture postcards: 1. W. Goodchild. 2. W. C. Collinson. 3. S. A. Felgate.

New cinematograph pictures of country scenes are obtained from this week by a case at Barnet County Court. William George was mulcted in £5 damages and costs for trespassing at Green Farm, Arkley. Mr. Poole, solicitor for Mr. King, the plaintiff, described the trespass as particularly impudent. Defendant drove up with two van loads of people and entered a fifteen-acre field, untethered the horses, and trod down the aftermath, on November 20, doing damage to the amount claimed. No permission was asked or obtained. Defendant admitted that he had done so in entering the field, but thought the case would be met without going to court by his paying, perhaps, £1 to a local hospital. He had only two wagenettes, and thirteen persons all told. They took 100 or 12,000 photographs, but did not roam over the whole fifteen acres.

The Hiring of Cinematograph Films.—J. Gaumont and Co., of the Court, have just instituted a special hiring department for cinematograph films, so that for a very reasonable fee a cinematograph film can be easily sandwiched in an ordinary lantern show or for evening entertainment, and the variety of films thus placed at exhibitor's command will prevent anything like satiety with one particular subject. Messrs. Gaumont have also, in conjunction with Messrs. Peach and Co., Limited, of 48, Holborn Viaduct, E.C., made arrangements whereby one of their first-class chrono projectors may be obtained on the "Times" instalment plan, and an instrument is delivered at once, although the payments for the same may be extended over six or twelve months. Considering the necessarily heavy cost of a perfect projector, this scheme should be of immense advantage to those of limited means, as there is no increase of the price. Films may also be obtained in the same way, but in this case there is a slight increase in the price over that for cash. Messrs.

Gaumont will be pleased to send any one full particulars on receipt of a postcard.

THE Photographic Theatre.—Mrs. Langtry, on the 27th ult., opened the Photographic Theatre at 154, Holland Park Avenue. There was a crowded audience to witness this somewhat novel event, and a large number of ladies and gentlemen connected with the musical and theatrical profession were present. The theatre where the ceremony took place is 80 ft. by 40 ft., and is full of novelties introduced by Mr. Mount Stephen Gillard, one of the inventors of the "Photolinol" patents. The stage is 24 ft. by 17 ft. Theatrical groups can easily be photographed without cramping into small space. As to "Photolinol," it might be mentioned that the patent duplex photographic linen invented by Mr. Otto Fulton, managing director of Photolinol, Limited, and Mr. William Gillard, is quite a new departure in photographic art material. The material is practically indestructible, is waterproof, impervious to the action of the sun, and has a high transparency. It can be rolled, posted, creased, or stretched without the slightest injury to the photograph. The company are the possessors of the only mercury vapour lighting apparatus for photographic purposes in England. They also employ a system of clustered incandescent electric lights, 10,000 candle power, which forms a substitute for the sun's illumination. When the visitors had all assembled Mrs. Langtry appeared upon the stage and declared the theatre open.—"Standard."

The second annual dinner of the Cardiff Windsor Photographic Society turned out a complete success, 105 members sat down to dinner, and this number was swelled to about 160 before the proceedings were over. J. Bell Harrison, Esq., presided, and gave a short history of the Society, and thought that it was one of the most successful societies that he had ever been connected with. An excellent menu having been prepared, the members enjoyed themselves thoroughly, after which an excellent programme of entertainment was provided for by Mr. McBratney, to whom credit is due for the excellent way in which he arranged both dinner and entertainment. Mr. Fred. Fox, the President, was presented with a ten-guinea camera which was subscribed for by the members, the generous use of his encyclopædic knowledge, energy, and geniality having done much to ensure the success of the Society. Previous to the dinner, Mr. J. Bell Harrison organised a competition in which members took a great deal of interest, three of them being successful in obtaining silver and bronze medals, namely, Messrs. Brown, Palmer, and W. Mathew Smith. Mr. J. Bell Harrison was also pleased to subscribe £5 5s. to the funds of the Society. The proceedings terminated at 12 o'clock, all the members having expressed their approval in very decisive terms. The dinner tickets and menu cards were produced on bromide paper from a clay model which the President prepared. The club is to be congratulated on the excellent attendance and the energetic way in which the members continued to support such a deserving society, the subscription being only 7s. 6d. a year. The members have the free use of dark-room, dishes, lockers, enlarging lantern, optical lantern, copying camera, library, and studio, etc., for which a complete set of apparatus has been provided. The Society holds its meetings two nights a week, at which lectures are read from the Royal Photographic Society and also given by the members themselves. An exhibition will be held in February, which is hoped will eclipse everything done hitherto in Wales.

We have received from Mr. Robert C. Carter, of 33, Enbrook Street, Queen's Park, Harrow Road, W., details of the International Photographic Exchange, a copy of the magazine, and the following explanation of the purpose of this association. At present the subscription for England is 1s. 6d., but after January 1, 1905, it will be raised to 2s. 6d. Mr. Carter will be pleased to furnish any one interested with full details. The object of the Exchange is to afford our members an opportunity of exchanging, through correspondence, photographs, stereoscopic views, and lantern slides. To circulate albums of photographs among such of our members as may contribute prints for that purpose. To encourage and assist our members to the better enjoyment of photography by affording that stimulus which association and example always provide. In enabling our members to form collections either of miscellaneous photographs or of some particular kind, such as historical, typical, or artistic, this society stands unrivalled. It is admitted by all that more useful photographic information may be secured by the exchange of prints and the attending correspondence than by any other method. Class I. includes

regular members or those desiring a general exchange. Such members may limit their exchange or specify a certain class or kind of work desired, in their exchange notice. Class I. members are expected to answer promptly all letters in which stamp is enclosed for reply. Class II. includes members who, from lack of time or uncertainty as to address, might find it inconvenient to always reply promptly to inquiries concerning exchange. Class III. members will receive few, if any, unsolicited exchanges, as they are expected to acknowledge only such correspondence as they may themselves invite. Class III. includes members desiring to enjoy only the benefits of the circulating albums, the monthly publication, or both. All members, regardless of the class to which they belong, in order to receive the albums must send prints to the Director of the Circulating Albums for insertion therein. In no case are Class III. members to be asked to exchange. The word Class, as used in this connection, has no reference to the grade of work turned out by a member. Any one interested in photography and willing to conform with the rules of the Exchange is eligible, amateur or professional, tyro or Salon medallist. All can find congenial correspondents and each can derive, as his individual taste may suggest as desirable, benefits from his membership in this Society. On joining, each new member is given an exchange notice in the "Photographic Exchange," setting forth his number and designating the Class in which he wishes to be placed. Mention is also made of the kind of work offered and desired in exchange, if any, together with such other detail as he may furnish. All members, irrespective of the Class in which they are enrolled, are privileged to send prints to the Album Director for the Circulating Albums, entitling them to a place on the route list of all such as contain one of their prints, as well as on that of such other albums as it may be found convenient to so route. The most liberal contributors to the albums are understood to be the most deeply interested, and, of course, are given the preference when routing foreign or other special albums. A numerical correspondence system, translations of which are furnished all foreign members, permits the exchanging of prints between those using different languages, with the greatest facility and satisfaction. All exchanging is done by direct correspondence on any agreed basis.

Commercial & Legal Intelligence

ATTEMPT at Suicide.—Walter Ancell, thirty-nine, photographer, of Canterbury Road, Ball's Pond, was charged last week, on remand, with attempting to poison himself with laudanum. He took this in a public-house, and Dr. Carey Barlow, who was called to him, said the poison was taking deadly effect when the remedies were applied. It transpired that the prisoner was depressed through lack of work and too much drink. He now said he would become teetotaler and take a more cheerful view of life. His father, too, said he would look after him, and Mr. Chapman allowed the prisoner to go away.

PHOTOGRAPHER'S Failure.—At Middlesbrough, Mr. R. C. Clifford, photographer, of Wilson Street, Middlesbrough, appeared before the Registrar (Mr. H. S. Crosby) to undergo a further examination in bankruptcy. The debtor admitted, when questioned by the Official Receiver (Mr. Stubbs), that there were some bank shares included in the marriage settlement. These had originally belonged to his father, who bequeathed them to him. He, however, denied the statement that he had these in his possession. He had never had them in his possession. Further questioned by the Official Receiver, debtor said that £12 10s. which he had paid to his solicitor he had borrowed from Mr. Turner. The cause of his failure was that he had not made sufficient in his business to meet his household and personal expenses. He had previously stated that he had lost £400 on an off-beer licence at Redcar. This must have been a mistake on his part, as he had only lost £200 on the business. The Official Receiver here pointed out that he had included this in his deficiency account, and if he had only lost £200 on the Redcar business the deficiency was not all accounted for. Further questioned, debtor said he had lost £102 during the last year. He had made no speculations, nor had he gambled to any extent. The Registrar, in further adjourning the examination until next Friday, said that the statements were not satisfactory, and suggested that debtor could find a better account than that which had been submitted.

Correspondence.

- * * *Correspondents should never write on both sides of the paper. notice is taken of communications unless the names and addresses of the writers are given*
- * * *We do not undertake responsibility for the opinions expressed by correspondents.*

THE PROPOSED BENEVOLENT ASSOCIATION.

To the Editors.

Gentlemen,—I am pleased to see that an effort is being made to revive the benevolent fund, and I hope it will be successful, as something of the kind is sadly needed. Why should photographic assistants not have a strong union amongst themselves to obtain a living wage, help each other in times of sickness and out of employment, and in time some sort of a pension scheme could be evolved? There should be enough assistants in the business now, and photography as a whole are not less humane than their fellows to make something possible; but there seems to be such an apathy, indifference, assumed superiority amongst the average operators, etc., to anything in the shape of trade unionism, which is hard to understand, is both foolish and hurtful to their own interests. I should strongly advise all assistants to at once rally round the Benevolent, and perhaps in time some strong organiser will arise amongst them to lead them to action in the matter of combination. I write this that assistants would in future avoid being placed in such a position as I myself, after working for thirty years, and getting very near half century old. I find it almost impossible to get a situation; six months vainly trying I find myself face to face with I scarcely know.

DARKNESS

"THE IDEAL PORTRAIT LAMP."

To the Editors.

Gentlemen,—In referring to our Ideal Portrait Lamp in your current issue you mention the fact that the lamps can be seen and demonstrated at Messrs. Gardiners, Glasgow, but you do not quite make it clear that they are only agents for the lamp.

We are always pleased to exhibit the lamp to anyone interested in our show rooms here, and shall be glad if you will make a note of this effect in your next issue. —Yours truly,

HOUGHTONS LTD

88 and 89, High Holborn, London, W.C.

November 23rd, 1904.

SOME NOTES ON ACETYLENE.

To the Editors.

Gentlemen,—When rising in a 'bus a few weeks since I noticed the light was very brilliant and that the flame was small. Concluding that it was some form of acetylene I examined it and found that the whole apparatus was very compact, and if nothing more was included than was visible it could be used in an optical lantern.

I am not now quite sure of the name it bore, but believe it to be "dissolved acetylene"; the address was 3, Victoria Street. It appeared to me to be an ideal light for an enlarging lantern.—Yours etc.,

ANON.

PROBLEM NO. 2.

To the Editors.

Gentlemen, Referring to the letter in your issue of the 18th inst. under the above heading, may I say that it seems to me to be a plausible waste of space in your valuable columns to accord a place to a communication which is neither instructive nor, I take it, of general interest, and can only reflect the utmost contempt and credit upon the writer.

The original letter at which this tirade of sarcasm is directed though perhaps an unusual one, is by no means ridiculous, as, the writer having been out of touch with photography for some years, and wishing to take it up again as a means of livelihood, what is more feasible than for him to write to the B. J.—which is generally regarded as being an authority on matters photographic—for any advice you could give him, which, by the way, was practically nil?

There is small likelihood of the P. P. A. becoming a paragon society, and I fail to see why a man should be boycotted or ridiculed on account of his having been a parson.

our ranks are crowded sufficiently now, but, still, "Live and live," and above all be fair.

There is one point I do really admire about your correspondent, his extreme modesty, as evidenced by his apparent desire to avoid undue notoriety and overwhelming commendation by his adoption of a nom-de-plume.

In conclusion, it is a matter of regret that you would-be humourist should not preface his brilliant and highly intellectual letter with an appropriate quotation, as, for instance, Shakespeare's "Write me you an ass."—Yours faithfully,
T. HOPKINS.

Kensington, W.
November 25, 1904.

ANOTHER PROBLEM FOR THE EDITORS To the Editors.

Gentlemen,—Seeing the terrible pass that photography has got to, a business in a country town is at best little better than starvation. I am at present located the local photographer had, in the old plate days, all the photographing that there was about the place. But now every association, every club—no matter which—every church picnic, every Sunday school picnic has its own smart amateur who does things at prices that no professional can touch. I could not get paid for the same class of work, but then I could not get the chance to do it. The professional used to get all the orders; now he gets none of them. The postcard having killed the view trade, there is little now left to us but an occasional thing, and for every half-dozen orders we get we have to take two plates, and give a retouched finish at 6s. per half dozen. So I have been thinking of making a change, but before doing so I should like to consult you, Mr. Editor, as I have hitherto done in all matters connected with my business before making the change. I may state that I would like to get an appointment as manager of a large steam shipping company; I should not care to take the management of a company of tramp steamers, I should prefer one of the first-class passenger lines. To begin with, I would accept of the management of any of the more important of their provincial branches. I may say that I know a good bit about shipping. When a boy (I am now an old chap) I was a great hand at model yachts, in fact, I was the real inventor of the centre-board. I had a flat yacht, built with an adjustable keel, that raced every boy's yacht in our village. I may further state that I was a very clever boy, and I now spend a lot of my spare time wondering why clever boys grow up into very stupid men. I have another reason for my anxiety to abandon the camera: my eyesight is failing, so I must either get the management of some high-salary paying concern or go in for a pair of spectacles.

J. M. P.
P.S.—If you happen to be a shareholder of the P. and O. or of the Inland Company, you might mention to the directors that I am open to accept such an appointment. If you do, I am positive that the Company will be ever indebted to you.

J. M. P.

THE BOVRIL COMPETITION. To the Editors.

Gentlemen,—Could you kindly inform me if the recent Bovril Photographic Competition results have been published, as I, and a number of my friends, are anxious to know?—Your sincerely,

November 17, 1904.

FAKER.

NOTICE TO ADVERTISERS.—Blocks and copy are received subject to the approval of the Publishers, and advertisements are inserted absolutely without condition, expressed or implied, as to what appears in the text portion of the paper.

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Answers to Correspondents.

***All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.**

***Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.**

***Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.**

***For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, &c. Two unmounted copies of each photograph must be sent with the fee.**

PHOTOGRAPHS REGISTERED:—

W. E. Sorrell, 55, Topsfield Parade, Crouch End, London, N. Photograph containing Mayor, Aldermen, Councillors and Principal Officers of the Hornsey Borough.

J. L. Hart, 2, Mill Street, Crewe. Photograph of the Crewe Alexandra Football Team 1904-1905.

J. H. Moody, High Street, Aberavon. Port Talbot, Glam. Photograph of Alderman T. Owen and Mr. Bell, M.P.

Mrs M. Le Tourneau, 219, Regent Road, Salford, Lancashire. Photograph of the Everton Football Team 1903-1904.

O. Baumgart, 118, Commercial Road, London, E. Photograph of J. Brodetsky. Photograph of S. Brodetsky.

J. Shivas, 46, Queen Street, Peterhead. Photograph entitled "The Tail of the Storm."

J. F. Forster, Tangier Buildings, Whitehaven. Photograph of the Cumberland Rugby Football Union Fifteen, 1904-1905.

A. G.—Threaten an action for illegal detention unless returned within 48 hours, and then proceed.

J. T. S.—Messrs. Dawbarn and Ward, 6, Farringdon Avenue, E.C., can supply you with the works in question.

D. D.—The camera named is sold by Houghtons, Ltd., 89, High Holborn, W.C., who would send you all information.

"Mac" (Newark).—We do not know the material under that name.

It is evidently an article fairly well known in America, though not here, or, at least, under the name given.

T. Hunt.—The manufacturers' address is Birmingham, and they only, we believe, supply dealers. As you have had no dealings with them, you can only treat with the local chemist who supplied you with the goods.

"A. W." asks:—"Having been engaged to photograph group, when members of the Royal Family were present, would I have the privilege of printing on my mounts, 'Patronised by Royalty'?" In reply: Certainly not.

FACTORY ACTS.—H. WHITE says:—"Will you be good enough to say how the new Closing Act affects professional photographers in their business on week-days and Sundays?" In reply: We scarcely understand your query as to the "New Closing Act," but see answer to "Don't You Know."

"BAS."—The chief fault is that you have not obtained satisfactory sharpness all over the plate. Probably a smaller stop would have helped you in this, and, in any case, you should have focused on a point with full aperture halfway between nearest sitter and the furthest, and then stopped down till you got all sharp. Your light was also too much in one place; for a hall that size, two, or even three, lights should have been used at almost equal distances from the camera.

DEVELOPER.—WM. GREEN asks:—"Will you please state a developer that gives straw-coloured negatives like pyro-ammonia, and also gives soft results for portraits?" In reply: Most of the newer developers will yield more or less stained negatives if some of the sulphite of soda be omitted. Formulae for all of them will be found in the "Almanac." Why not employ pyro if you wish for the yellow tint? It cannot well be improved upon in this respect.

"ANILINE DYES" asks:—" (1) Where can I get dyes for colouring lantern slides, or, how can I make the aniline dyes permanent? I have bought the dyes from chemists, but find the colours fade. (2) Are self-toning papers as permanent as those toned with gold?" In reply: (1) So far as we are aware no aniline dye is absolutely permanent, but some are more so than others. Messrs. Mawson and Swan, and Penrose and Co. stock a great number of these dyes. (2) Yes; certainly.

OPINION WANTED.—"E. D." says: "I should be extremely obliged if you would kindly pass your opinion on the enclosed retouching and tell me where I can get a book on retouching and operating." In reply: The work is moderately good, but the negative did not require much retouching. One cannot form an opinion of your ability from such a negative. "The Art of Retouching," by Robert Johnson, is a good work on the subject. "The Studio and What To Do In It," by H. P. Robinson, is also a good book.

REGISTRATION OF COPYRIGHT.—"J. H. G." asks:—"Can you inform me where to get a photograph copyrighted, and the cost of same? Size $8\frac{1}{2}$ by $6\frac{1}{2}$." In reply: If you send us two copies of the photograph, and one shilling and sevenpence in stamps, our publishers will effect the registration for you. The size of the photograph, whether large or small, makes no difference in the cost. If you read the notice heading this column every week, you will see that we do not answer correspondents by post.

NEGLECTED ORDER.—SALTER AND SONS write:—"You would greatly oblige by advising us on the following:—On October 10, 1904, we sent two prints to Messrs. —, who advertise making cabinet negatives from prints, with P.O. for cabinet negatives. They did not acknowledge receipt of order, and will not answer any communication. Will it be possible to regain possession of prints, as they are valuable and belong to our customers?" In reply: You can certainly recover the money sent, and the value of the prints, by suing the firm in the County Court.

OPINION WANTED.—"REFLEX" asks: "Will you kindly let me know which, in your opinion, is the most serviceable reflex camera on the market?" In reply: It is quite against our rule to express any opinion on the merits of any particular maker's goods. All the cameras supplied by established makers can be relied upon. Our correspondent's best plan will be to consult the advertisement columns of the JOURNAL and the "Almanac," and then call and see at the dealers' the different forms of apparatus, and select that which, in his idea, will best suit him and his pocket.

DEVELOPER.—R. H. DAVIDSON says:—"I should be greatly obliged if you would tell me:—(1) Of a formula for hydrochinone developer introducing ferrocyanide of potash. (2) The use of latter in the developer. (3) Is there any danger of fog in using it on rapid Iso plates?" In reply: (1) The following is taken from "Wall's Dictionary of Photography":—Solution A: Water, 550 parts; hydrochinone, 10 parts; sodium sulphite, 10.5 parts; ferrocyanide of potassium, 2 parts. Solution B: Sodium hydrate, 60 parts; water, 550 parts. For use, equal parts of A and B. (2) The ferrocyanide acts as an accelerator. (3) No.

A BUSINESS MATTER.—"E. H." asks: "Will you kindly answer me what could be done in the case of a customer bringing a photograph to us to be copied, at the same time requesting us not to supply anyone else with copies, and when another party came to our manager and asked him to sell them some copies, which he did, at the same time keeping the money for his own use? What is our liability and what is our manager's liability?" In reply: Of course, you are responsible for the action of your manager. The only honourable thing you can do is to decline to execute the second order and at the same time refund the money paid to your employé. If the facts be as stated, you can prosecute the man for embezzlement.

VARIOUS QUERIES.—"OLD SUBSCRIBER" asks:—" (1) How are black vignettes obtained? Are they made inside or front of lens? (2) Have Bovril allotted prizes? (3) Are unpaid finished proofs—sent for inspection—secure from copyright? If copied and enlarged before we receive order and payment, and we register, can we recover damages on all printed?" In reply: (1) They are usually made by placing the mask inside the camera. (2) We do not know anything about it. (3) No, the copyright is vested in the sitter, although the photographer has not been paid for taking the portraits. The only remedy he has is to recover the amount of his account, for the work he has done, in the County Court.

TERMS OF AGREEMENT.—"C. B." says:—"I herewith send you a

copy of an agreement which my employer is desirous of having me sign. I feel rather dilatory about it, because I think it very arbitrary, with most abominable exactions. I shall be obliged to you if you will give me your brief opinion of it. Is it customary agreement couched in those terms?" In reply: We have read through the proposed agreement, and we may say it is about the most unreasonable and one-sided one we have seen. If you sign it you will be subject to month's notice, and will then be prohibited for an unlimited period from following your profession within a very wide area. We should certainly not advise you to sign any such agreement without due consideration. The copy has been returned to you.

BLACK SPOTS.—"T. S. H." writes:—"Can you explain why I occasionally get a fine crop of black spots on my P.O. prints? I wash before toning, and immediately on putting the prints into the toning bath, I see the spots. They are not regular in occurrence, but only occasionally happen, and have had them twice this last week. Ordinary town water is used and it is rather hard." In reply: The cause lies in small particles of iron rust, or some other metal being present in the water, and these adhere to the film and at once make themselves seen on being put into the gold bath—though they can frequently be seen before. The remedy is a very simple one, namely, to immerse the prints into a ten per cent. solution of common salt; this converts the whole of the free iron salts into chloride and the metal has no action on this.

REFLECTOR PAINT.—"FOREGATE" asks:—"I have just had a reflector made for my incandescent gas apparatus in my studio, but the white material, that has been put on the inside, is not white enough, also, is beginning to peel off. Can you tell what is usually used in such cases, and how applied?" In reply: Our correspondent fails to inform us as to the material of his reflector. It is extremely difficult to get an absolute white paint that will adhere, because the heat of the light tends to lift it. The most satisfactory white paint is precipitated calcium sulphate, and if the surface of the reflector, if of metal, be roughened by etching, and the sulphate be ground up with a little white dextrine and water, it will adhere fairly well and should it peel it can be at once renewed. It can, of course, be applied with a brush and stippled over so as to present a perfectly even appearance.

FACTORY ACT.—FORMULA.—"DON'T YOU KNOW" writes:—" (1) I should esteem it a favour if you will kindly advise me on the following:—In my business I am obliged to keep open up to 10.30 or 11 o'clock every night (week-days only) but do not start business until 2 o'clock in the afternoon, that is, work about half hour to three-quarters, about eight hours' work a day averages about forty-eight hours per week. I have a lad working with me who now leaves off at 8 o'clock, but he very much wishes to work with me until I close, viz., 10.30 or 11 o'clock. His work is in the dark room; his age is fifteen years. His working hours are not many, and it is entirely his own wish to stay. Am I allowed to keep him with me up to that hour without getting any permission from the Court, or, if I have to get permission, kindly let me know where I shall have to apply? (2) Kindly give me a formula for a very cheap and very rapid developer for snap-shot plates which are under-exposed, since solution only preferred, or No. 1 and No. 2 if same will keep a day without going black when mixed together. Rapidity is essential, and price a consideration. Will you make up about four gallons at a time and to last about one week (keep)." In reply: (1) We should advise you to consult the inspector under the Factory Acts for your district. He will supply you with all the desired information also with an abstract of the Act itself. (2) We should recommend a two-solution developer. The following will probably answer your purpose well:—Solution A: Metol, 40 grains; hydrochinone, 48 grains; sulphite of soda, 120 grains; water, 8 ounces. Solution B: Carbonate of potash, one ounce; water, one quart. For use, mix one part of A with three of B for ordinary exposures.

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EX CATHEDRA.

Double Tone Carbon Tissue. A new carbon tissue has just been placed on the German market, which has two films superimposed, the upper one light colour, and the lower one a much darker tone of the same colour. It is obvious that by this means much darker shadows can be obtained, and it is claimed for the new paper that much better modelling and greater plasticity is obtainable than is possible with the old paper. There is no difference in the method of working it. The idea of a double-tone film was mooted by Henry Cooper in 1864, and was patented by J. R. Johnson in 1877, as recorded in our issues for the latter end of that year and the beginning of 1878, when there was a good deal of discussion on the point.

Portrait Painters and Photographic Portraitists. At Christie's auction sale of pictures on Saturday last, an unframed "Portrait of a Young Girl in White Dress," carrying a doll, by Geo. Romney, was sold for the substantial sum of £6,825 to the Messrs. Agnew. Now, there are probably no painter's works that portrait photographers could the better study than those by Romney, Vandyck, and Rembrandt. There are many who affect "Rembrandt" portraits that have not seen half a dozen examples of that great artist's work in their lives; some not even a single one. They simply light the portrait so that the major portion of the face is in shadow, and call it a "Rembrandt," while the result is no more like that old master's work than "chalk is like cheese." It is surprising how little interest photographers take in the portraits of the greatest painters, although

examples may be seen in all our public galleries. If they were more closely studied by them, we should see fewer of the—well, eccentricities, that we frequently meet with in photographic portraits.

* * *

Ultra-Violet Light and Eyesight.

One of our French contemporaries devoted to photo-mechanical progress, points out that there is a possible danger to the eyesight of operators in those studios which have recently been fitted up with the new arc lamps, in which carbon impregnated with metallic salts are used, so as to obtain a greater proportion of ultra-violet, or the photographically active rays, to the detriment of the visual. It is stated that in some studios the new lamps have been discarded and the old types replaced; in others, however, the new lamps have been found advantageous, but in both cases there is still the danger of injury to the eyesight of the operators, and that this takes a form analogous to the snow blindness met with on the Alps or other mountainous regions. Precisely the same precautions, it is claimed, should be taken, namely, the wearing of deep yellow or smoke-coloured goggles of a somewhat similar type to those employed by motorists.

* * *

Metric Photography.

M. Bertillon, the well-known director of the Anthropometric service of Paris, has just introduced a special system, full details of which are not yet to hand, under the above title, and which should be of considerable value in criminal photography for obtaining reliable data as to the size and disposition of objects at the scene of a crime, and would obviously also be useful for many other purposes, particularly in legal disputes, when a photograph is brought into evidence. We gather that the plate is impressed at the time of exposure with two scales, one showing the actual distance of an object, and the other the amount of reduction it has undergone, so that without any trigonometric or mathematical calculations the actual relative distances and heights of objects can be at once determined. He has devised a camera producing negatives in which the perspective is invariably identical. Each picture can, therefore, be compared at once with a given scale of distances and dimensions, provided the line of sight in the photograph be duly placed alongside a corresponding indication on the scale. On the other side of the photograph is another scale, that of dimensions. Obviously, the value of M. Bertillon's process entirely depends on the absolute accuracy of his instruments, and this requisite condition, he says, is mathematically fulfilled.

* * *

A Timely Warning.

A well-known correspondent has brought to our notice a particular effect, which may serve as a warning to others at this season, when low

temperatures are, or should be, prevalent. We may state that we were somewhat incredulous, but, having actually seen the test carried out, there is no question as to the facts. Some large negatives had to be reproduced, and for this purpose transparencies were made by contact, developed with a non-staining developer, and fixed, with the result that those portions which should have been bare glass, to use the familiar term, were stained a deep yellow. A fresh developer was tried, with like results; a fresh fixing-bath had been taken into use that morning, and it was quite clean, and therefore this could not have been the cause of the trouble. In taking out one of the transparencies, however, it was noted that the temperature of the fixing-bath was extremely low, and when tested proved to be only 40 deg. Fahrenheit. A portion of this bath was then heated to 65 deg. F., and a plate exposed and fixed in this, with the result of total disappearance of the stain. We tried this by exposing two quarter-plates in a stereoscopic camera, developing together, and fixing one in a hypo solution cooled to 38 deg. F. and the other in a bath at 60 deg. F., with precisely similar results. The cold fixing-bath gave a deep yellow stain, and the warm one perfect freedom from the same. The moral of this is obvious.

* * *

Blondlot's Rays. If die they must, the N-rays, so-called, will die hard, evidently. A short time ago we gave an abstract of Prof. R. W. Wood's investigations, appearing in "Nature," as to the reality of the alleged results in N-ray experiments, of apparently so convincing a nature, that it was difficult to imagine a rejoinder of any weight. Prof. Wood's letter was reprinted in the "Revue Scientifique" (No. 17), and in No. 18, the editor discussed the evidence. In No. 19 the opinions of Profs. Berthelot, Bonty, Pellat, Langevin, and Abraham are published. Prof. Langevin's opinions are the most emphatic. After making many experiments, he comes to the conclusion that whenever the experimenter does not know what phenomena to expect, the phenomena do not appear in the slightest degree. The consensus of opinion of the scientists named is to the effect that the results supposed to be seen or felt are wholly subjective, and due to suggestion, and in consequence interesting to the psychologist rather than the physicist. Yet, notwithstanding this formidable array of negationists, we have M. Blondlot a week or two later contributing to the Academy of Sciences, Paris, a paper on the photographic results of N-rays. The personal equation here being entirely absent, a photograph taken under proper conditions should be irrefragable evidence. The experiments described are a refinement on similar ones previously made, and M. Blondlot considers that they prove beyond cavil the action of the N-rays on the electric spark.

* * *

Some Notable Colour Prints. Probably we have by no means heard the last word with regard to colour-printing, and it is possible that in the next decade we may see some important advances in trichromatic printing, and even the adaptation of this to photogravure, but successful as have been the best of the three-colour prints at the present time, they have been very disappointing, and the very process does not lend itself to perfect reproduction because of the irritating cross-line screen. For some time Mr. Franz Hanfstaengel has issued individual prints, in photogravure in colours, and excellent as these have been they are entirely surpassed by the series, eleven prints, which are reproductions of the most beautiful canvases by Sir Joshua Reynolds in the possession of the Right Honourable the Earl of Spencer at Althorp House. The Althorp Reynolds's are, of course, famous, and in bygone

days we knew them well, and having had an opportunity of examining these reproductions we can only say that they are some of the best examples of colour-printing that have yet been turned out. It is possible, of course, to say that they do not in all cases, reproduce the effect of oil. This is true if closely examined, but when glazed and hung, we hardly think that in the majority of cases the charge can be maintained; the actual cracks and brush marks are faithfully reproduced, and the colours have softness and mellowness that we have not hitherto seen. Personally we cannot help expressing regret that they are only to be obtained in a complete set in portfolio, but obviously from the print collectors' point of view, and the fact that the present edition is to be limited to one hundred numbered impressions of each plate will make them all the more valuable.

* * *

Measuring Lens Curves. In the case of single simple lenses knowledge of the curvature is quite sufficient, given the refractive index, to enable the focus to be ascertained. Indeed, there is largely used by opticians an ingenious, simple instrument, which, applied to the surface of an eyeglass or spectacle lens, gives the focus of each surface to a fraction of a diopter, and without calculation, on a small dial, these glasses having an approximately uniform index. The manufacturers of large lenses, such as are used in photography, employ a still more delicate spherometer, by means of which he can take to a minute fraction of a thousandth of an inch the degree of curvature, and we apprehend that these instruments are employed in fabricating the cheap foreign imitations of English pattern high-class objectives. But when the question of the small lenses used in microscopes has to be considered, other methods have to be employed. At the last meeting of the Physical Society, Dr. C. V. Drysdale exhibited and described an apparatus for the direct determination of the curvatures of these small lenses. Parallel light from a distant source falls upon a plain unsilvered mirror—e.g., a plain sheet of glass, inclined at an angle of 45 deg. Some of the light is reflected, and brought to a focus, by an ordinary convex lens. The surface to be tested is placed at this point, and reflected rays proceed as if they had come from a point on the surface. They pass through the plate glass into a telescope focussed on parallel rays, and an observer sees an image of the distant source. If the surface is convex, and is brought near to the lens, thus, when it reaches such a position that the centre of curvature is at the focus of the rays emerging from the lens, the light will again retrace its former path, and a distinct image of the source will be seen in the telescope. In order to obtain the two images, the surface has, therefore, been moved through a distance equal to its radius of curvature. If the surface is concave it must be moved away from the lens.

* * *

The Power of Incandescent Electric Lamps. At a recent meeting of the Physical Society, Mr. G. B. Dyke contributed and read a paper on "The Practical Determination of the Mean Spherical Power of Incandescent and Arc Lamps."

As there must be thousands of incandescent lamps in use for every single arc lamp, it is obvious that the bulb type is the one to which most photographic interest will attach. The method adopted by Mr. Dyke was to set the lamp spinning at the rate of three hundred times a minute, so as to give a sort of average illumination, and then to measure the emitted light in various azimuths, step by step, and then obtain the mean spherical power. For a manufacturer's estimate, to show the total light produced by a given expenditure of current, this method is satisfactory enough.

for photographic purposes it is not very suitable. To obtain working data for photographic use, a knowledge of the power in various angles would be most useful. If we are required to know the power of the light from a dark room lantern, all would depend on the position of the light as to how much was received upon the plate, and its angle or azimuth. If the lamp were to be for supplying the well-known umbrella pattern of a series for studio use, a difference of efficiency amounting to ten or twenty, or more, per cent. might be brought about by varying the position of the lamp (which is very far from being analogous to a point of light set in the centre of a uniform globe). A knowledge of the range of emissive power would enable a suitable position to be chosen, and this would vary according to the type of globe employed. Again, the use of the incandescent globe in enlarging and copying is not by any means sufficiently known or adopted. If what might be termed a map of the power in various zones were supplied with the various lamps made, it would be most useful. For example, any one who has had experience with illuminating paper prints that are being copied knows that, quite apart from the question of annoying streaks of bright light, a slight turn of the lamp is capable of altering the illumination to such a great extent as to make an exposure vary in a ratio of ten to fifteen, and so on. We will hope some practical benefit may result from a consideration of Mr. Dyke's paper.

* * *

Resolution in Photo-micrography.

It is a well-established fact that the greatest resolution of the structure of minute objects with the aid of the microscope is only obtainable by the use of light of extremely short wave length, but this brings us into the violet ultra-violet region of the spectrum, to which the eye is not very sensitive, in micro-photography the second objection does not count, but the feeble intensity remains a drawback. Dr. A. Kohler, of Jena, has therefore tried ultra-violet light, notably the rays given out by electric sparks passing between cadmium electrodes. These rays, of wave-length 275μ , have a high intensity. Dr. Kohler described his new camera-microscope, which has been constructed by the Zeiss Glass Works, of Jena, before the Breslau meeting of the Naturforscher-Versammlung. The lenses of this microscope are made of crystal and of fused quartz; they need only be corrected for spherical aberration, because no chromatic aberration has to be guarded against when monochromatic light is used. As the ultra-violet light is invisible, however, an artificial eye has to be combined with the microscope for focussing and adjusting. This artificial eye consists of optical parts made of crystal, and of a retina made of fluorescent glass, which responds to ultra-violet rays. The observer examines through a lens the image thrown on this artificial retina. The instrument can, indeed, also be used for subjective vision by ultra-violet rays, and for this purpose magnesium light, of wave-length 280μ is still more suitable than the cadmium light. But the fluorescent light is injurious to the eye, and the finest detail can only be studied by photography. Yet the fluorescence helps in bringing out further detail. Dr. Kohler also examines his specimens—so far, mostly organic tissues—in a mixture of glycerin and water, or in salt solution, of which physiologists make large use. The ultra-violet rays once show differences in the structure, which, hitherto, had alone revealed. Thus the horny portions of the epidermis, the membranes of plant cells, and other parts, are more or less impermeable to ultra-violet rays, so that other advantages are realised in addition to the increased resolution. It would not be surprising if ultra-violet illumination should also render good service in metallography.

TRADES UNIONISM AMONGST PHOTOGRAPHERS.

THE reprint from the "Australian Photographic Journal" which we gave last week shows that the employees in New South Wales have combined, and have framed an Association amongst themselves which has been duly registered in the Industrial Arbitration Office at Sydney. On reading this agreement it will be seen that the Association is formed on strict trades-union lines, such as obtain in most of the trades unions in other trades in this country. Nearly every trade here has its union, even to the labourers and the navvies. A correspondent, in another column, suggests that a union of photographic employees should be formed in this country similar to that in New South Wales, and puts the question, that if this can be done there, why cannot it be done in the old country? This is by no means a new suggestion. It has been made several times, but that is all, and, as we all know, nothing has come of it. No one has come forward who has done more than suggest that the thing should be done, that it ought to be done, etc. But what is the good of suggestions if there are none who will assist in carrying them to a practical issue? Active work, and not mere talk that such-and-such things ought to be done, is what is required to form such a union as that in N.S.W. It seems to us that photographic assistants here have very little unity amongst themselves in working for their mutual benefit. Take, for example, the old Benevolent Society. It was notorious that very few of those for whose benefit it was formed subscribed to it, although the subscription was but half a crown a year, and took no interest whatever in the thing until they found themselves "stranded"; then they applied for relief from its funds. We notice in the N.S.W. Association that a minimum scale of wages is enforced for employees in every department, from apprentices upward, and that a certain time of apprenticeship is also stipulated—namely, for mounting, finishing, and spotting, including the care of the negative, it shall be two years. For retouching negatives it is three years. The term of apprenticeship for operating, developing, retouching, printing, and enlarging shall be for five years. There is a further stipulation as to the number of apprentices that may be taken in an establishment. It is limited to one apprentice and one junior to each senior assistant employed. In this country a very large proportion of photographic assistants have not served any apprenticeship at all; neither have many of their employers for that matter. For all that, many, although they do not really thoroughly understand the business themselves, do not scruple to take apprentices, of course, with a premium, and sometimes make as much out of them as out of their business, besides getting the services for nothing, or for quite nominal wage. In most of the trades unions here in other trades the serving of an apprenticeship is a *sine qua non* of membership. Is that likely to be the case if an assistants' trade union were formed in this country? This is a matter that will have to be taken into consideration by those who may attempt to form such a union—if any do. There is no question that an Association of Photographic Employees, particularly if it combines with it a benefit fund, is very desirable, and, if formed, it will have our best wishes for its success.

IN reference to our notice of Cubrome in our last issue, the special copper solution placed on the market by H. Edmund and Co., we would point out that in the case of plates they may be darkened by the application of a 10 per cent. solution of nitrate of silver, and that the same solution diluted may be applied to a bromide print, and that the nitric acid should be used after bleaching and before intensification.

PRESS PHOTOGRAPHY EXTRAORDINARY.

By AN OCCASIONAL CORRESPONDENT.

"THE Chinaman, as a mere man, is a shifty individual; but as a merchant a fair trader. The Japanese man is square, but in business dealings—watch him."

Such is the gist of oft-quoted advice in regard to dealing with Orientals, and during the current war more than one unfortunate photographer-correspondent has found that at least a part of the advice is well founded. The trouble dates from the beginning of the war. The opening incident was the sea fight at Chemulpo, where an American officer made a snapshot at the Russian gunboat "Korietz" as she blew up—or, rather, at the cloud of water and smoke which the explosion raised. A newspaper man heard of the exposure, and offered a fancy price for the film—before it had been developed. But the naval man thought he had something valuable, and declined to sell. Instead, he took it ashore to the local photographer for development. Unlucky speculation! The film was a complete failure. But next day the photographer was selling photographs of the explosion—fivepence each. "They were from another film; the one he had developed was a failure. He was supremely sorry." The naval man went ahead in the courts and proved his case. But what were nominal damages, compared with the fancy price which had been offered him? And the affair became a standing joke against him.

A great many films have been developed in Tokio, and the local photographers have shown a nice perception of what are good news pictures. Press agencies have sprung up there, and European and American papers have the cream of correspondents' work offered to them—before the correspondents themselves can submit it. Tokio knows all about mail boats and the quickest routes, and apparently Japan is not interested in copyright.

One correspondent never for a moment suspected why his pictures were twelve hours late. He was annoyed that he had missed the mail, but it was not until his home agent advised him that his pictures were a fortnight too late—having already reached the publishing offices through "another source"—that he discovered the perfidy of his bland little photographer.

In the latest of these little "beats" a correspondent has, on a conservative estimate, lost a cool hundred pounds, which amount has gone to a Japanese agency. They so manipulated matters that they "scooped" two continents. In one country they were ahead twelve hours only—but that was quite sufficient.

The only photographers who have received any adequate recompense for their pictures are those who took their own development outfit with them. It was no easy task to follow an army all day, and develop—under extraordinary difficulties—all night. But that is practically what some of them did in the early stages of the war, when interest was at white heat, and editors were clamorous for pictures. Those were the days of winter, and crude Korean houses had small facilities for warmth. More than one film was spoiled by the film suddenly becoming jammed as it was being turned slowly through the developing machine, and examination would reveal the developer as a mass of ice. But lots of good negatives were saved, and the photographer reaped his due reward.

The Japanese does not confine his genius to the appropriation of pictures. When Admiral Togo suddenly loomed into prominence his portrait was demanded. But the gallant admiral had never made the grand tour of the studios, and his presentment was not to be found. But what did that matter? The papers are constantly printing advertisements which warn us against other goods, which are represented as "just as good," and are pushed for the sake of the extra profit. But they were taken in over Togo, and a good many guineas were paid for portraits of some other estimable gentleman, of whom the world at large had never heard, and in whom it took not the slightest interest—that is, until it was labelled as "the gallant Admiral Togo."

THE IMPROVEMENT OF NEGATIVES

THE title of these notes is somewhat misleading because reproduced negative can hardly be said to be improved; yet as we propose to deal first with a particular method of improving negatives, the title is as it is.

It too often happens, particularly with work done in unaccustomed surroundings, or through errors in exposure, that a negative is obtained which may at first sight be said to be absolutely useless. For instance, when one has a subject such as an interior in which the contrasts of light and shade are abnormal or so great in the negative that to print out the high lights means blocking up the shadows, and obtaining details in the shadows means no detail in the denser portions, it is obvious that something must be done. The old devices of matt varnish, tissue paper, and crayon and a stump mean some manipulative skill which all do not possess.

In such a case we may use with good effect ammonium persulphate as the reducer, and it is well known that this reduces the high lights and not the shadows, and by this means we may obtain a far more even and harmonious result. Excellent as this method is, there are occasions when the reducer seems to make up its mind to play pranks, and spots and stains of various shapes and shades are obtained. An alternative method is an advantage.

The alternative which we would again call attention to is by no means new, but in the later and more advanced ideas now prevalent it seems to have somewhat dropped into disuse although extremely valuable. It was first suggested by Edgely in 1881, and the principle is merely the conversion of the metallic silver image into chloride of silver, and then redeveloping. Lately this has been revived as a method of intensification; but whilst it can be thus used, we would point out that it can be not only a method of intensification, but also a method of reduction at the same time, the shadows and most delicate half-tones being intensified, and the higher lights reduced in proportion.

The process is simple, and can be repeated *ad lib.* till a perfectly flat result may be obtained from even the most harsh negative. It will not, of course, make detail where there is none, but where there is the faintest trace of shadow detail it will intensify it.

The negative should be immersed in the following solution till bleached right through to the back:

Pure hydrochloric acid.....	10 parts.
Potassium bichromate	3 parts.
Alum	15 parts.
Water	450 parts.

It must now be thoroughly washed; too long washing seems almost impossible, for the bichromate is difficult to remove, and should any traces be left in the film, stains will subsequently appear.

When washed enough, a rather slow-acting developer—such as hydroquinone, without bromide or ferrous oxalate—may be used, and development continued till the critical point is reached; and this point can only be determined by continuous and careful scrutiny of the back, not the front, of the plate. Our practice is to immerse the negative in a hydroquinone developer till the surface reduction is distinctly apparent, and then lift the negative out of the tray, and, holding it face downwards, watch the developing action on the back, occasionally holding the plate just below the surface of the developer but face downwards. A point will now be reached when the shadow detail and the major portion of the half-tones will be blackened, but the higher lights and densest high lights will still show white. This is the critical point; one has now to have had some little experience to determine the particular moment to stop development, and this can at once be done by a rapid wash under the tap and refixing.

The result of this treatment will be apparent at once. The

whole of the image has been converted into silver chloride, and on development it would, if carried through, give a denser negative; but as development has only been allowed to continue till the shadows and half-tones are reduced and the high lights only partially so, then it is obvious that we have a flattening of the contrasts by the increase of the shadow detail and the production of the *in statu quo* of the high lights.

Obviously, then, if this is repeated a very great flattening of the whole scale is possible, and this method, if carefully carried out, enables one to considerably improve the printing qualities of the negative.

There is also another type of negative with which most of us are familiar—namely, one in which there is absolutely no contrast at all. It is as flat as it can be, and experience very soon shows us that intensification by any ordinary method is useless, for the differences of contrast between high light and shadow are so small that intensification of one means intensification of the other.

There are, of course certain printing-out and developing papers, by means of which this lack of contrast can be improved, but one does not always want to use a p.o.p. nor a particular development paper, and at any rate a negative that is of good printing contrasts generally is an advantage.

Professor Mach, of Prague, suggested some ten years ago that such a negative should be placed in optical contact with a mirror or sheet of opal glass, and copied through the back; but to avoid the reflection from the glass, which it is obviously impossible to do away with, he cemented a prism of low angle to the back of the negative. For such work as his namely, the photographing of flying bullets—such a course as this was permissible; but for the average worker, the process is entirely out of court, not only on account of trouble, but also cost. This, then, we may at once dismiss.

There is, however, the method of making a transparency, then a negative and repeating the cycle till a perfect, or, at least, a good printing negative is obtained, the idea being with each exposure to obtain increased contrast by slight under-exposure and the use of a hard-working emulsion. Now the hardest working plates are either pure chloride or chlorobromide emulsions, and by choosing one of these and slightly under-exposing and using a developer rich in bromide and a fairly prolonged development, after a short exposure, so as to obtain as great a contrast as possible, it is very easy to obtain a good printing negative from an absolutely useless one.

We know that there is some trouble and time involved in this process, but the end justifies the means, and, after all, the negative is but a means towards the end, which is the perfect print.

The mixing of flash-light powder caused an explosion in the establishment of a photographer at Toronto last month, and the whole place was completely wrecked, and the photographer himself seriously injured and burnt.

The toning of bromide prints by the hypo-alum process has often met with disappointment, and yet if properly handled is capable of yielding pleasing, in fact, beautiful browns and sepias. The Hull Society consider themselves fortunate in persuading one of its members, Mr. G. F. Bristow, jun., who has spent some years in producing his numerous and fine enlargements by this method. Three zinc dishes were kept going toning members' own work enlarged the previous Monday evening by the Society's lantern. Each one was stopped at the moment the owner desired the resulting picture to be in tone, and the demonstration proved most instructive and successful. The enlargements should be developed with the Imperial Hydroquinone formula, and a muddy black aimed for, when the best results are secured if taken considerably further than for simple black and white work. Take of hypo 8oz., water, 20oz.-12oz., alum, 2oz., water 20oz.-5oz., and water, 18oz., and place prints in cold and gradually heat until the finger can just bear it. Commence to tone in quarter of an hour.

STYLES: AN ANSWER TO VARIOUS QUERIES.

IN No. 2324 for November 18 a correspondent propounded some queries which, though answered briefly in the ordinary way, we thought of sufficient interest to go into more fully, as the queries dealt with the questions of styles. This is of ever-present interest to the profession, especially in the provinces, for frequently the man who can get hold of a new way of finishing photographs, or even one who makes a timely resurrection of an old fashion, stands a considerable chance of getting fresh business, and having a run on that particular line. Moreover, whilst the metropolitan professional can see and study any fresh idea that may be brought out, his less (?) fortunate brethren sometimes only see the particular fashion on a rare trip to town, or have it forcefully brought to their notice when it is used by a competitor perhaps three or four years after its inception in the capital. A case in point is the Cosway portrait mentioned by our correspondent. Whereas this style has been used in London for a good many years, in some of the northern towns it has only just made its appearance, and this owing to the placing on the market of the masks required by the Autotype Company.

Perhaps it will be as well if we first give a resumé of our correspondent's queries:—

"(1) I have a batch of prints to mount on art paper, C.C. plat., etc., and have met with the usual difficulty of cockling, even when dried under moderate pressure; I have tried thin gelatine and seccotine. Could you let me have a few practical hints? I have, of course, mounted them dry. (2) What are the most suitable subjects for the 'Romney' style of portraiture? Also could you give a brief outline of the style itself? (3) Re 'Cosway,' I have usually seen these with the head and shoulders draped. Is the draping necessary, providing the subject is suitable? (4) Where could I see specimens, or obtain a print of the above, and any other styles in vogue among the leading firms?"

The first question, though not actually one of styles, is closely related, since the most pressing fashion of the moment is mounting on paper mounts, not necessary multiple, but plate-marked thick rough brown, green, and other coloured mounts suitable chiefly for carbon prints or other positive-coloured images with a fairly rough surface, and also the very popular Japanese vellum. The latter is very thin, and with even the seccotine and gelatine mentioned, very prone to cockle.

These two mountants, or, rather, the mountant and the substitute, are both satisfactory in some cases. The gelatine, if made as given in the Almanac, will not cockle even medium thick mounts if applied in a thin streak round the edges only, and then the print placed under pressure. Seccotine sticks well, and in our hands does not cockle the thinnest mount if applied to the edges only as before. It, however, suffers from several defects, as all makeshifts not used for the particular purpose for which they were intended must do. The chemical constituents, whilst not harming carbon prints, cause a sort of fading with silver which may have been mounted with it. This stain, or whatever one likes to call it, only shows on the surface over those places to which the seccotine was applied at the back, so if one mounts these silver prints round the edge, one obtains, after a lapse of time, an unsightly border.

With carbons this is not apparent after some years, and for these the handy tubes are useful if one has nothing else on hand. For multiple mounting, i.e., several layers of paper, usually the number of layers in inverse ratio to your knowledge of the subject, this prepared adhesive is extremely useful. It sticks tenaciously after even a few seconds, whilst a couple of minutes is sufficient to hold it firm enough for more additions from the grocer's store. Only a dab at the corner is needed, we think, for the lower layers of paper. Having discussed the mountants mentioned, we beg leave to remark that there are several mountants specially made and which can be

obtained commercially, and which will not cockle a mount of ordinary thickness, and are perfectly harmless to even a silver print. Alcoholic solutions of certain resins may be used. These mountants only require placing in warm water for a few minutes before use, and if applied in the proper way they do not cockle even the thinnest of paper. The following instructions, of course, apply to any form of non-cockling solution:—

As dents, etc., in the prints do not disappear in the mounting as with starch, every care must be taken during the drying of the prints not to bend or otherwise mark them. When dry they will probably curl somewhat badly, and must be straightened. To do this take a sheet of perfectly clean paper and a straight-edge—a penny ruler will do if the edge is quite smooth. Now lay print face down on paper, and place edge of rule on back, pressing down with some force; now take edge of print in finger and thumb and pull from under rule. Repeat this in every direction until four corners turn outwards from face. If prints are now placed under a weight for an hour or so they will be found quite flat and ready to mount. To mount, cut a number of pieces of paper slightly larger than the prints to be operated upon, and of a number the same as the total number of prints. The mountant, having been placed in warm bath, and being in a fluid state, is ready for use. The mounting-brush should be a very small, stiff hog's-hair one. An ordinary very small house-painter brush is the kind we mean, and the hair should not have a greater diameter than a quarter of an inch. To stiffen up the brush, bind (or get a painter to do so) the hairs to within half an inch of the ends.

Having the mounts, mountant, and prints ready, the first print is placed face down on one of the cut papers, and a streak of mountant as narrow as possible is run round the outside edges within about a twelfth of an inch of the side. Of course this last measurement is not essential, and it does not signify a great deal if one does overstep the mark, but that is the point to aim at. If the print is held down in the middle with the fingers the nails sometimes make disfiguring dents. It is better to place a small glass cutting-shape (one with knob) in the middle and hold down with that. When this print is done take a fresh piece of the cut papers for every one, and no mountant will get on the face.

The prints are, of course, centred in the usual way. After mounting, place under a weight with blotting-paper over the surface of print for a few minutes. If anything goes wrong, a short soak in water will separate the print and mount. We have treated this subject at some length, not having much space for the subsequent questions, but our excuse must be the great number of queries we get on the subject of mounting on to paper.

We must confess we do not quite understand our correspondent's second question with regard to "Romney" portraits. If there are photographic portraits designated by this title we think it must have been applied somewhat arbitrarily, and is perhaps of only local significance. We hardly like that expression, "the most suitable subjects." It sounds too much like blind imitation of a picture rather than a proposal to study their composition, balance, and arrangement with a view to original work. Moreover, one must remember that the style and fashion of one century are not usually applicable to those of another. Our thoughts or ideas, as well as our costumes, have changed, and whilst the old-masters' method of handling and general treatment of line and mass will always be applicable to photography, though, of course, only in a moderate degree, knowledge of these things should be acquired so that we can the better express modern men and manners rather than for the sake of copying models and positions.

With reference to Romney's style, he is chiefly noted for his vigorous handling and the charm with which he infused his sitters, frequently charming in themselves in striking contra-

distinction to the modern cult of ugliness, which prizes the greatest, the most plain, models. Lady Hamilton was one of Romney's frequent sitters, and our querists cannot do better than study some of the photographic reproductions of her portraits.

The Cosway portrait, or, rather the photographic version, is, of course, an oval photograph in a sort of washed-in border in two or three shades of monochrome. The masks necessary for printing in this border round the masked one, oval, are now supplied commercially, and are negatives made from old engravings. We cannot find a great deal to cavil at in the name of this style, since portraits well done in this fashion in sepia, carbon, or platinotype bear a striking resemblance to old engravings. If the centre portion is made into a scene in tint, the *tout ensemble* is that of a mezzotint engraving, though imitation of another process may not benefit photography, and this sort of imitation is certainly not artistic yet in the eyes of the public it passes as such, and therefore should be practised. The draping is not absolutely necessary, of course, but it will be easily seen that the modern dress hardly agrees with the style of the print, and that if the engraving illusion is to be thoroughly kept up, the drapery dependent on no whim of fashion is the better to use. This drapery, or "drape," as it is called in American studios, comes in very useful for other portraits, when the sitter has no evening bodice handy or other suitable dress, for instance. It may be what the ladies call a large fichu, or merely a few yards of butter muslin. In any case, for ease in photography, it should be dyed cream.

The last query depends a great deal on the locality of the questioner and the firm he has in his immediate vicinity. For reproductions of the best firms, or, rather, the firms who are marvels at technical skill and wonderfully prolific in arrangement and artistic lines and poses, though lacking the true artistic feeling, see such papers as the "Sketch" and "The Bystander," where there are nearly always whole-page reproductions of the leading men. There are sometimes in the Society columns true pictures of leading Society beauties by such men as Hinstead and Bullingham, to mention only two out of the ever-increasing number of picture-making professionals. The wonderful work of Crooke and Moffat does not often appear in these papers, but will be found in such papers as "Photograms of the Year," as well as others of the greatest educational value by Furley Lewis, Frederick Hollyer, and others.

With regard to photographs by the firms, too. The Rotograph twopenny post-cards are, of course, bromides from the original negatives by Ellis and Walery, Biograph Studio, and others. Whilst some are not to be imitated, others are very fine technically, and the poses in nearly all are good.

There are other post-cards, too, in collotype which reproduce very finely many of the great pictures of the old masters, and form a very cheap and handy method of obtaining specimens of some of the best pictures for photographic study. The series we have especially in mind is the Woodbury series of post-cards. They, of course, do not come up to the fine photographures supplied by the art shops, which, if one intends to frame, are excellent. Best of all, however, in our mind, are the carbon reproductions now sold in such numbers, and so great is the variety that practically any picture can be obtained.

With these many and cheap reproductions about, we think no student should be at a loss for subjects to study, and if these lines have reminded some reader that he wants to study pictures, and has the means ready to hand, that will be something.

THE Christmas number of "The Weekly Press," from Christchurch, New Zealand, is again to hand this week, and it is, if anything, almost superior in appearance to previous issues. As an example of high-class half-tone blockmaking and printing it is very commendable, and there is many an English magazine that could take a lesson from these fifty pages so crammed with good illustrations.

SOME NEW RESULTS WITH RESPECT TO THE PRINCIPLE OF THE CONSERVATION OF ENERGY.

II.

We have now to state the limitations of the principle (6), or

$$T - U = \text{const.}$$

Any problem of mechanics (i.e., any questions relating to the motion of masses under any of these circumstances of motion which we call "forces") can be put into equations, and is thus at least theoretically soluble (i.e., we know there is a solution, and only one, if the problem is completely stated, but we may not always be able to exactly express this solution in terms of known functions). The simplest way of writing these equations is a method due to d'Alembert and Lagrange, but it is to be remembered that this "d'Alembert's principle" is only a convenient way of stating what was already known in Newton's laws. These laws, in fact, supply a sufficient foundation for the whole of mechanics.*

From the equation embodying d'Alembert's principle, Lagrange derived a highly important and convenient set of equations which completely determine the motion of the whole mechanical system in terms only of T and U , when these are expressed in terms of those quantities ("generalised co-ordinates") which suffice to completely fix the position of the system in space. If this system is a rigid body of any shape and size, it is not difficult to see that six such quantities only are required (these may be the distances of its centre of gravity to three mutually perpendicular planes fixed in space—the "co-ordinate planes"—and three angles between certain planes fixed in the body and certain others fixed in space, whose fixity prevents rotation about any axis passing through the above point).

Now 6 is deducible from these equations under certain restrictions,† but not inversely. Hence the insufficiency of (6) alone to determine the motion of the system, an insufficiency which also follows at once from the consideration at the end of the note below. This remark is important in view of the fact that it is disregarded by Mr. Herbert Spencer, and hence many of the doctrines of his "Synthetic Philosophy" have been exposed by Professor Ward.‡

Although thus (6) is a principle of such small power—even if it is applicable—in most questions of mechanics, it possesses the important property of holding in some cases where even Lagrange's equations fail. That Lagrange's equations do not apply in certain cases of rolling motion (when bodies roll, without slipping) had been known since 1873; in 1899 M. Appell, of the French Academy, gave some new equations, which can take the place of Lagrange's without being subject to the failures of the latter; in 1902 I found, independently, and in quite another way, the same equations, and in 1904 I developed the theory of the equations, which are extensions of (or not failing) Lagrange's equations, in which paper is the detailed proof that (6) can hold even when Lagrange's equations

fail. This result is of some importance when we consider the possibility of a "science of energetics"; but first we must show how (6) has grown so as to express a quantitative connection between all branches of physics; in other words, has grown into the principle of the conservation of energy.

Let us consider, again, the equation (5). The "work" of raising a mass m to a height h against the (practically constant and $= mg$) force of gravity is mgh ; when it falls through the height h from rest the final velocity (v) is given by

$$\frac{1}{2}mv^2 = mgh,$$

and inversely if m starts with this v it will attain a height h .* The equation (7) states the equivalence of work and kinetic energy. In general, when the forces and conditions are subject to the restriction referred to before, we

$$T - U = \text{constant},$$

or, since the work (U) only depends on the positions of the masses forming the system, the kinetic energy (T) of the whole system (the sum of the kinetic energies of all the masses) is the same for two similar positions, whatever the paths and velocities of the masses may have been in the interval of time between these two positions. Let us, finally, think of our mass in (7), when at rest (its velocity $= 0$) at the height h (as it is for an instant) as possessing, in virtue of its position, the capability, or "potential energy," to produce the kinetic energy $\frac{1}{2}mv^2$ by falling. Then the potential energy (v) $= (-U)$, or, in general,

$$T + V$$

is a constant quantity for every position of m ; the lower m is (in one instance) the greater is T and the less is V , and vice-versa.

If the body m does not fall freely, but in gradually sinking heats another body or renders it electric in some sense, the heat or electricity produced must stand for exactly as much as the lost T , for the reason that if the heat produced "stands for" a greater (or less) quantity of work than mgh , it is (at least, theoretically) possible to arrange a mechanism to produce work—mechanical or otherwise—out of nothing; we shall have solved the so-called "perpetual motion." This argument was first used by S. Carnot,† who also said, in further explanation: "One will, perhaps, object that the perpetual motion, proved to be impossible by mere mechanical actions, is not, perhaps, so when one uses the influence of heat or electricity; but can one conceive the phenomena of heat and of electricity as due to anything else than to certain movements of bodies, and as such ought they not to be subject to the general laws of mechanics?" Also Helmholtz, in his celebrated memoir of 1847, following Carnot's example, also started from "the supposition that it is impossible to continually create moving force from nothing by any combination of natural bodies"; but went further, and carried this principle through all branches of physics. Helmholtz's memoir‡ thus contains a statement of the conservation of energy, though only as a (probable) hypothesis, and subsequent to the work of Mayer and Joule. The work of the latter is included under the more suitable title of "The Conceptions of Physics." PHILIP E. B. JOURDAIN.

* See Mach, *op. cit.*, pp. 293-305, 362-374, 495-509. Cf. also the section on the theorem of vis viva, pp. 374-381.

† For mathematical readers I put these in a note. They are (1) that the connection of the systems do not vary with the time (e.g., two masses in motion connected by a rod varying in length through heat); (2) that the integral expressing the "work" be an integral of a total differential of V , and V does not vary with the time; cf. Mach, *op. cit.*, pp. 507-508. Then (3) is a first integral of Lagrange's equations, i.e., if there are n Lagrange's equations, we require $2n$ integrals (in general) to solve the problem, (4) gives one.

‡ "Naturalism and Agnosticism." Second edition. 1903. Vol. I.

* In this ideal case we neglect resistance of the air. See below, where transformation of the "energy" into heat is spoken of.

† See Mach, "Die Principien der Wärmelehre." Second edition. Leipzig. 1900. Pp. 211-237.

‡ "Ueber die Erhaltung der Kraft." Reprint in Ostwald's "Klassiker." Leipzig. 1889. Nr. 1.

THE INTERNATIONAL PHOTOGRAPHIC SURVEY OF THE HEAVENS.

[A lecture delivered before the Literary and Scientific and Natural History Societies, Reading.]

It was more than fifty years ago that photography came to the aid of astronomy, first in relation to the moon and then, in 1860, to the sun. The work went on slowly for some twenty years. Between 1876 and 1879, about 900 plates of the moon were taken at the University Observatory, and this was almost the last astronomical use made of the wet collodion plate. In 1882 there was a very bright comet, that will not be seen again for 600 years, very low down in the southern sky. Its appearance attracted the attention of a photographer at the Cape, and he tried to photograph it with a dry gelatine plate, with an ordinary apparatus resting upon the earth. The result was not very satisfactory, but the photographer took the photograph to Sir David Gill, at the Cape Observatory. After inspecting it, he invited the photographer to take his camera to the Observatory and strap it on to the tube of a telescope provided with a driving clock for the purpose of counteracting the earth's motion, which secured that the plate pointed to the same place during the exposure. Not only was the comet successfully photographed, but Sir David saw that a large number of stars had also been included. Copies of the photograph were distributed among astronomers in all parts of the world, and the dry plates came rapidly into use. This was the initial idea that eventually resulted in the International Survey. Dr. Common in this country quickly appreciated the advantage that might be derived by substituting the photographic plate for tedious and laborious eye work, and by 1883 had secured some fine photographs of the great nebulae in Orion and the Pleiades cluster. The immense amount of detail obtained with comparative ease with one hour's exposure far surpassed what had less accurately taken months and years to secure by eye observation. As an outcome of this work, an international conference was held at Paris in 1887 to consider the advisability of obtaining by photography a complete chart of the sky. It was soon apparent that such a piece of work, on account of its magnitude and the impossibility of the northern sky being seen at southern observatories, would have to be divided among several. The question was discussed generally and details reserved for a second conference, which was held at Paris in 1889, and largely attended by delegates from the most important countries in the world. Eighteen observatories had then agreed to share the work, six of which were in the British Empire, while the United States, with its 165 observatories and large means, did nothing for the scheme. All details were arranged at the conference. It was decided that a refractor telescope should be used, consisting of one flint and one crown lens, and so arranged that the plate should be placed at the blue violet portion of the spectrum instead of the yellow, as is usual. This was necessary because, while the rapid gelatine plate is not sensitive to the yellow rays, it is very sensitive to the blue. The lenses had to be specially constructed for photographic work, and the plates made of plate glass, which involved great expense, ordinary glass being too uneven and rough. It was decided to include stars to the eleventh magnitude, and to secure these it was found necessary by experiment to expose the plate for three minutes. Considering the small point of light that such stars presented, it was remarkable that so faint an object should leave its image in so short a time. Such, however, it did on a normally fine night, but it was agreed that each plate should be exposed for six minutes, three minutes, and twenty seconds. By this method dust marks or flaws were eliminated. Measures were also taken to prevent the distortion of the film. Besides those short exposures or catalogue plates, as they are conveniently called, it was decided that the whole area should be again photographed with an exposure of 40 minutes, these plates to be ultimately reproduced as charts or maps. To carry out these various decisions it was estimated a period of 25 years would be necessary, and that about 1,200 plates would require to be taken by each observatory participating. The number actually allotted varied from 1,060 to 1,512 plates, those in the southern hemisphere having a larger number. At Oxford they had 1,180 to cover their zone, extending eight degrees north of the Pleiades. The lecturer entered at some detail into the cost of the undertaking. At Oxford the necessary equipment was the munificent gift of Dr. Warren de la Rue, and the University had made an annual grant for the work. In France the Government had agreed

to bear the cost of the reproduction of the chart plates by photogravure. If it were carried out on the same scale throughout the world, the cost would be enormous. But observatories which were not subsidised by their Governments would not do the chart portion of the survey on this expensive scale, not only on account of lack of money, but also because of the small utility of the work, the sky having been many times covered, and being still covered, just as adequately for the detection of changes at Harvard University and by various people using lenses that cover the sky much more rapidly. For this reason they were not taking the chart plates at Oxford. The lecturer described in detail the methods of measurements adopted, and, to give some idea of the magnitude of the undertaking, he stated that he had found that the average number of star images measured on each plate amounts to 339, varying from less than 100 to just under 5,000, in a three minutes' exposure. Each plate is measured twice, giving with revision about 825 images, making at Oxford a total of star images measured of well over a million. The number of separate stars in this portion of the sky is about a quarter of a million in a band eight degrees wide. This, if regarded as typical, would mean some four million stars to the eleventh magnitude for the whole of the heavens, but probably this average would not be reached. One point of interest the survey had been able to determine was the varying density of the stars in the heavens. This varied upon the Oxford plates from about 120 to 776, or fully 6½ times the densest. At Greenwich the number varied from 200 to 600, or only three times, and the number of stars per square degree passed from 35 up to well over 100 at Oxford. One important use to which the catalogue plates might be turned was the discovery of new or variable stars. One interesting discovery of this nature had been made by Professor Turner in a plate exposed by the lecturer. This plate had been rejected as an error made in pointing the telescope to the sky, an error actually due to the star itself, which was mistaken for another near thereto. He had had the star under observation for ten minutes, eight days before the Professor had detected its true character. When the result was announced the Harvard University turned up a photo, taken two days previously, and upon it discovered the same star. It was quite probable that they had many undetected new and variable stars, and even minor planets upon their plates, but other more pressing matters had prevented them as yet being looked for.

The lecture was illustrated by a series of some 60 lantern slides, mostly of the lecturer's own preparation.

F. A. BELLAMY, M.A., F.R.A.S.

ROYAL INSTITUTION.—The following are the lecture arrangements at the Royal Institution before Easter:—A Christmas course of lectures (experimentally illustrated and adapted to a juvenile auditory), on "Ancient and Modern Methods of Measuring Time," by Mr. Henry Cunyngame; Professor L. C. Miall, Fullerian Professor of Physiology, R.I., six lectures on "Adaptation and History in the Structure and Life of Animals"; Professor Karl Pearson, three lectures on "Some Recent Biometric Studies"; Professor W. E. Dalby, two lectures on "Engineering"; Mr. A. H. Savage Landor, two lectures on "Exploration in the Philippines"; Mr. Churton Collins, two lectures on (I.) "The Religion of Shakespeare," (II.) "The Philosophy and Significance of 'The Tempest'"; Professor W. Schlich, two lectures on "Forestry in the British Empire"; Mr. J. J. H. Teall, two lectures on "Recent Work of the Geological Survey"; Professor H. H. Turner, three lectures on "Recent Astronomical Progress"; Professor R. Meldola, two lectures on "Synthetic Chemistry" (experimental); Sir Alexander Mackenzie, three lectures on the "Bohemian School of Music" (with musical illustrations); Mr. D. G. Hogarth, two lectures on "Archeology"; Professor J. J. Thomson, three lectures on "Electrical Properties of Radioactive Substances"; and the Right Hon. Lord Rayleigh, three lectures on "Some Controverted Questions of Optics." The Friday evening meetings will begin on January 20, when a discourse will be delivered by Professor Sir James Dewar on "New Low Temperature Phenomena"; succeeding discourses will probably be given by Dr. E. A. Wilson, Mr. Cecil Smith, Mr. J. W. Gordon, Professor H. Marshall Ward, Chevalier G. Marconi, Professor J. J. Thomson, Sir Squire Bancroft, Professor G. H. Bryan, Professor J. Wright, Professor J. C. Allbutt, the Right Hon. Lord Rayleigh, and other gentlemen.

SUN'S: THEIR VARIOUS STAGES OF DEVELOPMENT AS REVEALED BY THE SPECTROSCOPE.

[From the "Journal of the Camera Club,"]

THE lecturer apologised for the abstruseness of his subject. It was to him, he said, a most engrossing one, and one which had occupied him for very many years. Some time before he lectured to the members on the subject of Nebulæ, and he intended to take up the thread of his argument from where he let it fall and speak of the next stage to Nebulæ in star condensation and development.

The first slide showed a plain spectrum representing the dispersion of one small line of light. All the various rays of which the light was composed were bent out of their path on passing through the spectroscope, and their dispersion took the form of the coloured band shown. The light of any incandescent solid substance, similarly treated, gave a like band of colour. The hotter the source of light the more extended would be the spectrum at its violet end.

When the spectroscope was pointed to the sun a very extraordinary view was presented. Curious black lines appeared in the spectrum, in some cases crowded together, in others wider apart; in others again very fine or double. For a long time the meaning of these dark lines running transversely across the solar spectrum remained a mystery. Fraunhofer, with a tiny object prism, first discovered their existence in 1823. This pioneer work with this prism only saw a few of the lines at first, the remainder being unnoticed owing to the inadequacy of his apparatus; subsequently, with the aid of a four-inch telescope and a prism set suitably before it, a larger number of lines were discovered by him.

A mass of incandescent hydrogen glowing in its own light gives through the spectroscope only four lines—red, bluish-green, blue, and violet—instead of a continuous band of colour. These lines always had the same fixed position in the spectrum, and the same width and intensity. Sodium was represented only by the well-known double D line in the yellow, while the complicated spectrum of iron, on the other hand, had some 460 lines, ranging from red to blue. So it was with every element. Each had certain definite lines applicable to its own spectrum. The spectroscope thus furnished a means of identifying the elements beyond doubt. In 1859 Kirchhoff found that many of the bright lines of incandescent metals had their exact counterpart, both in regard to position and width, in the dark lines of the solar spectrum. These dark lines showed where absorption took place through vapours of metals and gases.

Kirchhoff made his first experiments with the two yellow lines of sodium because these were so easy to produce. As a matter of fact, it was so difficult to get rid of the sodium spectrum in the ordinary laboratory that it was something of a nuisance. In order to reproduce the two black lines found in the sun's spectrum, Kirchhoff took an iron tube five feet long, closed it at each end with a piece of plate glass; along the interior of this tube he placed small and absolutely clean fragments of sodium metal, and exposed the whole to the heat of a furnace. Thus he obtained sodium gas. He then placed at one end an electric light and a spectroscope at the other, and threw the electric light through the tube. As a result, instead of the two yellow lines of sodium, he got two black lines, superposed on the coloured spectrum of the electric light, and when he came to compare these with the two black lines in the same position in the sun's spectrum he found them to be absolutely identical. Thus he was convinced that sodium was in the sun's chromosphere.

Then followed the identification of various other elements in our luminary by the same process. It was now known that the black lines in the sun's spectrum were due to magnesium, iron, calcium, nickel, aluminium, sodium, helium, hydrogen, and various other metals and gases common to our own planet. To a great extent the constitution of our sun was known to us. It was composed of a central glowing mass, which represented the electric light of Kirchhoff's experiment; this was surrounded by an atmosphere consisting of incandescent gases of the various metals, etc., beyond that an atmosphere of hydrogen, higher still one of helium, and at the furthest the corona, which was probably the true solar atmosphere, and lay outside the region of the coloured prominences.

In reply to a question from one of the members, the lecturer further explained that the sodium in the sun's outer envelope was in a state of incandescence, without which the lines could not be obtained.

Were the sodium solid it would merely give in the spectrum a colour band. In this connection a very pretty experiment might be tried. A tiny piece of sodium should be placed in a test tube and heated with an ordinary Bunsen burner; the sodium gas which would be given off if placed in front of a spectroscope would give the two yellow lines. Examined, while still hot, with a good petroleum lamp behind it, a curious reversal would be noted: the sodium would have cut out its own light, and produced two black bands superposed on the coloured spectrum of the petroleum lamp.

Huggins, Rutherford, and Secchi followed in the steps of Kirchhoff. Secchi applied the spectroscope to the whole of the heavens, and discovered that while the planets gave the same spectrum as the sun (necessarily so, because they shone by its light), the fixed stars revealed a different order of things. The spectra of the stars differed from one another very considerably. Some were crowded with lines, others had very few lines indeed. It was found possible, however, to divide the stars into four types. The first type, the Sirian stars, consisted of those having one or two broad lines. The second, the Solar stars, resembled our own sun, and had a number of well-defined lines. The third consisted of those stars which had a number of lines crowded together and with peculiar "flutings" sharply cut off at the blue and shaded at the red end. The fourth gave a very faint spectrum consisting of a number of dark lines with flutings sharply cut off at the red end and shaded at the blue. All being suns in different stages of development.

In order to assist in tracing the earliest defined stage in the development of stars from Nebulæ, the lecturer showed a photograph of the Pleiades, in which group there were but seven stars visible to the naked eye. The photograph, taken with a very long exposure on different nights, revealed 1,421 countable stars; another, with a longer exposure still, showed that nebulæ surrounded the principal of these orbs. It was only photography that revealed these nebulous structures; when observed under ordinary conditions no nebulæ were visible. The long exposure impressed them on the plate, and these stars had been as it were "caught in the act" of condensing.

The lecturer also showed a field of star spectra. Each star was seen simply as a spectrum, owing to the fact that there was a large prism before the objective which dispersed the light into spectra. These spectra greatly differed from one another, again illustrating the various stages in development in the fixed stars. Some were young, others a little older, others again old.

The first type of star to be noted was that in which the metal lines were so faint as to be all but invisible. In this type hydrogen was so prominent and intense as to overpower almost every metal that was present. At the same time it was not present in equal force in all the "white stars." In the case of Sirius one had practically only the G line and the H line. There were, indeed, other lines of a very faint character, but hydrogen was overwhelmingly prominent. Another peculiarity in stars of this type was that the violet portion of their spectrum was very intense and prolonged, showing that the heat was very intense. The spectrum entirely differed from that of our sun. These were, in fact, the white stars of the heavens representing the first definite form after condensation from nebulæ, an atmosphere of hydrogen and helium surrounding them to an enormous extent.

The second or solar order of stars consisted of those in which the metal lines were similar to those of our own sun, the typical star being Capella. In these also the hydrogen lines were prominent, but condensation and cooling had gone on to such a degree as to make the dark lines of numerous metals and gases distinctly visible. In α Procyon, for example, the majority of the lines traceable were due to iron, calcium, magnesium, sodium, nickel, cobalt, barium, etc., lines are also present, those of hydrogen being prominent.

In the third class of stars, the hydrogen lines, instead of being black as hitherto, were bright; that is, coloured, as would be the case when examining incandescent hydrogen in the laboratory. This type of star, as a rule, was variable. At one time it would be brightly, and then would dwindle down until it nearly passed sight, when it would again revive and become bright. The thesis explaining the condition of these stars is somewhat at New York. The star itself had a small nucleus, but its atmosphere, it was shown that the light from the incandescent hydrogen, overpowered the dark lines emitted by the nuclei.

of this central nucleus would, therefore, be superposed upon the spectrum emitted by the whole of the atmosphere, and, as a result, the atmosphere being incandescent and more powerful than the nucleus, its bright lines were seen instead of dark lines, those of the nucleus being dark. There are, however, other explanations of the phenomenon.

The spectrum given by this third order of stars was similar to that of a sun spot. The lecturer exhibited a slide showing an outburst of hydrogen from the sun's disc as seen at the time of an eclipse. This upshot of hydrogen, when contrasted with the size of our own planet, was seen to be truly enormous. A photograph taken at Greenwich of the great sun spot of September, 1903, was also shown. This spot extended over very nearly five-millionths of the sun's disc. It was supposed that these spots were uprushes from the atmosphere of the sun forming glowing clouds of vapour in the outermost solar envelope. Examined through the spectroscope, it was found that some of these were clouds of magnesium, others of sodium, etc., and that they generally had small bridges of incandescent hydrogen connecting their darkest portions. The two narrow sodium lines in this spectrum were found to be greatly thickened, showing that the pressure was very great.

The lecturer entered somewhat minutely upon the star Beta Lyrae, to the south of Vega. This was a variable star, taking 12 days, 21 hours, 47 minutes, and 13 seconds in which to accomplish its cycle. Its two maxima and two minima changes went on with unalterable regularity. By means of a slide, prepared at Stoneyhurst Observatory, illustrating the changes in this star's spectrum for each day of the above specified period, it was seen that some of the lines performed extraordinary caprices. When the various spectra were compared with the time of the variability of the star it was found that they tallied to a considerable extent. There were a number of explanations to account for these changes. It was known that there were at least three sources of light—an incandescent gas giving off light of its own, and two further sources of light giving off two series of dark lines; but at another stage in this star's changes it was evident from its spectrum that there must be either four sources of light or that the same two series of dark lines must be superposed on a considerably widened bright line. The general opinion favoured the latter explanation.

The reason for the widening of the line might be illustrated by the case of a train travelling in the direction of the observer; if the light of its lantern were examined through the spectroscope it would be found that the advance of the engine caused the wavelength to shorten and all the rays to shift to the violet. If, on the other hand, the train were going from the observer, all the rays would be shifted to the red, and the light waves would be lengthened. Light waves were closely allied to sound waves, in which the same principle was at work. As a train approached the observer the sound of its whistle would rise in pitch; as it went from him the sound would lower in pitch. The sound waves shortened as the train approached and lengthened as the train receded. By the shifting of the lines it was possible to estimate the velocity of a star in the line of sight; when the lines shifted to the violet end it was known that they were being shortened, and by calculating this shortening of the wave length they could tell the pace at which the star was moving.

This category of events made visible by the agency of the spectroscope showed that the various components of this star were in a state of very rapid motion. Calculating by means of the two edges of the F line, a certain great scientist had estimated that the pace at which it was moving towards us was 68 kilometres per second of time. He further calculated that the circumference of the orbit was 74 million kilometres, and the distance of the centre of gravity 24 million kilometres. By comparing the spectra of this star in its various stages it was possible to learn the metals of which it was composed. The general idea now was that there were four suns revolving round each other, their eclipse and re-eclipse giving the appearance of these lines. A great deal more scientific work would have to be done, however, before the vagaries of this spectrum could be explained.

Order of stars to which the lecturer called attention included the Pleiades. These were temporary or occasional. They were few and far between, but stars sometimes blazed up in the heavens and were not usually seen there. Their sudden transformation

into the first magnitude would occasionally take place in twenty-four hours. *Nova Persei* was an example of this class. Ten days before this star appeared, in December, 1891, a photograph was taken of Perseus which gave no sign of anything remarkable; in less than twenty-four hours it came up from nothing to the first magnitude, out-rivalling Capella in brilliancy. Its spectra varied greatly, and even while one spectrum was being photographed the motion in the line of sight shifted the lines. An enormous region of nebulous gas many millions of miles in extent evidently surrounded the star. During its continuance as a first magnitude star, hydrogen and helium shone out in its spectrum with enormous intensity. After a time it dwindled down to the third or fourth magnitude. In the course of three days it shifted from the third to the fifth and back again to the third. The change in the H line was so enormous as to show a motion in the line of sight of from 500 to 700 miles per second. The vortices, the storms, the hurricanes that occurred as shown by the different intensities in the hydrogen lines must have been beyond the power of any adjective to describe. Various explanations were put forward to account for the phenomenon. A solar system like our own might have been precipitated into a nebula. This was more likely than the alternative explanation, namely, that a very large body had crashed into a faint star; in any case, for such an enormous mass of gas to develop in twenty-four hours the upheaval must have been truly awful, and the terrific motions and forces which were raging must have been appalling.

In order to show how the mass of gas could extend far beyond the nucleus of a star, the lecturer placed on the screen a photograph of this Nova surrounded by a nebula. He also showed the spectrum of the great nebula of Orion and the trapezium stars, and pointed out how the beginning of the development of a star out of the nebula itself was to be traced.

To sum up the whole, all the stars were suns, and were different in constitution only because of their different stages of development from nebulae. They might be classified according to the gradual cooling which had taken place, as white, yellow, red, and orange, and they ranged from the brightest, identified by the hydrogen lines, and few or no lines to those of the lowest group giving a very faint spectrum with crowded lines. In all of them were the same elements as in our own sun, and all of them had their part in the one grand development of the enormous universe.

In 4,334 stars of a magnitude only down to the fifth, 73 per cent were white stars (2 per cent. of these having broad lines in the spectrum); 25 per cent. were suns like our own; and 1 per cent. were cold or cooling stars which would go out of light altogether so far as the spectroscope was concerned.

This science was still in its infancy, and this was an age of new developments. He felt confident that in a hundred years' time the astronomer would be in a much better position to talk to the members of the Camera Club about the wonders of the universe.

J. A. FORMOY, F.R.A.S.

At a well-attended meeting of the Bolton Amateur Photographic Society, on the 30th ult., at which the chair was taken by Mr. G. Hodges, the society's president, a most interesting and helpful lecture on "Architectural Photography" was delivered by Mr. W. A. McLean, the president of the Blackburn Photographic Society. In the course of his introductory remarks, after dealing with the questions of apparatus and materials, the lecturer touched upon some of the difficulties which beset the beginner in this particular branch of the art, and pointed out a variety of ways in which they may be met. A fine selection of slides, chiefly from Mr. McLean's own negatives, were next exhibited, the lecturer, who possesses a fund of racy humour, recounting the circumstances under which some of the exposures were made and pointing out their peculiarities, technical and otherwise. The usual vote of thanks terminated a meeting, which may be said to augur well for the success of the ensuing session. The society, which is in a flourishing condition, offers many advantages to amateur photographers, particulars of which may be obtained on application from the secretary, Mr. A. Robinson, of 2, Fold Street, Bolton.

OLD CUSTOMS IN ENGLAND.

[Abstract of a lecture delivered before the Walsall Literary Institute by Sir Benjamin Stone, M.P.]

Photography had only been the auxiliary helper towards the end he had in view, and that was recording the current history of their national life, and, though his collection was large and varied, as it should be to reflect the national life of the country, yet there were special collections of pictures which were more or less interesting in groups, and on this occasion he would like to use the group he had got together of the National Customs of England which survived in various parts of the country. They must understand that throughout the country there were a very large number of old customs that were still kept up, sometimes in cities, sometimes in country villages, and which were extremely interesting in themselves, but were really little understood by people, even by those taking part in them. They were looked upon as annual and interesting festivals, but the meaning of which the people who took part in them had not the remotest idea, and yet that meaning was very significant and most interesting, and would afford a subject for his address that night, an address which he hoped they would, when he had finished, understand and appreciate. Many of these customs threw a light on the former history and habits of the people. These customs, which were very popular in ancient times, had survived until the present day in many cases. Some of them were religious customs, but many also, especially those which were kept up in country villages, were of pagan origin. Other customs had arisen out of the grant of Royal Charters, by which certain privileges had been granted in different parts, all of which had given rise to certain festivals and customs that were very interesting, if one visited them, and knew the reason why they existed. For instance, there were certain holidays and festivals, such as May Day, the Easter Festival, and Christmas, which had a distinct meaning. Some of the ancient religious festivals had rather got into disuse, but they still remained in different parts of the country. If they were well up in history, they might remember having read of one festival which at one time was very popular and universal in the country, and that was the Hock Tide Festival, which, as a matter of fact, commemorated the massacre of the Danes by King Ethelred and his Queen Emma. At the time that took place the Danish invaders had settled down amongst the people of the country, and had almost become part of the nation, but King Ethelred and his wife decided to massacre them, and this was done on the occasion of their marriage festivities, the slaughter commencing at Winchester, where they were married. Women also took a large share in the massacre. The rejoicings of Hock Tide were really to celebrate that massacre, although that was not known by many people in these days. The festival was still carried out at Hungerford, in Hertfordshire, on the Easter Tuesday, when the ceremonies were very quaint and interesting. After describing the various formalities observed, Sir Benjamin went on to speak more particularly of the custom of appointing two men at the festival to kiss all the girls. When he was last in Hungerford he said there was a difficulty, as the young men appointed had objected to carrying out their duties, but the ladies had risen in indignation. There was up till recently in Staffordshire still a trace of the old Hock Tide Festival in the custom of Heaving Monday or Heaving Tuesday, which he believed still obtained in some parts of the country. There were, however, few people, he thought, who connected that rather vulgar practice with the massacre of the Danes in the time of King Ethelred. In olden times it was the duty of towns and cities and even private people, according to the amount of income, to provide a certain amount of defensive armour and protection in case of war, and in the time of Edward IV. there was an Act passed requiring every town to provide so many coats of mail and so many halberds, and he believed that in Walsall they still had some of those venerable halberds, which, under that Act, they had been compelled to provide. More than that, in the neighbouring town of Lichfield, the Court of Aray, which was really the court held for the inspection of the weapons provided, was still carried out, and they still had there some of the original coats of mail. The fact that these had now to be worn by boys and youths and were too small for men might, he thought, be attributed to the fact that they were supplied soon after the Wars of the Roses, when most of the men had been killed off. The Bower at Lichfield was indeed one of the most

interesting relics in the country. The remainder of the address was illustrated with photographic slides, of which a large number of interesting ones were shown. Sir Benjamin explained the different customs, and showed that many of them had their origin in remote antiquity, such as the kern baby, whose origin was the Grecian festival in honour of the Goddess Ceres, and to Greece the custom was probably brought from Egypt. Amongst others which were shown on the screen were the festivals at Hungerford and Lichfield; the horn dance at Abbots Bromley, held originally to commemorate the relaxing of the arbitrary forest laws in the time of Henry II.; the morris dancers at Knutsford, Cheshire, from which dances had come the present-day country dances; the May Day Show, which really was a pagan celebration on the return of Spring; Garland Day, at Abbotsbury, in Dorset, where on the annual festival the fishing boats were decorated with garlands, which were afterwards thrown into the sea—a frankly pagan ceremony coming from the Mediterranean and really meaning the propitiation of Neptune, God of the sea; the Midsummer Fire in the hills of Northumberland, which had in the beginning been nothing but sun worship pure and simple; a custom in a Cornish village probably introduced from Greece, which consisted in the inhabitants dancing through all the houses in the village; and, finally, the Welsh Eisteddfod, which was nothing more nor less than a continuation of the ancient Druidical ceremonies.

Exhibition.

ISLE OF THANET PHOTOGRAPHIC SOCIETY.

THE following is the list of awards made by the judges, the Rev. F. C. Lambert, M.A., and Mr. W. H. Rogers, in this exhibition, held last week:—

For the Best Pictorial Print.—Silver Plaque: No. 172, P. F. Weeks (member).

OPEN CLASSES.

Class A.—Landscape and Seascape: Silver plaque, No. 15, E. J. Jarvis; bronze plaque, No. 31, P. F. Weeks (member); honourable mention, No. 9, F. C. Snell.

Class B.—Portraiture, Figure and Animal Studies: Silver Plaque, No. 58, Mrs. H. Morgan (member); bronze plaque, No. 57, J. W. Johnson; honourable mention, No. 50, G. M. Meyer.

Class C.—Architecture: Silver plaque, withheld; bronze plaque, No. 102, L. G. Hodgson (member); honourable mention, No. 105, W. Lombardi.

Class D.—Miscellaneous, Still Life, etc.: Silver plaque, No. 119, E. Seymour; bronze plaque, No. 114, F. C. Cobb; bronze plaque, No. 137, G. W. Simmers (member).

Class E.—Lantern Slides: Silver plaque, No. 60, "The Brew House, Lympne Castle," A. Vigar (member); bronze plaque, No. 34, "Cheedale," P. Solly (member); honourable mention, No. 5, "The Lavatorium," Rev. E. T. Clark.

MEMBERS' CLASSES.

Class F.—Pictorial Prints: Silver plaque, No. 172, P. F. Weeks; bronze plaque, No. 153, Mrs. H. Morgan; bronze plaque, No. 182, L. G. Hodgson; honourable mention, No. 194, J. Savage.

Class G.—Lantern Slides: Silver plaque, No. 96, "A Strong Breeze," P. F. Weeks; bronze plaque, No. 87, "Upper Surface, Sand Str," A. Vigar; bronze plaque, withheld.

CLASSES FOR MEMBERS WHO HAVE NOT PREVIOUSLY TAKEN AN AWARD.

Class H.—Pictorial Prints: Bronze plaque, No. 206, P. Solly; honourable mention, No. 214, W. B. Jones.

Class J.—Lantern Slides: Bronze plaque, No. 126, W. B. Jones.

FORTHCOMING EXHIBITIONS.

December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104, West 101st Street, New York.

December 8, 9; 10.—Muirkirk Amateur Photographic Association. Secretary, W. Barrowman, Ayre View, Muirkirk.

December 12-17.—Sefton Park Photographic Society, Liverpool. Hon. Secretary, H. E. Cubley, 3, Langdale Road, Sefton Park, Liverpool.

December 13-20.—Southampton Camera Club. Hon. Secretary, S. G. Kimber, Oakdene, Highfield, Southampton.

December 28-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 138, Glasgow Road, Wishaw.

January 12-14, 1905.—Boston Camera Club. Hon. Secretary, H. M. Hames, 65, West Street, Boston.

January 14-23, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.

January 20-21, 1905.—South Essex Camera Club. Hon. Secretary, T. Mitchell, 180, Browning Road, Manor Road, E.

January 28-February 12, 1905.—Photographic Society of Marseilles. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.

February 6-11, 1905.—Blairgowrie and District Photographic Association. Hon. Secretary, Wm. D. M. Falconer, James Street Cottage, Blairgowrie.

February 16-18, 1905.—Norwich and District Photographic Society. Hon. Secretary, E. Peake, Rydal House, Earlham Road, Norwich.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

February 25-March 4, 1905.—Birmingham Photographic Society. Hon. Secretary, Lewis Lloyd, Norwich Union Chambers, Congress Street, Birmingham.

March 4-11, 1905.—South London Photographic Society. Hon. Secretary, H. Creighton Beckett, 44, Edith Road, Peckham, S.E.

March 7-14, 1905.—Brentford Photographic Society. Hon. Secretary, F. H. Read, Ferndale, Clifden Road, Brentford.

March 20-25, 1905.—The Cripplegate Photographic Society. Hon. Secretary, John B. Parnham.

June, 1905.—Northern Photographic Exhibition. Secretary, F. G. Issot, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

December 31.—Barnet. Nineteen classes. Prizes valued at £500 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

March 31, 1905.—Ilford. £750 in cash prizes for negatives on Ilford plates. Ilford, Limited, Ilford, E.

MESSRS. JEPSON AND CO., of Hanover Street, Leeds, send us a dainty little trade price-list for enlarging and printing in all processes, which they will be pleased to send to anyone on receipt of trade card. Their work has been favourably known to us for some time.

ROYALTY AND PHOTOGRAPHY.—It is tolerably well known the great interest that is taken in photography by our Royal Family. It seems also that the King and Queen of Portugal are great patrons of it, for we read in the "Standard" that after the midday luncheon of the shooting party, at the Duc d'Orleans' Evesham seat, photography occupied the party for some time afterwards, and that the King gave great gratification to the beaters by commanding that a picture should be taken of them in a group.

TECHNICAL EDUCATION.—According to a return which was issued one day last week, there was expended on technical education in England and Wales during the year 1902-3, the sum of £1,191,998 3s. This amount is exclusive of the sums allocated to intermediate and technical education under the Welsh Intermediate Education Act, 1889. The amount raised by loan on the security of the local rate under the Technical Instruction Acts was £149,665 1s. 6d. The amount of loans—so raised—outstanding was £1,159,941 11s. 7d., and the balance in hand of moneys received and allocated to technical instruction was £598,989 7s. 3d.

New Books.

"Who's Who." "Who's Who Year Book." Published by Adam and Charles Black, Soho Square, W.

These familiar scarlet-coated annuals have again made their appearance, and, judging from the thickness of "Who's Who," there is an increasing number of people considered to be worthy of the honour of inclusion in this archive of haut ton. The Year Book we have found very useful many a time for reference, and there is much to be found in it that one would not find in others of somewhat similar construction.

"The Adventures of Cock Robin and His Mate." By R. Kearton, F.Z.S. 120 illustrations. 240 pp. Price 6s. London: Cassell and Co., Ltd.

The latest Kearton volume should be popular with the little folk, for it deals with "Dicky-bird Land" in a manner at once engaging, simple, and lucid. An old cock robin is the narrator, and he has many interesting experiences to tell his chicks. These include his "adventures in and around a garden during the winter; his courtship and nest building in queer quarters, his observations upon other birds, and their interesting homes and habits; the wonderful ways of all kinds of chicks; a trip to the seaside, with stories of seabird life and character; the amusing mistakes he has seen chicks, fox cubs, and kittens make; what young Robins see and inquire about when they leave the nest; strange adventures with stoats, squirrels, jays, cats, and dogs." The illustrations show the Keartons' wonted skill in this branch of photographic work, although they perhaps are not so sensational as those that appear in some previous books of the series. Presumably a great many of the negatives were taken by telephotographic agency. All, at any rate, show most painstaking effort, and the book being, besides, one filled from cover to cover with natural history lore very clearly set forth, is one to be heartily commended to the purchaser of seasonable presents.

MESSRS. CADETT AND NEALL, LTD., of Ashted, the well known plate manufacturers, have sent us a sample of their plate boxes, which will for the future bear a label at one end so that they may be used for storing negatives, and the register of the numbers written on these labels, so that mere reference to an index will at once enable the desired negative to be found. The idea is ingenious and practical.

FROM Andree, of the Hopetoun Studio, Colombo, Ceylon, we have received a large parcel of pictorial postcards, which are not only interesting as giving a good insight into the people's customs and places of Ceylon, but also for their artistic composition and excellence as collotype prints. They are fully equal to any that we have seen done in England.

O. SICHEL AND CO., of 52, Bunhill Row, E.C., have just issued a new list of chemicals and other sundries, which merit the attention of our readers. The majority of them are put up in powder form, and will therefore be found extremely handy for touring. Two special lines we notice are the "Vivid" flashlight cartridges, which are put up in 20, 40, and 60 grains, all ready with a fuse and also founts of thin metallic letters, which are attached to a negative by an adhesive, and give very sharp and white titles. These we shall hope to notice later on after practical trial.

It is with regret that we have to record the death on Sunday morning last of Mr. John Blundell, Senior, in his seventy-eighth year. Mr. Blundell's connection with photography has been a long and honourable one, and many of our readers must have known him well. He had been ailing for about two years, and practically retired from business three years ago. He was a prominent freemason, and one of the old school, making this a great hobby, and, speaking from personal recollections of him in this connection, he was characterised by a geniality and kindness of heart to his younger brethren that much endeared him to them. We extend our sympathy and that of our readers to his family.

New Materials.

"Zambex" Cameras. Sold by R. and J. Beck, Ltd., 68, Cornhill, London, E.C.

Under this name the makers have introduced a new series of cameras, fitted with an extremely ingenious system of changing flat films and plates. The cameras are of the folding, box, and twin lens patterns, and may be obtained either fitted with a single lens, a symmetrical, planat, or Unofocal, and also with Bausch and Lomb or Cornex lenses. The folding cameras are fitted with the well-known and useful Cornex finder, and the box form, which has a fixed focus of ft., can be used with magnifiers. The camera sent to us for examination is the No. 3, fitted with a Unofocal of 4.75 focus, a Bausch and Lomb shutter, a Cornex index, and view finder, which can be used both for vertical and horizontal views. The front of the camera pulls out and automatically locks on the tailboard at infinity, and can be also lifted and set to any distance by the scale. It is further fitted with a rising front, two small but sensitive levels for vertical and horizontal use, and tailboard is mahogany and metal bound, and is provided with bushes for tripod screws. The whole of the metal parts are nickel-plated, and the instrument is well made, and works easily and smoothly, and measures $5\frac{1}{2}$ by $4\frac{1}{4}$ by $2\frac{1}{2}$ ins. The great novelty is the "Zambex" film and plate changer, which is the same in all the cameras, and we cannot do better than give the maker's description of it, which is as follows:—

The "Zambex" skeleton is a folded strip of paper with a film attached at each fold; in each of the 12 folds a film B is held in a flap at the top and two corner slots at the bottom, and an opaque card A is attached to the front. The "Zambex" skeleton loaded with films is contained in a double length opaque envelope (Fig. 1).

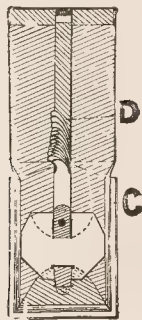


Fig. 1.—Zambex Skeleton in its Envelope.

The films are in the lower half of this envelope when unexposed, and are pulled into the upper half as they are used. The lower half of the envelope has an opening the size of the film through which the exposure is made, and around this opening is a stiff projecting edge of card (A) by which the "Zambex" Skeleton in its envelope is slid into a frame of the "Zambex" camera.

To expose the first film, the front tag is pulled up the slot in the envelope to the position (K) in Fig. 2. This removes the dummy A

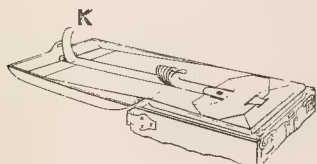


Fig. 2.—Zambex Camera, Showing First Tag Pulled Up.

from the lower to the upper half of the envelope, leaving the first film uncovered ready for exposure. In turn, as each film is exposed, it is transferred from the lower half to the upper half of the envelope,

and when they have all been exposed they are pushed back to their original position, and the envelope can be removed from the camera and another set inserted.

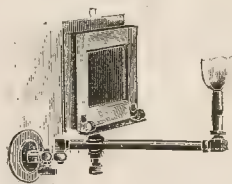
"Zambex" skeletons may be removed from the camera for focussing, after each exposure, if required. Those films which have been exposed are simply pushed back to their original position, and the skeleton in its envelope removed from the camera.

The slot in the back of the "Zambex" envelope, along which the tags are pulled for transferring a film from the lower to the upper half, is so situated that although daylight can get to the back of the skeleton, the films or plates themselves are absolutely protected from light, and the changing can be done in the strongest sunlight without any fear of fogging.

These "Zambex" skeletons carry 12 cut films of any make. We have used this camera and changing system during the past week, and have found that all went as merry as a marriage bell, there was no hitch, and on development of the films we could find no scratches, nor fog, and it strikes us as being an efficient and satisfactory device for daylight loading of stiff flat films.

Griffin's Gas Bracket Printer. Sold by John J. Griffin and Sons, Ltd., Sardinia Street, London, W.C.

This ingenious little device is particularly intended for printing bromide or other developing papers by gaslight, and consists of a metal easel with spring clip, which will take any ordinary $\frac{1}{4}$, 5 by 4, or $\frac{1}{2}$ -plate printing frame, and which can be screwed to any existing gas bracket, and then raised or lowered till it is central with the light. It will be found extremely convenient, and will certainly ensure one constant factor—namely, a fixed distance, which is so



important when many prints have to be made from one negative. It will be found advantageous, too, when it is required to give the top or bottom of the negative more exposure, as the support may be raised or lowered during exposure, and, as sometimes happens, one side of a negative is denser than the other, it can be swung round during the whole or part of the exposure, so as to effect this purpose. It is an ingenious and useful adjunct to the dark room.

Auto-Pastel. Sold by the Autotype Company, 74, New Oxford Street, London, W.C.

Under this name the Autotype Company have introduced a process of pigment printing without transfer, somewhat analogous to gum bichromate, but differing from it, in that the pigmented coating becomes absolutely insoluble in hot or cold water, and development has to be effected by abrasion, which is most easily obtained by using a broad camel-hair brush. It is obvious from this that this gives enormous latitude for local and general treatment. The actual working of the process is extremely simple. To sensitise the paper it should be immersed for one minute in a 5 per cent. solution of bichromate of potash and dried in a dark warm room. The drying should take about half an hour. Printing from a fairly strong, well-exposed negative, the time required is about the same as for ordinary carbon printing. Full exposures may be given, as there is great latitude in development. After exposure remove the paper from the printing frame, and allow to soak for a few minutes in cold water. Several sheets may be placed in the cold water at the same time. Next take a tin dish containing water of a temperature from 120 to 150 degrees Fahrenheit (40 to 50 degrees Reaumur). Float the exposed paper face downwards for two or three minutes, keeping the dish moving at the time. Now take the sheet and turn it face upwards, and commence the development by gently brushing in all directions with a three or four inch

camel hair brush, commencing at one edge and working towards the centre. As the image begins to appear the development may be either local or general, according to the wishes of the operator. On completion of the development the prints are washed in cold water, and are then finished. If desired, they may be fixed by about ten minutes immersion in a 2½ per cent. solution of alum, but this is not really necessary. We have not yet had an opportunity of trying the process, but the specimen prints submitted to us are exceptionally pleasing, they have an absolutely dead matt. surface, and the grain of the pigments used is so fine that there is no distinction of detail and an absence of "blobbiness" which is too often the characteristic of home-made gum prints. The "Auto-Pastel" papers can, of course, be obtained in various colours.

The New "Agfa" Flashlight. Sold by Charles Zimmermann and Co., St. Mary-at-Hill, London, E.C.

One of the troubles of keeping a flashlight mixture is the possibility of the salts that are mixed with the magnesium becoming damp, and, further, the danger of mixing these. This new flashlight gets over the difficulties by keeping the magnesium separate from the salts till they are wanted, and then the salts, which are stored in a corked measure that practically forms a stopper to the bottle, are shaken up with the magnesium and the empty measure used to portion out the requisite quantity of flashlight mixture. Accompanying the bottle is a supply of touch paper, on one end of which the powder is heaped, and as this paper burns but slowly there is no difficulty in removing the hand from the proximity of danger, even although a match be used. From a practical trial of this we have found that the duration of the flash is very short, there is very little smoke, and a very brilliant light is given.

Patent News.

The following applications for patents were made between November 14 and 26, 1904:—

Apparatus and Film.—No. 24,677. "Improvements in Photographic Apparatus and Film." Paul Theodore Hahn.

Films.—No. 24,774. "Improvements in films for photography." Maurice Bry.

Developing Apparatus.—No. 24,910. "Improvements in apparatus for introducing developing, washing, fixing photographic plates, films, or sensitised surfaces without the use of a dark-room." Hays Tirmann and Hugo Tirmann.

Dark Slides.—No. 25,136. "Improvements in and relating to dark slides for photographic use." Howard Hearne Crosbie.

Printer and Vignetter.—No. 25,177. "Improved general printer and vignetter for photographic papers, films, and the like." George Wilson Morgan.

Shutter Camera.—No. 25,379. "Improvement in folding pocket and focal plane shutter camera." John Stratton Wright.

Shutters.—No. 25,383. "Improvements in photographic shutters." John Stratton Wright.

Camera.—No. 25,496. "Improvements in hand photographic cameras." Houghtons, Limited, and W. Dockree.

Sensitised Plates.—No. 25,718. "Improvements relating to sensitised plates for a process of colour photography." A. Lumière.

Colour Photography.—No. 25,752. "Improvements in colour photography." Arthur Henry Gittings.

Printing Frames.—No. 25,772. "Improvements in photographic printing frames." Alfred Schoeller.

The second number of "Herman's Occasional" is just to hand, and will be found interesting to professional photographers.

In consequence of the rapid extension of their Paisley branch Rae Bros. have been compelled to remove to larger and more central premises at 100, High Street, Paisley.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Dec.	Name of Society.	Subject.
12.....	South London Photo. Society...	Orthochromatic Work Simply Tr...
12.....	Society of Arts	Mr. H. E. Edmads.
12.....	Luton Camera Club	Music Wind Instruments. Mr. J. Blaikley.
12.....	Camera Club	Isoschromatic Work. Mr. John Gear, F.R.P.S.
13.....	Hackney Photo. Society	A Few Walks Round Pompeii. I...
13.....	Nelson Photographic Society ..	trated, Hugh Stannus, F.R.I.B.
13.....	Glasgow Southern Ph. Assn.	London Life and Excursion Slides.
13.....	Brentford Photo. Society	Tramps Round Ambleside with Camera. Mr. A. Plunkett.
13.....	Devonport Camera Club	Carbon. Mr. L. A. Blair.
14.....	Boro' Poly. Photo. Society	Combination Printing. Mr. F. H. R.
14.....	G.E.R. Mechanics' Institution	Rising to the Occasion. Mr. W. Welford, F.R.P.S.
14.....	Cricklewood Photo. Society.....	Lantern Night.
14.....	Society of Arts	Pigment Stripping Films for T...
14 to 21	Southampton Camera Club	Colour Photography. Demonstrat...
14.....	North Middlesex Photo. Soc. ..	Mr. Sims.
14.....	Everton Camera Club	Lantern Night.
15.....	Hull Photographic Society	The Patent Laws. Mr. Charles Abel.
15.....	London and Prov. Photo. Assn.	The Exhibition.
15.....	Ealing Photographic Society ..	Ten Minutes Papers by Members.
15.....	Richmond Camera Club	Annual Meeting.
15.....	Watford Camera Club	Egypt, through a Goetz Lens. Mr. Falconer Jameson.
15.....	Liverpool Amateur Ph. Assn.	Paper by Mr. T. K. Grant.
15.....	Southport Photo. Society.....	Flashlight Photography. Mr. E. J. Smith.
15.....	Gateshead Camera Club	Demonstration by the Rotary Ph...
15.....	Leigh Photographic Society ..	graphic Company.
15.....	Optical Society	Competition, "Christmas Cards."
15.....	Batley and Dis. Photo. Soc. ..	Telephotography. Demonstrated.
15.....	West London Photo. Society ..	E. N. Ellis.
15.....	Aberdeen Photographic Assn....	What I saw in Norway. Dr. Payne.
15.....	Boro' Poly. Photo. Society	Printing by Artificial Light. Dem...
		strated, Mr. A. G. Greaves.
		The Higher and Lower Intentions...
		Photographer. Rev. H. W. Dick.
		Direct Stereoscopic Projection. Dem...
		strated, Mr. Theodore Brown.
		Contact Lantern Slides. Mr. W. Atkinson.
		Holland. Messrs. J. Brown.
		P. G. B. Wright.
		Novelties in Hand Cameras. Dem...
		strated, Mr. W. E. Seata.
		Trimming and Mounting Prints.

CROYDON CAMERA CLUB.

THE platinum toning of bromide prints was dealt with by Mr. H. Allen last week, who advocated a method of toning with an acidified solution of platinum salt and mercury, recently brought forward by Mr. C. W. Somerville. After fixation and thorough washing, prints are immersed in the following:—

A.	
Mercuric chloride	1 grain.
Citric acid	9 grains.
Water	1 oz.
B.	
Chloroplatinite of Potassium	2 grains.
Water	1 oz.

Equal quantities of A and B being taken, a few drops of a ten per cent. solution of bromide of potash rendered the whites clear, slightly altered the resulting tone, and hastened the action. Mr. Allen then proceeded to tone several prints, and a very pleasant sepia colour, inclining to warm brown, was obtained, together, nearly all cases, with a slight intensification of the image.

Should a still further intensification be required, then the print should be briefly washed, re-developed to the black stage with a negative staining developer, and again toned. The method was also applicable to lantern slides and transparencies. It had been claimed that owing to the addition of metallic platinum the image would be rendered more stable.

A somewhat lively discussion followed. Mr. W. H. Smith said that as bromide prints were claimed to be permanent, why add "more permanency"? He was, in addition, somewhat at a loss to see a novelty in the process, considering a very similar solution had been on the market for twenty years. He also pointed out that if

wished to keep the platinum salt in solution for a considerable period without deterioration, then a strength of 40 to 60 grains per ounce should be adopted, and the bottle kept away from strong light.

Mr. W. H. Rogers regarded the tones obtained as in no wise superior to those resulting from the hot hypo-alum bath; there was, in addition, more staining of the whites. Mr. Sellors thought the action of mercury hardly tended in the direction of permanency. The mere fact that prints had kept a certain number of years without deterioration was in itself no criterion. He had at home a print made with uranium over twelve years ago which still maintained its pristine beauty, no change being observable. This hardly coincided with general opinions regarding uranium.

The President, Mr. S. H. Wratten, thanked Mr. Allen for affording the most instructive and interesting evening, without expressing any opinion as to the permanency of bromide prints in general, but he might safely say that if the foundation of the image was of a fugitive nature, it did not matter very much what was put on top of it. He could not help regarding such a procedure as in the nature of veneering.

Dews and Notes.

POUGHAMPTON'S Monthly for November is to hand, and contains some valuable notes on novelties, etc.

Mr. WM. TYLAR, of Aston, Birmingham, has placed some new specially pliable cloth lantern slide binding strips on the market, which seem very satisfactory.

Mr. ARCHIBALD GOLDIE, F.R.P.S., a well-known Swansea photographer, who had won distinction for artistic work, on Thursday succumbed to an attack of phthisis.

The late Mr. Alex. Tate, C.E., was one of the original members and founders of the Ulster Amateur Photographic Society of Belfast, of which we omitted to note in the ALMANAC.

The Interstate Photographic Art Exhibition will be held under the auspices of the Amateur Photographic Association of Victoria in January, 1905, and numerous medals and other awards are offered.

The annual prize distribution and students' conversazione of the Hampton Institute is to be held to-night, the 9th inst., and the Hon. Lord Reay will distribute the prizes. The conversazione with members and students will be continued on the 10th.

Messrs. A. E. STALEY AND CO., of Thavies' Inn, Holborn Circus, request us to notify that they will be pleased to appoint agents for "Geka" specialities in the various British colonies, of which they are in the control from the above address.

Mr. OWEN BROOKS, photographer, Dewsbury Road, Leeds, has met with a nasty accident whilst motor cycling. He was riding down Clifton Hill when he collided with a milk cart, and was badly thrown. A broken collar bone is, happily, the most serious of his injuries.

The Fifth Annual Exhibition of the Weybridge Arts and Crafts Society was held last week, and Mr. Henry Stevens lent some of his well-known flower studies and other pictures, and Messrs. Bates, of Weybridge, were represented by a fine exhibit of portraits and miniatures on ivory.

OPTICAL Convention, 1905.—The Optical Convention will be held in London at a date towards the end of May, 1905. The president is Mr. R. T. Glazebrook, Director of the National Physical Laboratory. The list of vice-presidents includes Sir William Abney, Lord Blythburgh, Sir W. H. M. Christie, Astronomer Royal, Earl of Crawford, Lord Kelvin, Lord Rayleigh, and the Earl of Rosse. The treasurer is Mr. E. B. Knobel, and the honorary secretary Mr. F. J. Selby. The main object of the Convention is to bring into close sympathy the co-operation men interested in optical matters, from all sides of the question, theoretical, practical, and commercial. This it is proposed to do by holding a series of meetings for papers and discussions on optical questions; and a "Papers" Sub-committee has been appointed with Professor S. P. Thompson as chairman, and Mr. S. D. Palmer as secretary. It has also been decided to organise an exhibi-

tion, of a scientific character, of instruments manufactured in this country, with a view to showing the great progress recently made and of stimulating further efforts. Instrument makers and manufacturers are invited to assist the committee by sending for the purpose of the exhibition typical instruments and apparatus of their manufacture. It is not proposed to ask exhibitors to pay for space, but a nominal sum, to defray out of pocket expenses, would be charged to each firm whose goods are shown. This charge would not exceed one guinea for each class in which goods are exhibited. An illustrated catalogue will be prepared, which will describe the special character and advantage of any particular instrument. It is hoped that the catalogue may be especially serviceable to manufacturers in making their instruments known in colonial markets. An Exhibition and Catalogue Sub-committee, with Dr. Mullineux Walmsley as chairman, and Mr. F. J. Selby, as secretary, is already at work. A provisional list of classes which they have drawn up for the exhibition and catalogue is appended. Firms desirous to have their manufactures included in the catalogue, or to send apparatus for exhibition, are requested to communicate without delay to the secretary, and to forward as early as possible descriptions and particulars of their instruments. The following is the suggested classification of instruments:—(1) Materials and tools; (2) simple optical elements and testing apparatus; (3) astronomical instruments; (4) nautical instruments; (5) surveying instruments; (6) meteorological instruments; (7) spectacles and eyeglasses; (8) telescopes and binoculars; (9) microscopes and accessories, and apparatus for photo-micrography; (10) photographic apparatus; (11) projection apparatus; (12) apparatus for optical measurement—spectroscopes—refractometers—polarisation and interference apparatus—apparatus for measurement with optical aids; (13) photometric apparatus; (14) heliographs—range finders; (15) stereoscopes; (16) ophthalmic instruments and appliances; (17) apparatus for educational purposes; (18) mathematical and drawing instruments—calculating apparatus; (19) shop fittings and miscellaneous; (20) historical collection; (21) literature.

MESSRS. SPEAIGHT'S New Premises.—Last week we accepted the invitation of the managing directors of Speaight, Limited, the well-known photographers, to view their new and palatial premises erected by them at 157, New Bond Street, London, W., their old premises in Regent Street having proved too small for their ever increasing business. Access is gained to the galleries from New Bond Street through the magnificent entrance gates and porch, which is paved in Sicilian and Bleu Belge marbles, and panelled in oak with cross vaulted ceiling. Here are show cases containing examples of the company's work. The double doors of the lobby open on to the entrance corridor, the length of which is pleasantly broken by an alcove, the walls throughout having a dado of oak. The entrance hall, with its beautifully designed oak work, and its several balconies over, resembles in some ways the interior of an ancient country mansion. The staircase, which is one of the finest in London, is constructed in solid oak throughout, the details of the balustrading having been taken from some of Wren's famous work at Hampton Court. The floor of the entrance hall, like those of the galleries, are in polished teak. The galleries have balconies round them, supported by grouped Ionic columns in oak, having beautifully carved capitals. The Minstrel Gallery, from which clients waiting for their sittings have the opportunity of listening to excellent music, is situated over the managing director's offices, which are panelled in oak. The Lounge, where tea is served during the afternoon to clients, is on the half landing, and is a beautifully designed room, with a vaulted ceiling, supported by Doric columns. The mantelpiece is especially worthy of note, with its moulded Sienna marble slips of great beauty, the interior of the fireplace being built with very valuable Persian tiles of quaint designs. Outside the Lounge the oak balustrade of gallery is carried up as a screen, and contains some excellent carving. The various dressing rooms are approached from the Lounge, the one reserved for Royal and other distinguished clients being particularly handsome, its fireplace contains an interesting selection of Dutch tiles illustrating children at their various games. Great care has been paid to the heating of all these rooms. In the construction of the studio, which is twice the size of the former one at Regent Street, great care has been taken in order to obtain the maximum amount of light, which is so essential for the successful photographing of children. The ventilation and warming of the studio have also received special attention. Throughout the year the temperature is the same; in the winter the fresh air

passes over heated pipes, and in the summer through specially ventilated air chambers, over blocks of ice. The electric fans in the roof change the air of the studio every few seconds. In addition, during the summer, jets of water constantly play on the studio roof to assist in keeping it cool. The installation of the electric light in the studio is ingeniously arranged, enabling portraits to be taken with the same success during the dark days of the winter as in summer. Close to the photographic studio is the miniature studio, where, under the most favourable conditions of light, this important branch of the work is conducted. On the same floor are situated the cloak rooms, retouching studio (where we saw six lady retouchers hard at work), mounting, framing, and dispatch departments. On the third floor are printing department, kitchen, dressing room, and black and white studio; and above these the negative department, developing and toning room, dark room, and stores. Messrs. Speaight, who now possess one of the finest photographic studios in the whole world, are to be heartily congratulated on their enterprise and upon the excellent work that hangs upon their walls. We wish them the continued success which they undoubtedly deserve.

Commercial & Legal Intelligence

At the Middlesbrough Bankruptcy Court, on Friday last, before Mr. H. S. Crosby, Registrar, R. C. Clifford, photographer, came up for further examination. In reply to Mr. W. G. Simpson, Deputy-Official Receiver, bankrupt said he did not give up to the Official Receiver a life insurance policy because he thought he was out of benefit. Mr. Simpson: You had no right to keep a single paper. The Registrar informed the bankrupt that he must hand it over. The Bankrupt: All right. Mr. Simpson said the bankrupt's examination from beginning to end had been unsatisfactory in many ways. The examination was ultimately adjourned by the Registrar, sine die.

E. YOULDON, LTD.—Capital, £6,000 in £1 shares. Object, to acquire the business carried on at the East London Glass Bottle Works, Carter Street, Mile End, E., by F. Youldon, as E. Youldon, to adopt an agreement with the said vendor, and to carry on the business of glass bottle and glass manufacturers and merchants, druggists' sundriesmen, manufacturers of, and dealers in, optical, photographic, mathematical, and scientific apparatus, etc. No initial public issue. F. Youldon is the permanent managing director. Qualification, £50. Remuneration of managing director, £200 per annum and 20 per cent. of the surplus profits after dividend has been paid. Registered office: East London Glass Works, Carter Street, Mile End, E.

PHOTOGRAPHY AND ADVERTISING.—One of the most remarkable cases governing the relations between photography and advertisement ever tried before a court of law has just conferred additional fame upon a well-known Parisian actress, Mdlle. Carlier, who was sued by a leading furrier for £511. The lady did not dispute receipt of the furs, but pleaded that they were gifts to her in consideration of the furrier being permitted to publish photographs of her wearing his goods. One of these portraits was produced, and it contained a dedication by the furrier averring Mdlle. Carlier to be the "daintiest dame in Christendom." Perpending these things, the judge has non-suited the furrier, on the ground that £511 is not an unreasonable price to pay for having one's wares displayed to advantage by the "daintiest dame in Christendom."

RR A. H. Emons, 36, Basinghall Street, E.C.—The first meeting of the creditors interested under this failure took place at the London Bankruptcy Court, before Mr. Bowyer, Official Receiver. The statement of affairs filed by the debtor disclosed liabilities to unsecured creditors amounting to £271 13s., and assets, nil. It appeared that the receiving order was made on the petition of Mr. Emil Lowitz, of 73, Basinghall Street, E.C., a creditor. Debtor stated that he had never been in business on his own account, and was at present employed as a traveller for a photographic company at a salary of 30s. per week, out of which he paid his travelling expenses. He alleged his failure to have been brought about through an adverse judgment having been obtained in an action brought against him by the petitioning creditor. He was now trying to get that judgment set aside. As the debtor was unable to make any proposal of composition to his creditors, the estate was left in the hands of the Official Receiver for summary administration in the usual manner.

Correspondence.

- * * Correspondents should never write on both sides of the paper, notice is taken of communications unless the names and addresses of the writers are given.
- * * We do not undertake responsibility for the opinions expressed by correspondents.

AN INDUSTRIAL AGREEMENT.

To the Editors.

Gentlemen,—Your quiet comment at the head of the extremely valuable extract from the journal down under which appears page 1,027 of your last issue has given me considerable cause to think.

I have been for twelve months an indentured apprentice to a respectable photographer, with whom personally I have not the slightest quarrel, but in face of this document I begin to ask myself whether the game is worth the candle. Here am I an apprentice on a minimum of £75, all paid, and for twelve months I have done nothing but develop plates; I have not yet officially made a print; I have not had a single lesson in retouching, in posing or lighting or enlarging. Am I to be five years before I learn all these?

Is this or a similar industrial agreement likely to be adopted in England? At present I feel dissatisfied, and the perusal of the paper in your last issue does not make me less so.—Yours faithfully,

INDENTURED APPRENTICE

To the Editors.

Gentlemen,—Like probably hundreds of others, I read with interest the report taken from the "Australian Photographic Journal" of "Studio Employers and the Photographic Employees' Association N.S.W.," which appeared in your last issue. It will very naturally occur to most of us assistants on reading the account that if employees of New South Wales can form a strong Association for their own protection and for the regulation of wages and hours of labour, why cannot a similar thing be done in the old country? The employers already have their Association, the "P.P.A.," and it is proposed to form a Benevolent Association. Now it seems to me that if an Association of employees were formed on the lines of the N.S.W. one a Benevolent Fund might be combined with it in the case of other trade societies, and if it could be made to oblige us for higher pay for our services we could the better afford to contribute to its funds; also that there would really be less need for such an institution than there is at present. The scale of pay, hours of labour, half holidays, etc., arranged by the N.S.W. Association will make the mouths of most of us assistants here water. Look through these regulations, I find that with my ten years' experience in every branch of photography my minimum wage would be £3 a week, with short hours, etc., while I have to work long ones just about half that sum; and if I were to throw up the berth I am sure scores who would take it up for even less than that. See the example set by our Australian confrères why should we follow it? Thanking you in anticipation for the insertion of my letter, I am, yours, etc.

A YORKSHIRE OPERATOR WITH TEN YEARS' EXPERIENCE

WHAT SHALL WE DO WITH OUR GIRLS?

To the Editors.

Gentlemen,—I am an amateur with a large family, and one that is growing in years if, thank heaven! not in numbers; the major being girls, might I ask some of your professional readers to kindly give us the true facts of the case as regards the employment of women, ladies if you like, in photography?

Is it really possible to learn photography from a few books, a portable studio, and twelve months' work and two or three months' studio?

Will a first-rate provincial photographer actually take a girl and teach her the business, and is it possible for a well-educated, sensible girl with this experience to make both ends meet on a capital outlay of £400?

I have two girls, now both at that age when they feel they want to be up and doing. Both have passed their matriculation, and is a B.A. of Newnham and a clever chemist; the other is an artist.

her finger tips, and having, alas! for my pocket, taken up amateur photography, they are wild to start as professionals, and have flung my face the extract from "The Englishwoman's Year-Book" which you reprint on page 1,032 of your last issue.

Personally, I gather that you printed this rather in sorrow than anger, and that the whole thing is piffle, but I should like to know. When a man has only one business and five growing girls, all eager to be emancipated from home and become independent, the prospects held out in the above extract are alluring to them, but not to him who has to find the money, and who signs himself—Yours faithfully, Folkestone, December 5.

AN ANXIOUS FATHER.

THE PROPOSED BENEVOLENT ASSOCIATION.

To the Editors.

Dear Sirs,—I noticed in your issue of 18th ult. the remarks relative to the difficulty of resuscitating the old Benevolent Fund or starting a new one, and the implication that photographers as a body will not help themselves. I am not sure that the inference is correct. I am not sufficiently acquainted with the *modus operandi* of the old Society to judge the cause of its apparent failure, but I am inclined to think that any Society worked purely on benevolent lines, and by that I mean depending wholly on voluntary subscriptions, and whose funds are administered by a central committee resident, say, in London, for the benefit of the infirm or unfortunate all over the country, is bound sooner or later to come to grief partly because those who start it give place to others on the committee, from one cause or another, and the fresh ones have not the same interest and do not put the same vigour into its working, and partly because, failing to touch but a fraction of those in need, others withdraw their support and become their own almoner, or give it to some local body who they feel more likely to be in touch with those of their own district than those at a great distance.

As one who had the privilege of starting a benefit society for a special class of men nearly forty years ago, and which has worked ever since, perhaps I may be allowed to say that to successfully and impartially work such is not the easiest thing in the world, and it is made more difficult by the fact that in every society of this kind, despite all precautions, some get into it who draw more than their fair share, and were it not that many others draw much less, and some nothing, the society would fail.

I do not think the inference correct, because photographers, as well as others, have the opportunity, if they will avail themselves of it, of paying a small sum weekly into some benefit society for which they receive a proportionate payment in time of sickness. I do not say that this will last at the rate it begins for any length of time, but it will be material help at such a time.

Unless in youth and health people are willing to contribute to some fund they can hardly expect to be kept by strangers when they grow old and infirm. Of course there are exceptions where a man gives his time and talent for the public weal, and whose health perhaps suddenly gives way or some misfortune overtakes him; such men have a claim on public support; they, even, do not always regret it, and if others did not interest themselves on their behalf but leave them to their own would, as they are usually the last to seek help for themselves.

I think rather, Sirs, the inference is that a great proportion of the body are helping themselves in some such way as I have indicated, they can as far as *ill-health is concerned*, but I do not see how any society can help for any length of time at all materially those who have either lost their business or are no longer able to attend to it. In the first instance I fear the work of investigating claims would tax too heavily any unpaid committee, and in the second you would naturally expect that a business man would get others into the working as he finds himself getting less able to do it. It is not a healthy thing for any body of men to expect charity, which, if I rightly understand, a benevolent society is intended to distribute.—Yours.

PROFESSIONAL.

A WARNING.

To the Editors.

Gentlemen,—We have received a letter from the publishers of the "Gardener's Magazine," a copy of which we enclose, and think

it only right to call attention to this and express our surprise at the impertinent tone of it, and hope that should any of your readers have received similar communication they will either treat it with the contempt that it deserves, or, better still, inform the writers that there is such a thing as a fee for reproduction. We enclose our card and remain,—Yours faithfully,

PROFESSIONAL.

[We have received several communications on the same subject. The following is the letter referred to:—

CCPY.

5.12.04.

Dear Sirs,—We are anxious to obtain immediately for use in the New Year number of this magazine one or two good picturesque photographs of garden or rural scenes containing figures. We want whole plate subjects or large. We want *pictures*, not merely ordinary views.

If you have any subjects which you think will suit our purpose we shall be much obliged if you can send them along to us *to-morrow morning*. We shall, of course, be pleased to mention the name of your firm in connection with any picture we use.—Yours faithfully,

(Signed) W. H. and L. COLLINGRIDGE.]

"THE INTERNATIONAL PHOTO EXCHANGE."

To the Editors.

Dear Sirs,—Thank you very much for inserting the notice in your paper of to-day's issue re "International Photographic Exchange." I regret to say that you omitted to mention that I would send particulars upon receipt of stamped, addressed envelope.—Yours truly,

ROBERT C. CARTER.

33, Enbrook Street, Queen's Park, Harrow Road, London, W.

December 2, 1904.

TRAILL TAYLOR MEMORIAL LECTURE.

To the Editors.

Dear Sirs,—I shall be much obliged if you will permit me to inform your readers that I have sent to the Honorary Secretaries of the London and suburban photographic societies a number of admission tickets to the Seventh Memorial Lecture, which will be given by Dr. Glazebrook, Director of the National Physical Laboratory, at the Rooms of the Royal Photographic Society, 66, Russell Square, on Thursday, December 15, at 8 p.m. Mr. Conrad Beck will take the chair.

The subject of the lecture will be, "Modern Physics in Relation to Photographic Lenses." It is Dr. Glazebrook's intention to deal with the testing of these instruments.

As it is possible there may be many who cannot avail themselves of the mode of distribution which has been adopted for the admission tickets, if they will send me a stamped, directed envelope I shall be happy to send them a supply through the post.—Faithfully yours,

P. EVERITT,

Hon. Secretary.

88, Evering Road, N.

December 3, 1904.

DETECTIVE CAMERAS.

To the Editors.

Gentlemen,—Can you, or any reader of the B.J., kindly inform me who was the first to apply the roller dark slide to the above?

Some years ago—in the eighties, if my memory serves me aright—I designed a hand camera fitted with a roller slide, a sketch of which was sent to the Kodak, or, as it was then designated, the Eastman Co. Some time afterwards the well-known Kodak was introduced.

I may add that my camera was the outcome of an article in one of the photographic annuals by Mr. Melton Prior, the war correspondent, wherein he emphasised the need in his avocation of an instrument that would enable him to make a number of consecutive exposures at a moment's notice, without the loss of time involved in inserting dark slides.

I do not in the least wish to detract from the credit due to the Kodak Company, who were the first to supply a perfect and reliable roller slide at a moderate price, and, in addition, a film, without which

such a contrivance was practically useless. But I would like to clear up a matter of photographic history on a point that is, to me, of particular interest.—Yours, etc.,
H. C. PARLOW.

16, Benin Street, Hither Green, S.E.

[We are, of course, quite unable to state who was the first to fit a roll holder to a hand camera. Roller slides date back to Relaudin, 1855; Melhuish, 1856; Burnett, 1857; Disderi and Audineau, 1862; and Warnerke, 1875. The article by Mr. Melton Prior appears in the B. J. ALMANAC for 1887, two years after the Eastman-Walker roll-holder had been medalled at the P.S.G.B., Inventions, and Royal Cornwall Polytechnic Society.—EDITORS.]

TO PREVENT YELLOW SPOTS IN C.C. PAPER.

To the Editors.

Gentlemen,—The following tip may be useful to some of my fellow readers of the B. J.:—It is absolutely necessary to have all dishes perfectly clean, and to have separate dishes for each kind of toning bath. Prints must be hand washed throughout. Blot off in clean paper and separate prints for drying on dry paper. Dry sufficiently for trimming, but not so that prints curl up. After trimming, immediately immerse in clean water till thoroughly pliable, and mount with good, fresh starch. Under no circumstances must print be superimposed for drying flat, and when mounted and bone dry should be put into wallets. The great secret is to keep the prints—after washing—separate from each other and well exposed to the air till bone dry.
C. E. M.

Grand Canary.

PUBLIC OBSERVATORIES.

To the Editors.

Gentlemen,—Referring to the remarks in the JOURNAL of November 19 about public observatories, you may be interested to know that we have had them in Glasgow for many years. They are placed in a number of the public parks round the outskirts of the city, and there is one right in the business centre, in George Square. They contain self-registering barometer and thermometer, wet and dry bulb thermometer, and some, but not all, have rain-gauge and anemometer; probably all the sites are not suitable for these last two instruments.

Every year the Superintendent of Parks issues a review of the weather, and a report on its influence on the vegetation in the parks. Also, when anything abnormal happens, such as great heat, or cold, or rainfall, the observations at each station are published in the local papers.—Yours truly,
November 28, 1904.

WM. GOODWIN.

HALATION.

To the Editors.

Dear Sirs,—On recommendation of a friend I tried Bluebell Metal Polish as a reducer of halation on negatives, and am pleased with the result, as it reduces it evenly and does not leave any impression that it has been rubbed down, as one often finds with spirits.

I applied it with cotton wool, rubbing over the halated parts firmly, and on a negative exposed inside a cabin where the port holes had a very strong halation round them.—Yours faithfully,

L. MADDOCK.

Mottingham, Kent.

A UNION WANTED.

To the Editors.

Gentlemen,—Referring to the letter which appeared in your valuable columns last week signed "Darkness," I quite agree with him. I think the time has come when something should be done to protect the trade. I am sure employers as well as employees would benefit by a union. I know several employers who have advertised for assistants, and when they have engaged one have found him to be an amateur, or in other ways unequal to his work, and knowing very little of the professional side of the business. This, of course, causes great inconvenience to the employers. It is all very well for amateurs to practise as a hobby, or even as a "side line," but it is ridiculous for them to take up photography as a profession before they know what it is.

If a union were formed, I might suggest that examinations could be held and certificates given to the successful candidates. This would be a security for employers, and would also give assistants a good idea of the amount of knowledge they had.

And also, as "Darkness" suggests, a union would be a great benefit in times of sickness or unemployment.

I think a little enthusiasm is all that is necessary.—Yours, etc.

WOULD-BE UNIONIST.

STUDIO LIGHTING.

To the Editors.

Gentlemen.—I have read with interest the articles that have appeared at different times in the columns of your valuable JOURNAL on studio lighting, and will esteem it a favour if you would allow me just a wee space in your paper, and will promise to be as concise as I possibly can, while omitting the customary "few don'ts."

The billiard ball and gas jet theory is all very well in its way but the effect on a smooth, round object is very different to that on the human face, which is composed of projections, depressions, and innumerable slight curves and elevations. But, I will hold that the light should come from only one source; and all doubts on the subject have been set at rest by the works of the world's greatest painters. It is the area of that source of light and the dividing off into blind that the photographer has to deal with.

In regarding the painter's studio there are two points I wish to touch upon.

First, that the rays of the sun never enter through the illuminating area, on account of their being located in countries north of 23½ deg. N. Lat., and the north side being glazed vertically.

It is just as important that the photographic studio should be free from the rays of the sun; and in order to do so the glazed portion must be inclined, or vertical, or both, according to the latitude of the country—to be precise, I would say, part of the country—in which the studio is erected.

If at 23½ deg., it must be vertical, and as it is no uncommon thing for buildings in countries of this latitude to have high-pitched roofs, the glazed portion, commencing 3 ft. from the floor, may safely be carried to 16 or 18, even 22 ft. in height, with glazed portion facing north in N. latitude and south in S. latitude.

In countries at 53 deg. N. latitude it may be vertical at 9 or 10 ft. from the floor, and then inclined 6 to 10 ft. at an angle of 60 deg. 30 m. on the north side.

On the Equator it must be inclined at an angle of 113 deg. 30 m. either north or south side.

All angles for intermediate latitudes north or south of the Equator may be found by the formula, $\alpha = 90 - (x - 23\frac{1}{2})$, in which the value of α varies for all values of x , or for all degrees north or south of the Equator.

Secondly, that the illuminating area of the painter's studio is about 60 sq. ft., which is not sufficient by a long way for a photographic studio, for the simple reason that it produces shadows with very sharp edges, which is rather an advantage to the painter because he can see at a glance where the light ends and the shadow begins, and can soften or strengthen where, and to what extent, he pleases.

If the light is increased to 144 sq. ft., the shadows are greatly softened, but the high lights are weakened at the same time, resulting in a flat image. If now the whole of the light is screened off with some grey material which transmits about one-third the quantity of light as ground glass, we have a shade thrown over the face of the sitter, but which still appears flat.

Now, if just a portion of about 4 ft. sq. be torn open the high lights and deep shadows immediately appear, and the sitter may be placed in any part of the studio and there will be roundness at all hours of the day, the position of the open space, whether high, low on the side, in advance of, or behind the sitter, being determined by the catch light in the eye.

For children and on dull days the clear open space will require to be enlarged.

The grey material may be divided into three or four pairs of blinds according to the length of studio, each 4 ft. in width, working on spring rollers, from top and bottom and meeting at the eaves.

I enclose a specimen which shows the amount of roundness it is possible to secure.

For fancy portraits there will be need of another set of blinds of some stouter fabric, but not opaque, which must run under them, and may be used either separately or in conjunction with the above. The interior of the studio to be painted or papered a medium grey.

Existing studios north of the Equator facing due north may with facility have their glazed portions altered to the proper angle. For glass houses facing all other points of the compass I can hold out no hope, except that they may more conveniently be rented as warehouses.

And in conclusion I may add that all black blinds, reflecting screens, ground glass, and scraps of tissue and brown paper be unceremoniously removed, tied together, labelled, and precipitately despatched to—ah, there's the difficulty—why, of course, Blackburn. What an appropriate name, too!

I am looking forward with fear and trembling to a R.S.V.P. of a correspondent, who will severely take me to task for metaphorically playing ping-pong with the photographic hemispheres. I must confess to a keen sense of guilt, and, considering my tender years, pray that after the sentence is passed it will be commuted to servitude for life in some photographic studio where people "is took" at 2s. 6d. for three cabinets.—Yours truly,
ANGLO-INDIAN.
Lahore, India, November 16, 1904.

PANIC at an Entertainment.—A serious panic occurred on Monday at the Salvation Army Barracks at Dudley. During a cinematograph entertainment, illustrative of the Life of Christ, the lantern exploded, and a mass of flame enveloped the place under the gallery. The panic which followed was indescribable. The audience was mainly composed of children, and a wild rush ensued. Happily the Army officials kept cool, and the place was cleared without anybody being seriously injured. The lantern was destroyed, and other damage done.

A THREE days' exhibition of members' work in connection with the North Middlesex Photographic Society was opened last week, at the Hanley Hall, Crouch Hill. There were considerably over 400 exhibits on view, and the exhibition is undoubtedly the best that has taken place since the society's formation, seventeen years ago. An interesting feature is the record section, which comprises a collection of photographs illustrative of parts of the borough and district before they became a suburb of London. Prizes have been awarded to the following for the best exhibits:—Messrs. Louis Dick, S. E. Wall, A. H. Lisett, and S. H. Bentley. Those successful with lantern transparencies are Messrs. E. Burton, Louis Dick, and T. A. Macdermott.

THE eleventh of the annual chemists' exhibitions, organised by the "British and Colonial Druggist," will be held at Covent Garden Opera House from March 13 to 17, 1905, and amongst the exhibits will be included optics and photography. Full information may be obtained from the "British and Colonial Druggist," 44, Bishopsgate Street Without, E.C. Amongst the rules and regulations we find the following:—Photography: Where the management of the exhibition considers that in order to get any class of work properly done it is necessary to give a monopoly to a firm or firms, the exhibitors will not be at liberty to employ or introduce any other houses into the exhibition to do that class of work. This applies to photography, and any work other than stand fitting of which the management may give notice.

BEFORE the Southampton Camera Club, on the 5th inst., Mr. H. C. Shelley, War Correspondent for the "Westminster Gazette" and "The King," gave an illustrated lecture on "The Kodak in Peace and War." The lecturer recounted his experience with the kodak in the South African War, declaring that the camera was almost indispensable, and was seldom left behind, whatever else had to be abandoned. The desirability of possessing a camera as a useful accessory in almost every sphere of life was admirably demonstrated, and its illimitable value for recording important events and retaining pleasing incidents of every day life, which would otherwise probably be forgotten, was thoroughly maintained to the entire satisfaction and appreciation of the audience, and was greatly enhanced by the aid of a large number of well selected lantern slides.

Answers to Correspondents.

*** All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.

*** Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.

*** Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & Co., 24, Wellington-street, Strand, London, W.C.

*** For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

- J. W. Cook, Oaklea, Knott End, near Fleetwood. Photograph Showing Promenade and Rough Sea, Knott End.
E. Seath, 98, Church Street, Luton, Beds. Photograph of the Old Wheelplough Inn.
W. Williams, 24, High Street, Carnarvon. Photograph of Sunset on the Menai Straits from near Carnarvon.
J. Dawson, 13, Whitefriars Road, Hastings, Sussex. Photograph of Old Saint Leonards Boundary Archway.
E. O. Parkin, 58, Wilkinson Street, Sheffield. Two Photographs of A. Drake, J. A. Groves, W. Bennett, J. Donnelly; also Photographs of A. Brown, E. Needham, and W. Foulke, all of the Sheffield United Football Club.
E. O. Parkin, 58, Wilkinson Street, Sheffield. Two Photographs of W. H. Johnson, A. E. Priest, J. Lang; also Photograph of A. Annan, F. H. Milnes, and Group of the Sheffield United Football Club.
W. H. Hoare, 66, Oxford Street, Swansea. Photograph of Lych Gate, Sketty Church, near Swansea. Photograph of Scene in Brynmill Park, Swansea. Two Photographs of Sketty Church. Photograph of Scene in Victoria Park, Swansea, all Snow Scenes.

DRAWING REGISTERED:—

- H. E. Squibbs, 33, Fore Street, Bridgwater, Somerset. Drawing of Bridgwater Fifth of November Carnival, 1904.
E. B. P.—Use a convex lens of 16.3 in. or practically 16 in. for the 4in. focus and 10.3 for the 3½in. focus.

W. ARMSTRONG.—We are sorry to hear your experience, but it is obviously impossible for us to publish a list as you suggest. There is an old proverb, cheap and nasty.

BACKGROUND.—It is impossible, of course, for us to remember the exact article, but you can obtain somewhat similar articles from any of the wholesale houses that advertise in our pages.

IVY.—You must be a little more explicit. Was the agreement written or verbal? Certainly, in the face of the facts you state, you have a perfect right to claim full wages, but as to your other query, we cannot answer without knowing more facts.

OPINION WANTED.—"S. S." says:—"Kindly pass your candid opinion on enclosed retouching, and do you think I could improve myself by taking lessons?" In reply: The work is fairly good, but it is capable of improvement. We should advise you to take a few lessons—personally, instead of by correspondence.

ARTIFICIAL LIGHT.—G. MOORE asks: "Could you give me an idea how to show on a photograph that it received one second exposure? I can think of nothing that is positive enough, and it would be an immense help if we could take the interior of our room at night showing room, lamp, and sitter, and the exposure by some means or other." In reply: We should say that it would be a somewhat convincing proof of the shortness of the exposure if you were to take a series of pictures of young children, animals, etc. The sharpness of the pictures of such subjects would show that the exposure was rapid.

OBSTRUCTED LIGHT.—H. R. MEHEW asks: "Will you kindly advise me on the following:—On the opposite side of my studio is a large red brick and stone building, and when the sun is out it

reflects rather a yellow light; if I put a reflector, as per sketch, do you think it will improve matters, or what do you suggest?" In reply: If the reflector be placed as shown in the sketch it would certainly throw more light into the studio, but not in the direction it is most wanted. I would send it towards the roof instead of towards the sitter. If it be adopted, it should be placed lower down than is shown in the sketch. The best plan would be to whitewash the building if that be possible.

BLACK LINE PROCESS.—P. MAGEE says: "Thanks for your reply, but if you refer to my query again, I said it was not the Ferro Gallic process, it is a newer one. I enclose you a piece of one. As I stated previously, a negative on paper is made first, and the negative is all black like the border on the enclosed piece, and the lines are pure white. Printing ink enters into the process in some way. The method of printing is in a cylindrical lamp (electric). Can you say where these are to be obtained?" In reply: The cylindrical printing frames and lamps are supplied by the patentees, Messrs. B. J. Hall and Co., 39, Victoria Street, Westminster. They may also be able to supply you with the paper. Messrs. Marion and Co., we believe, supply a new paper for the purpose.

COPYRIGHT QUESTION.—"Gaslight" writes:—"About six weeks ago I sent my assistant to photograph a group of potato pickers. After seeing the proof, they ordered ten half-plate copies. When the copies were delivered the men had no money, and only one was sold for 1s. I have now found out that their employer has issued a book in which appears a reproduction of my photograph. The negative is now copyright, but was not at the time the block was made. The question is: Had the author of the book any right to use the print without my permission?" In reply: The author of the book had no right to reproduce the print, and as it is now copyright you can prevent any further sale of the book. This is a case which should certainly be placed in the hands of the Copyright Union.

SEPIA PAPER.—THISTLE writes as follows: "On page 803 of the 'Almanack' for 1902 appears an article 'Sepia Paper.' Now, it was just what I wanted, and described as simply made. Well, I tried it but failed. I am an old wet plate worker, so I am not careless. I tried it again, but again failed, so I gave it up. Recently I came across the article again, and thought I would give it a trial again, but with the same result as before. The chemicals were the best. I get the green colours all right, but it is opaque, and a dense white precipitate settles to the bottom of the bottle, and it won't print but a faint, dirty image. I seem to go wrong on adding the silver citrate solution. It is then the dense white precipitation takes place. In reply: We cannot say where you have gone wrong, which you should not have done if you had closely followed the instructions. Possibly you did not add sufficient ammonia. When you try again use more, and see the effect.

COPYRIGHT QUERIES.—"R. E. S." writes: "A man here, calling himself a photographer, purchases my 12 x 10 and other views, and without permission has them reproduced as postcards, for sale in the shops and bazaars. I shall be much obliged if you will reply to the following questions:—(1) Can I stop the sale without copyrighting the photographs? (2) If I copyright now can I stop sale of those he has already reproduced? (3) Can I obtain any redress or punish the man in any way?" In reply: (1) No; certainly not. (2) If you register the copyright now you can obtain an injunction to restrain further sales of the pictures. (3) No. You can obtain no redress whatever for anything that was done prior to registration. Our correspondent finds himself in the position of hundreds of others who neglect to register their copyrights in the first instance. Had he registered them he could have obtained a penalty for every print made, damages, forfeiture of all negatives, blocks, and prints in existence. Also an injunction restraining, etc. He has only himself to blame for his neglect.

OCCUPATION WANTED.—INQUIRER says: "I should be extremely obliged if you would give me your advice upon the following questions:—I am in the want of an occupation, and a friend,

interested in photography, suggests retouching as a means of earning a livelihood, but looking through the pages of the Journal I see, from the retouching advertisements that the rate of pay seems to be very low considering the amount of time. Three hours I am told—that must be spent on each negative. I may mention that I have attended an Art class for several years, and have taken first-class certificates for nearly all subjects taught there, including one for advanced light and shade drawing. Considering the training I have received should like to ask your opinion upon these two questions: (1) Do you think there is a reasonable chance of earning a living at retouching. And, if so, (2) Do you think it possible to gain a knowledge of the method of retouching through post-lessons?" In reply: (1) The photographic labour market is at the present time so much overstocked, especially with retouchers, that we should advise you to look in some other direction in which to employ your talents. It is not necessary, however, that three hours be spent over each negative. (2) Yes, but not so well as by personal instruction.

TERMS OF AGREEMENT.—"C. B." says:—"This week I shall be obliged to you if you will enlighten me on the following 'point': In an agreement it is stated that 'I am not to set up business without the written consent of the Principal, or his successors.' It is the last three words that I would like your advice upon—whether it is right to be there, or not. The agreement is between the writer and the Principal (I will call him Mr. Brown) and him only. The point I want to know is this: would it or no make the present agreement invalid if at any time hereafter the business should be disposed of, or assume a new name, the addition of another partner's name, or 'and Co.,' or say, his wife, or sister, or any of those carry it on, am I right in presuming that it would be absolutely necessary that his successors, whoever they may be, should have a fresh agreement in their name or name for their further protection? The other agreement could I possibly stand in the one man name." In reply: We adhere to our opinion that the agreement is far too drastic, and you should not sign. The particular three words to which you now direct our attention are bad in law, because they would be held in equity to be an undue restraint of trade. Certainly it would not be necessary for any successor or successors to have a fresh agreement, as they could hold you to this if you signed it, but if you set up contrary to the provisions of the agreement then Mr. Brown or his successors could bring an action against you, and you would have to defend and would probably cost you a heavy amount; but to prevent you from setting up, within a given distance in perpetuity, is bad in law.

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THE BRITISH JOURNAL OF PHOTOGRAPHY.

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EX CATHEDRA.

Unbreakable Ware. It is reported that a firm of Liège in Belgium has produced a special kind of ware which closely resembles fine translucent china, and which it is almost impossible to break. The United States Consul for Belgium has stated that he saw pieces of the ware used to drive nails into wood, and others thrown about on a stone floor without their being damaged. The special property is said to be due to a hardening process and to the nature of the materials used. The manufacture of photographic dishes and measures in this material would be a great boon both to amateurs and professionals.

* * *

Infringed Copyrights. Photographic publishers have not of late years suffered by the piracy of their works to the same extent as they did at one time. The case seems to be quite different with publishers of music. Each month we read that, during the previous one, so many tens of thousands of pirated copies have been seized by the Musical Copyright Association. Last week a pirate was proceeded against in the King's Bench Division, and he was mulcted in damages and costs, and a perpetual injunction was granted restraining him from further piracy of the plaintiff's music. In pronouncing judgment, Mr. Justice Kennedy told the defendant that if he broke the injunction he would be liable to be sent to prison for contempt of court. Contempt of court is a very serious matter, as the one in contempt may be kept in prison for an indefinite time, at the will of the court.

* * *

A Business Hint. The picture postcard, although it took a long time to get acclimatised in this country, after it had been well established on the Con-

tinient, is now well with us, and has come to stay—or at least until something supersedes it. Almost every scene, and every point of view of it, has been utilised by local photographers for publication as postcards, and there seems to be little left to be done so far as points of view are concerned. The only thing that now appears possible is to retake many of the views under different aspects, say, for example, when they are snow or frost clad. In the metropolitan district, up to the present, there has been little opportunity for obtaining snow-clad scenes, for what snow we had quickly disappeared. It was not so, however, in some of the provinces. But did local photographers take full advantage of it while it lasted? The "high street" and other points of interest in country towns have been photographed from almost every direction, but few, we think, when they coated with freshly-fallen snow, which gives them quite a different aspect. These snow-clad scenes would, no doubt, command but little sale during the summer months, but the thing would be different during the winter ones, particularly about Christmas and New Year time. It is a little late, perhaps, in the season now to put such pictures on the market if the negatives are not already secured. Ours is a fickle climate, and we may get but little more snow this winter; but there is ample time for plenty of it yet, and perhaps be followed by hoar frosts towards spring time. What we suggest to photographers is that they lose no opportunity, when it occurs, of securing snow-clad scenes in their districts, or of their principal streets, and before the snow is disturbed by traffic, etc., if possible, and to keep the negatives till next year if too late for profitable publication this. Photographs can be taken at a minute's notice, but not so snow pictures in this country. The opportunity of obtaining them is not often, and it should not be lost when it occurs. The above hint may be useful to those professionals to whom it may not have occurred.

* * *

The International Copyright Convention—Another Accession.

One day last week a Parliamentary Paper (Treaty Series No. 11) was issued announcing Sweden's accession to the International Copyright Convention. In this Sweden has followed the example set by Norway some little time back. The Swedish accession takes effect from August 1 of this year. Now all pictures, including photographs, made copyright in Sweden become copyright in this country, and at the same time all photographs copyrighted here become copyright in Sweden. It is not known to all those who register the copyright in their photographs at Stationers' Hall that they become automatically copyright in every other country that is a party to the Berne Convention of 1886, and that it endures in them for the same length of time as it does here. All that is necessary under this convention is that the copyright law of any of the countries,

of course, parties to the convention, be complied with, and the works are then copyright in them all. In this country registration is necessary; in some it is not—in Germany, for example. There, merely publishing the work is sufficient to secure the copyright, and the work becomes copyright here without registration at Stationers' Hall. We have frequently been asked, through the correspondence column, if the reproductions of the paintings in the Continental galleries, and in our own, that are produced by German firms are copyright if they are not registered at Stationers' Hall. As it may be fairly assumed that all these pictures are first published in Germany, where registration is unnecessary, it may be taken for granted that they are all copyright in this country. Heavy damages have from time to time been recovered in this country for infringements of it, as some know to their cost. The United States are not a party to the International Convention, and, as a result, English and Continental works are largely pirated there, and there is no remedy.

* * *

The Metric System.

The Canadian Government, according to the *Standard's* correspondent, is about to introduce legislation to make the metric system of weights and measures the only legal standard. Some years' notice will be given before the change takes effect. At present both the English and metric systems are permissible (as in England), while the French standards obtain in Quebec. Sooner or later, there is very little doubt, the metric system will be the only legal standard in this country, but, according to present ideas, it will not be quite in the near future. It seems a pity that this system should not be universally adopted by photographers, seeing the great convenience it would be to them in many ways, more especially when dealing with foreign formulæ. These are usually written under the metric system, and often the components of them are given in percentage solutions. Now, the making of an ounce or two of a certain percentage solution with English weights and measures often proves puzzling to some, whereas if the metric system were in vogue the thing would be "plain sailing," even to the most ignorant with figures. Again, in converting grammes and cubic centimetres into English grains and ounces, when only small quantities are concerned, the formulæ often suffers. We have heard very many photographers speak favourably of the metric system, and say they wished it were adopted, yet they do not use it in their own practice. Why? Just recently we were asked where metric weights and measures were to be obtained, and we replied, at once, "Of any of the dealers," but we were told that we were under a misapprehension on this point, for they could not, as they did not stock them. On reference to the catalogue (of several hundred pages) of one of our largest London houses, although some half-dozen pages are devoted to weights, measures, and scales, metric weights and measures are not listed, nor is any reference whatever made to them. If metric weights and measures are not easily procurable, and at a moderate price, it is not promising that the system will be universally adopted in the near future by the general body of photographers.

* * *

Intensification It frequently happens that a print is **unlimited**, required from a negative in which the details are so faint that it seems almost a hopeless task to start on it. The following method which has been suggested by M. Popowsky before the Russian Photographic Society, whilst a lot of trouble, is probably the most satisfactory. On the negative is fastened at one corner a little right angle of cardboard, so as to ensure the accurate

register of the glass that is used to obtain the print. M. Popowsky used a collodio-chloride emulsion made according to the formula of Kleffel, thus:—

1. Water	6 parts.
Silver Nitrate	5 parts.
Alcohol 90 deg.....	100 parts.
2. Calcium Chloride	2 parts.
Alcohol 90 deg.....	100 parts.
3. Citric Acid	2 parts.
Alcohol 90 deg.....	100 parts.

No. 1 is added in small quantities and with constant shaking to 240 parts of a $1\frac{1}{2}$ per cent. collodion, and then Nos. 2 and 3 are added drop by drop with constant shaking, and the emulsion allowed to stand for an hour or two to ripen. A sheet of glass is coated with this emulsion, and when dry is placed in contact with the negative, and a faint image printed out and developed to full intensity with

Gallic Acid	5 parts.
Lead Acetate	3 parts.
Acetic Acid	7 parts.
Water	1,500 parts.

The print is then fixed, washed, and dried and coated with

Rubber Solution	30 parts.
Toluol	70 parts.

The rubber solution should be of 5 per cent. strength in benzole. When this is dry, another collodion coating is given and again it is printed out and again developed, fixed, and dried, and these operations repeated till an image of sufficient intensity is obtained, from which a duplicate negative can be made.

* * *

The Steadman System of Exposure.

The Photographers' Association of America, or, as it is familiarly known, the P.A. of A., appointed a committee to confer with Mr. Steadman upon his system of measuring light and speeding plates, and their report runs as follows:—"We believe that to express the intensity of light in simple numbers, and to think of it in units, as we now consider temperature and volume, would tend to great simplification in the practice of photography. Mr. Steadman's method of doing this seems thoroughly practical. Actinometers have for many years been in successful use, and the theory involved is known to be practical. The different meters, as now made, differ one from the other in the degree of work that the light is allowed to perform, such work being determined by a tint selected arbitrarily by the manufacturers, and to which the discolouring paper is designed to match in its discoloration in the light. For this reason no uniformity of measurement through the world can possibly exist. The use of special papers, as well as the necessity of buying a meter, also prohibits a world-wide standard. For the reason that Mr. Steadman's method is based on paper always at hand in all parts of the world, and that no expense is involved beyond the strips of paper used and a small pocket note book with a hole in the corner, in which to tint it, your committee take pleasure in recommending the following standards for the measurements of light intensity:—For the standard paper for the measurement of light intensity, we recommend *solio*, and all printing-out paper which, on measurement, shall be found to agree with it in sensitiveness. For the standard amount of work that the light shall do, we recommend that degree of discoloration which becomes first plainly distinguishable from the original colour of the untinted paper. Such tint to be made through a hole in any thin opaque material, as the corner of a note book, the cover being raised to observe the tint. For the scale of values

we recommend the following as practicable:—One-eighth, one-fourth, one-half, one, two, four, eight, sixteen, thirty-two seconds, one, two, four, etc., minutes. For greater accuracy, the interval half-way between any two of the scale may be used, as three, six, or twelve seconds. The shortest interval, one-eighth of a second, is the intensity of the light out of doors on a clear day with the sun from fifty to ninety degrees above the horizon, and no shorter, greater intensity therefore exists under ordinary natural circumstances. Therefore, as to Mr. Steadman's method of speeding plates, we recommend that the Association officially request each and all of the plate and film manufacturers of the United States to investigate the method, with a view to establishing a uniform system, should the method be found satisfactory." It will doubtless be remembered by our readers that there was considerable discussion on this system in our pages during July and August.

* * *

Colour Photo-raphy Again. At the Convention of the Photographers' Association of America, a Mr. C. W. South discoursed on this subject, and introduced his own particular process, which he calls the "Solgram." His description of it leaves much to be desired, but we give it for what it is worth. He says: "A process for producing photographic prints in colours from the excellent negatives now possible must be simple and easy to work, permanent in result, and a printing-out process requiring methods of working not far removed from the monochrome processes now so extensively used. Such a process, I believe, I shall have the pleasure of demonstrating to you now, and which I call the 'Solgram.' The three-colour theory, which is well known to most of you, is the basis of all colour processes, whether direct or indirect. This theory has been resisted and turned in every way to accomplish the desired end—a photographic print or photograph in natural colours. For years I have been convinced that the three colours—yellow, red, and blue—had some particular office in the world of art except tinting objects, and I invented the Solgram to prove my theory—namely, that red was the base and warmth of a picture, blue was the great drawing-master, giving detail, shadow, and form; and yellow gave to our work light and life. I reasoned with myself thus—if red is the base, it should be placed first upon our paper (or suitable substance)—and as its office was simply to give warmth, tone, or colour, it need not be sharp and wiry, therefore the old gum bichromate pigment process would suffice, with the advantages that the pigment could be chosen for permanency, and also that by reason of its colour the print upon which a service would be variable, fading away with actinometers, etc. After printing and washing, we would obtain a beautiful crimson picture. Now for the blue print, which gives detail, drawing, form, and shadow, the gum pigment process, I was convinced, would not suffice for several reasons. (1) Above all, if a blue gum pigment should be painted over our red image, it would obliterate it, making it impossible for anyone, save an expert, to obtain correct registration. (2) As the blue print is to be used for detail, form, etc., the gum pigment print would be very unsatisfactory; thus I was led to adopt a chemical compound which would give the required colour upon being exposed to light. This idea carried out, I at once accomplished the two main points in practical colour-photography. (3) The yellow, which gives light, sparkle, and life to a picture, could be printed last over the compound image, crimson and blue giving a finished print. This last print, which, like the first (crimson print) had nothing to do with the drawing, could be made by the gum pigment process, care being taken that the yellow should not be opaque. Thus I invented the

Solgram process. However, after all this work was completed, I worked to perfect and form a complete colour balance so essential to obtain pictures which would not appear false."

A PRINTING-OUT GUM PAPER.

Dr. Reiss recently suggested at a meeting of the Société Française de Photographie the use of an emulsion of gum arabic and silver nitrate for printing out, and whilst we cannot quite see the advantages that the process has over any other plain paper process, his notes may lead some to experiment in this direction.

Gum arabic has been suggested as an addition to a gelatino-bromide emulsion, and it is stated that it gives greater density and freedom from fog; but this is a debatable point; it at least has found no general application. M. J. Liddee has prepared sensitive cloth or fabric by immersion for fifteen minutes in a solution of

Gum arabic...	...	...	...	...	32 g.
Sodium chloride	...	...	...	...	8 g.
Water	...	...	...	...	1000 cc.

After drying, this was sensitised by immersion in a 10 per cent. solution of nitrate of silver.

Dr. Reiss's process is, however, he suggests, quite new, and he says that although the results obtainable are very fine, the process is capable of improvement, particularly as regards the keeping of the paper before printing.

Any well-sized paper may be used; in fact, it is absolutely essential that it should be well sized, otherwise the image is flat and wanting in vigour. The well-known Canson's drawing paper, or good English writing paper, were found satisfactory.

To make the emulsion, 100 grammes of powdered gum arabic are dissolved in 100 ccm. of water; of this solution 5 grammes should be placed in a small porcelain or glass mortar, and 3 ccm. of glacial acetic acid added. The gum is coagulated at once, but on rubbing up vigorously a perfectly homogeneous mass or emulsion can be obtained. To this, then, is added, by yellow light, a solution of 1 gramme of silver nitrate in 3 ccm. of water, and the mixture again worked up into an homogeneous emulsion.

To sensitise the paper, it should be fastened to a sheet of stout cardboard or a drawing-board, and the emulsion spread over it with a round, stiff, hog's hair brush, and the marks evened out with a flat hog's hair brush. Too soft a brush soaks up too much emulsion. It is important to ensure a regular coating, to coat quickly, and to keep the brushes very clean; after each time of using they must be repeatedly washed in hot water.

The quantity of emulsion required to coat a sheet 18 by 24 cm. is about 3 ccm. The coated paper should be suspended by a corner, and will completely dry in from ten to fifteen minutes in a well ventilated and cold room. It is of course unnecessary to add that the operations must be carried out by artificial light, or in a room illuminated by yellow light.

As soon as dry, the paper should be printed. The prepared side is shiny and possesses a faint yellow tinge; it can be kept from twenty-four to forty-eight hours before printing, but it then becomes rather deeper coloured, but this disappears in fixing. If the paper is kept longer the coloration deepens in ratio to the time it is kept.

Printing is effected in the usual way, and the sensitiveness of the paper varies with the nature of the paper and the time the paper has been kept. Canson's paper prints more rapidly than the English writing paper. The quality of the paper has not only an influence on the sensitiveness of the paper, but it also determines the tone of the print.

Whilst the one prints in a red bistre, the other prints to a brown. The sensitiveness of the argentic gum paper is practically the same as that of Lumière's citrate paper.

It is obvious that the variation in the colour of the print and its sensitiveness is greatly dependent upon the size that is used, and an animal sized paper such as English writing-paper may give a totally different result to a resin-sized paper, such as I fancy Canson's is.

Printing must be carried further than is required in the finished print, as there is a reduction of intensity in toning and fixing. Freshly prepared paper gives the best results with plucky negatives. Soft negatives, however, give equally satisfactory results. After printing the whites of the print should have a faint brownish orange tint.

After printing the print is immersed in ordinary water, and the whites become quite clear, washing should be continued for fifteen minutes in running water, and the print should then be immersed in a 2 per cent. solution of hypo for ten minutes, and it should then be washed for an hour and hung up to dry. When dry the print is a rich brown.

If the ordinary photographic tones are required, then the ordinary methods of toning must be adopted, such as gold or platinum, or gold followed by platinum. To obtain prints rivaling platinotypes in colour, Namias's bath should be used:—

Chloroplatinite of Potash	1 part.
Distilled Water	1,000 parts.
Pure Hydrochloric Acid.....	5 "
Oxalic Acid	10 "

After toning in this, the print must be washed in running water for fifteen minutes, and then fixed as suggested above.

To obtain pure black tones the print should be first treated with:—

Borax	10 parts.
Sodium Acetate	10 "
Chloride of Gold (1 per cent. sol.)	50 "
Water	1,000 "

Then well washed and toned in Namias's platinum bath given above.

Violet tones are obtained by printing very deeply and toning after a good preliminary wash in

Water	1,000 parts.
Hydrochloric Acid (pure).....	20 "
Chloride of Gold (1 per cent. sol.)	50 "

The print is much reduced in this bath.

A very fine blue tone is obtained by treating the fixed and well-washed print with

Water	1,000 parts.
Ammonium Sulphocyanide ...	50 "
Chloride of Gold (1 per cent. sol.)	50 "

Finally Dr. Reiss has tried to increase the sensitiveness of the paper by the addition of a little gallic acid, and added three drops of a 1 per cent. solution of gallic acid to the first-mentioned quantity of emulsion. The result was greater sensitiveness, but obviously concurrently less keeping power.

Whether the above process is likely to be of any value I cannot express an opinion, but there are one or two suggestions that present themselves to me which may be worth consideration from the point of view of the experimentalist. In all probability, indeed, it is half suggested by Dr. Reiss that the whites of his prints are obtained by the gum dissolving away when the print is washed, why, then,

should we not combine the principle of gum bichromate printing with a silver image?

It is an old idea to immerse gelatino-chloride paper in bichromate and then print, but this gives us far too heavy a coating of gelatine. It might be possible to use Dr. Reiss's gum emulsion, and print out and then soak in bichromate solution, and then develop with warm water for Howard Farmer has proved that a metallic silver image in the presence of bichromate will render gelatine insoluble, and what is applicable to gelatine is in all probability applicable to another colloid like gum arabic. By applying this principle we could obtain an image of finely divided silver, suspended in gum or other colloid and could give to the man who wants to control his results by brush-work another process, which would give him an almost invisible grain and yet complete control over the tonality of his prints, I think much would be done to reconcile the gum-splodger and the average worker. For to me, the extremely coarse grain and blobbiness of the majority of bi-gum prints is excessively irritating. It is in fact, impossible to reproduce structure by the aid of the ordinary bi-gum, because of the coarseness of grain.

Dr. Reiss has also used nothing but silver nitrate. There is no reason why a chloride should not be incorporated with his emulsion, and as regards the keeping properties of it, it is generally known that the addition of citric acid or other organic acid will preserve a printing out emulsion for some time. In fact, it is not necessary to have an acid emulsion, or one with an excess of silver nitrate to obtain excellent results. Dr. Reiss's process makes for experiment, and, whilst I have added a suggestion or two, there are plenty which naturally occur, one, at least, rises to the front at the moment of writing—Why not incorporate a bichromate with the sensitiser?

E. J. WALL.

PYROGALLIC ACID AND ITS USE.

THIS name is apparently as fixed in photographic parlance as that of hyposulphite of soda, though each is a misnomer. It is true that "pyro" and "hypo" are the more commonly employed terms; but they are contractions of the originally used descriptive titles. The term "pyrogallie acid" was devised to express the idea of the substance being gallic acid sublimed, as first observed by Scheele, but whose true composition was shown by Pelouze and Berzelius. Any one can make an interesting experiment in its manufacture by placing a little dry extract of galls in a gallipot, fashioning a cap of white paper, tying it to the rim of the pot, and exposing the pot, in a sand-bath or otherwise to a temperature of 80 deg. to 85 deg. The gallic acid in the extract is sublimed, and parts with the elements of carbonic anhydride, condensing on the paper cap in the familiar form of flocculent crystals. Accepting the definition of "acid" to be "a salt of hydrogen," it is obvious that pyrogallie acid is an incorrect designation and that the comparatively recent word pyrogallol should take its place.

In the early days of collodion negative making, pyrogallie acid was the stand-by of all photographers. When dry plates came to the front pyro was still the developer, though for a long time opinions halted between its merits and those of ferrous oxalate. The latter was made by the direct dissolution of ferrous oxalate by the aid of oxalate of potassium. If, at the outset, the simple method of mixing solutions of ferrous sulphate and of oxalate had been devised, possibly the preference might still be undecided, for on the Continent the ferrous oxalate developer was still universally popular, when in Britain there was virtually no competitor against pyro. Whatever the actual

use, pyro became then, and has since continued, in almost universal vogue up to the last few years, until the introduction of the series of modern developers, the theory of whose composition and structure, with corresponding developing properties, owes so much to the investigations of Messrs. Lumière and Seyewitz. We have made inquiries among a large number of professional photographers as to their practice in developing plates, and, while finding a sprinkling of hydroquinone users, the vast majority still adhere to pyro. Some have taken to metol for a time; but many of these have given it up and returned to pyro. The question naturally arises: "Why is this so?" There are many possible replies. Thus, there are now such a multiplicity of new developers that it is difficult to discover, even from the manufacturers' own statements, the exact shades of differences between one and the other, the result being such a feeling of perplexity that the old pyro, whose properties are, or are supposed to be, so well known, is adopted, notwithstanding its drawbacks of finger staining and quick degradation of power after once using, etc. Pyro-soda, and, even, pyro-ammonia, can be used a second, and, even, a third time (in rapid succession), but lose much of their strength, a third development taking, perhaps, thrice the time to bring up the image to full density that the first use calls for. Metol and its congeners may be used many times over, and kept after use from day to day without injury. Yet, even these developers are not identical in properties after using. Each time that a plate is placed in them the action alters, though it be only slightly. As against metol, on the other hand, there is the peculiar sensitiveness to its action upon the skin exhibited by some constitutions. With regard to pyro and its finger-staining proclivities, we should not regret so much if a less slovenly manner of working were universal. It is simply marvellous to see the good pictures produced by some men, if the uncleanly modes of doing their work is noticed. If, before immersing the fingers in the pyro solution, or handling plates covered with it, the fingers be first dipped into water, so as to saturate the skin, as it were, with an innocuous liquid, very little pyro enters the pores, and if when the plates have been handled the fingers be well rinsed again and wiped on a towel (always to be placed ready to hand), there would be very little talk about finger-staining compared with what we now hear.

But the great point in favour of pyro is the gradual manner in which the image appears, and the common impression still prevailing that the ultimate gradations can be altered by the addition of suitable chemicals at an early stage before full printing strength has been arrived at, a property not shown by the more recent developers, under which the whole of the image flashes out at once and the continuation of the development being merely the requirement of density for printing purposes. Further, pyro is so much cheaper, weight for weight, than any of the others, even allowing for their use a second time. Under such commercial stress as now exists, every penny has to be looked at to make a commercial success.

Some photographers complain that pyro solution does not keep well, especially when once the bottle containing it is opened and put into use. But this need not be. The once-despised sulphite of soda is now in almost universal employment, varied by the substitution of metabisulphite. But sulphite alone will not answer for the purpose; it must have an acid added to it. Citric acid is handy and frequently made use of; nitric acid is not advisable, and is, further, liable to the presence of nitrous acid, which will cause the solution to turn brown, the reaction, indeed, forming an excellent test. The formula for a stock pyro

solution that we ourselves work by is: Pyro, one ounce, dissolved in a pint of 20 per cent. sulphite of soda solution, to which is added (before putting in the pyro) half an ounce of 10 per cent. solution of sulphuric acid. This is perfectly colourless when made, and will remain so for a long time.

Finally, we may refer to a form of pyro put upon the market during the last few years—that of small transparent crystals, a pound of which occupies very little more space than an ounce of the old form of sublimed pyro in flocculent crystals. We have given it a thorough trial, and our opinion is that no one using a solution of the sublimed and of the crystalline form could distinguish the action of one from the other. There is no mess, no feathery crystals to blow about in the air and settle upon plates or prints—the crystals are rapidly weighed and they quickly dissolve. A further advantage is that the price of the crystalline is about 10 per cent. below that of the feathery form.

SILVER PRINTING IN WINTER.

THE dull weather, accompanied as it too often is by extreme damp, is a sore trial to the silver printer. Not only will it frequently happen that one P.O.P. print cannot be obtained from a negative in a day, but there is also great chance of silver stains. The varnishing of negatives during the prevalence of such weather as we have been having of late is an absolute essential; one may omit it in summer, but never in winter.

It is fortunate that we can, however, obtain only a faint image on gelatino-chloride paper and then develop it up to full strength, and this method is not only of great value in the saving of time, but the results are not to be distinguished when the operation is properly carried out from a fully printed-out picture.

There are two distinct methods that may be used, the one in which an acid developer is used, into which the print is placed without washing, and in which the process of physical development is taken advantage of, and the other in which an alkaline developer is used, and the soluble silver salts in the print are converted into insoluble bromide of silver by immersion of the print in a strong solution of an alkaline bromide.

When an acid developer is used it frequently happens that the colour of the print is satisfactory, and no toning at all is required, but as a rule it is much more satisfactory to use a gold bath.

One of the most satisfactory acid developers is that suggested by Valenta, which is as follows:—

1. Hydroquinone	...	...	...	...	1 oz.
Alcohol	...	...	...	...	10 oz.
2. Sodium sulphite	...	...	...	...	2 oz.
Citric acid	...	...	...	...	48 gr.
Water	...	...	...	...	10 oz.

For use, mix half an ounce of Nos. 1 and 2, and add half a pint of water. The prints should be immersed in this and kept on the move, till the desired depth is reached, which will as a rule take about fifteen minutes, and should then be immersed in a 5 per cent. solution of common salt to stop the developing action, and then thoroughly washed and toned.

Pyrocatechine may be used instead of the hydroquinone in the above formula, and it gives tones than tend more to violet, whilst if a very quick developer is desired, though there is no other advantage, pyrogallol may be used. For some years, on the Continent, there has been a one solution

developer obtainable commercially, the composition of which is practically as follows:—

Hydroquinone	50 gr.
Sodium acetate	50 gr.
Citric acid	50 gr.
Sodium sulphite	50 gr.
Water	20 oz.

and this acts very satisfactorily.

The second method, that by the use of an alkaline developer, is, however, preferable to the acid developer. It is certainly more certain in its action, and if due precautions be taken on one or two points the chances of failure are relatively small.

If a piece of gelatino-chloride paper be immersed in an alkaline developer, it turns instantly either green or black all over, or becomes covered with an iridescent film of reduced silver, and any image there might have been on it is lost in the general reduction of the silver. If, however, the paper, with its faintly impressed image, be immersed for five or ten minutes in a 5 per cent. solution of potassium bromide, the whole of the silver salts, the chloride as well as the free nitrate or organic salts of silver, are converted into bromide of silver, and in all probability the light affected silver salts are converted into lower compounds of silver bromide. On the immersion of such a print into an alkaline developer we have nothing more than ordinary development, though there is a possibility that when a developer containing a large proportion of bromide is used, of some of the silver salts being dissolved and instantly precipitated on the image.

One of the most important points is to avoid as far as possible the access of any strong actinic light to the paper whilst filling the frames or examining the prints. The faint and invisible action which then takes place, whilst quite impossible to detect when the print is fully printed out and treated in the ordinary way, becomes distinctly visible by the development process, and leads to a degradation of the whites which is undesirable.

It is advisable to well wash the prints after immersion in the bromide solution, otherwise irregularities in the developer may occur. Development must not be carried far; in fact, the print when sufficiently developed should be a very pale yellowish orange, and the detail in the highest lights should certainly be wanting. If artificial light be used, it is somewhat difficult to judge the progress or final stage of development, but this can be got over by a somewhat ingenious idea that we lately saw in use, and that was the use of a sheet of glass coated with gelatine and stained with methyl violet in front of the light, which makes the yellow image show up very strongly.

After development the print must be thoroughly washed. This is most important, for the slightest trace of developer in the paper or film at once reduces the gold of the toning bath, and a faint purple tint is seen over the whole of the print, both back and front.

Various formula have been given for the alkaline developer, but one of the simplest is that suggested by the Paget Prize Plate Company:—

1. Hydroquinone	1/2 oz.
Sodium sulphite	2 oz.
Water	110 oz.
2. Potassium bromide	15 oz.
Sodium carbonate	12 oz.
Water	112 oz.

For normal results mix 1/2 oz. No. 1, 1 oz. No. 2, and 1/2 oz. water; for greater contrast reduce No. 1, and for less contrast increase No. 1, and proportionately reduce or

increase the quantity of water, so that the total bulk of the solution is kept constant.

Either the separate or combined baths may be used, though the latter is preferable, and in this the print rapidly assumes a purple tone and full intensity.

Considering that a faintly impressed image can be obtained on P.O.P. by burning a foot or two of magnesium ribbon three or four inches away from the negative, and the image thus obtained can be developed by either the above processes, there should be no difficulty turning out prints in winter as rapidly, almost, as in summer.

THE SENSITISING ACTION OF SOME YELLOW DYES AND MEANS OF DETERMINING IT.

Those who are interested in orthochromatic photography cannot fail to appreciate the subtlety of yellow dyes as regards their influence on silver bromide emulsions. The number of yellow dyes which are now made are exceedingly numerous, and it is possible that there are many among them, as yet untried, which could be used as colour sensitisers. Their action is in many cases so limited, that it is difficult to interpret one result, but one noticeable point in their behaviour is the relation of their sensitising actions to their absorption; is hardly comparable with that of the blue-black and violet dyes.

The testing of a plate sensitised with a dye is a matter which requires especial consideration, and the illuminant must essentially be the same both for testing and using the plates. The difficulty of employing daylight for work destined to be of any scientific value is of course known to be very great, and a glance at Fig. 1 will show how impossible it would be to estimate the action of a dye by its means. Four curves are given, obtained by plotting the densities of different portions of the spectrum photographed upon the same brand and batch of panchromatic plate. No. 1 is the result when incandescent gas was used to make the spectrograph, No. 2 was made by strong sunlight, No. 3 by a brightly clouded sky, No. 4 by a heavy, rainy sky. The results are markedly different, in the second, third, and fourth curves they do not necessarily show that the light varies in its proportions of pure colours under different atmospheric conditions, though it is generally supposed that this is the case, but they show the impossibility of taking for scientific comparisons or estimations such a changeable illuminant as "daylight."

Imitating the excellent suggestion of Dr. Eder to some extent, the following estimates of the effect of four well-known yellow dyes were obtained by making the spectrographs with a standard illuminant, and resolving the ratio of density in the greenish-yellow region to density in the blue region into a fraction, so that any one dye could be compared with another by comparing their sensitiveness to greenish-yellow against their sensitiveness to blue. The following table was thus arrived at:—

Dye.	A.—Density of Blue Region.	B.—Density of Greenish-yellow Region.	Ratio of A/B.
Aurantia	12.3	1.7	7.23/1
Thiazol yellow	14.5	3.7	3.92/1
Uranine	13.8	2	6.9/1
Auracine	13.8	4	3.45/1
None	9.3	1.9	4.9/1

Such a table as this could of course be made up in endless ways, but it will be found of great use if formulated somewhat in the above way. For example, if experimenting with rhodamine, a yellow and green sensitiser, spectrographs are made of the densities of the bands corresponding to the blue, green, and

yellow portions of the spectrum read, and the ratio of blue sensitiveness to green, blue sensitiveness to yellow, etc., obtained. The lower this fraction is, the more active will be the dye with regard to the region of the spectrum in question. Thus out of the four above described, auracine is clearly the best for sensitising for greenish-yellow, according to the experiments under discussion, it giving a sensitiveness to the E region nearly a third that of the plate's sensitiveness to blue. For the bluish-green region uranine runs auracine very closely especially when used as a neutral solution plus silver nitrate. The same four dyes were also tested in another way, a very useful one for determining the practical value of a dye for various kinds of illumination. One in two thousand aqueous solutions were prepared, and rendered alkaline with ammonia. Plates were bathed with the filtered solutions, and exposed under a Chapman-Jones plate-tester, and all subsequently developed for an equal time. The densities of the colour

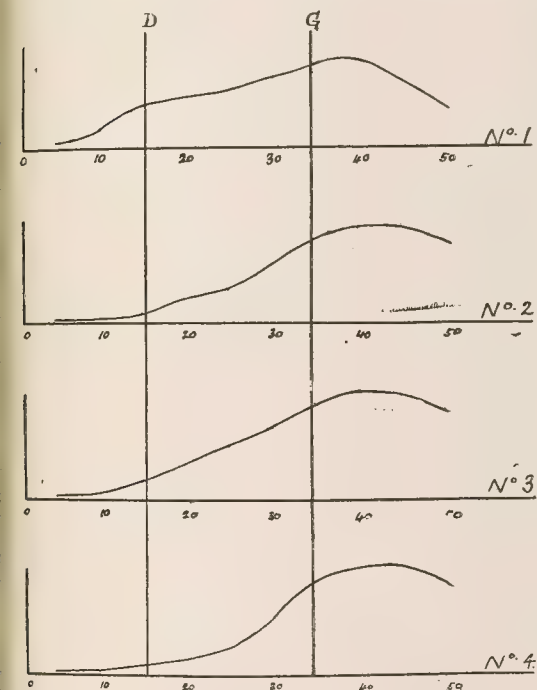


Fig. 1.

patch records, blue-violet, green, yellow, and red, were determined on the photometer, and each tabulated as follows:—

Dye.	Blue-violet Square.	Density of Green Square.	Yellow. Square.	Red Square.
Auracine	27	14.5	1.0	1.75

The results with aurantia and uranine were not to be compared with those produced by thiazol yellow and auracine, but uranine gave slightly increased susceptibility to bluish-green rays—a thing one would anticipate from its fluorescence. But the result with auracine, as tabulated, is very remarkable. It will be seen by examining the absorption curves of the dyes used for these experiments (Fig. 2), that the "colour" of auracine does not differ very markedly from that of aurantia. (At any rate, it is only when one compares the readings of the absorption spectra of extremely dilute solutions that a greater extinction co-efficient is apparent from F to H in the case of aurantia.) And yet these two dyes behave entirely

differently in their sensitising action. With auracine our plate is sensitive to yellow and red, with aurantia no visible sensitiveness is conferred.

Aurantia and uranine were further tested by bathing plates with an ammoniacal solution of each, to which a small quantity of silver nitrate was added. Uranine being a fluorescent dye, and therefore possibly capable of exerting more energy than one non-fluorescent such as aurantia, it might reasonably be expected that the addition of free silver nitrate would effect some increase in its action. That it does so can be shown by means of the spectroscopic camera, the prismatic spectrum being for some reason the best, but with aurantia, silver nitrate works no miracle, and it remains still apparently inert. A reference to page 115 of Hübl's "Dreifarbentphotographie" will show the author's opinion of uranine to be high, and the dye certainly works well with eosin and erythrosine, more particularly when silver nitrate is present also. Its action is, however, uncertain—i.e., it varies with different qualities of plates.

Those to whom a sensitising bath for an "orthochromatic" plate or a plate suitable for the green exposure in three-colour work is of interest will find auracine well worthy of their attention, as in conjunction with erythrosine it is particularly useful for bathing plates. Although mentioned by Dr. Eder some two years ago as a green sensitiser, it does not seem to have been followed up with the interest it undoubtedly de-

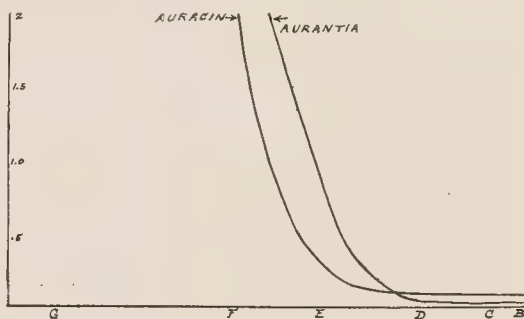


Fig. 2.

serves. Like uranine, nevertheless, it is a far more valuable colouring medium when used with erythrosine, enabling a continuous band to be obtained from the blue-violet end of the spectrum up to about D $\frac{1}{2}$ E, on plates bathed with the solutions.

When using silver nitrate with auracine, a thorough rinsing of the bathed plates is necessary before drying them; the quantity of AgNO₃ should approximately equal that of the dye or dyes by weight and lastly, drying should be effected within two hours, and the plates used when fairly fresh.

T. THORNE BAKER, F.C.S.

PROFESSIONAL Photographers' Association.—A meeting of the General Committee was held at 51, Baker Street, on Friday, December 9. The following members were present:—Messrs. Alfred Ellis, A. Mackie, Martin Jacquette, Lang Sims, F. A. Bridge, Wm. Grove, E. Scamell, R. Fellows-Willson, S. H. Fry, and D. Prodger; Mr. Alfred Ellis in the chair. The minutes of the previous committee meeting were read and confirmed. The various suggestions for the improvement of the Assistant's Certificate scheme having been incorporated by the sub-committee, the complete prospectus was considered and passed. The "Handbook" for 1904-5 was also considered, and various alterations agreed to.

THE PRACTICAL PERFORMANCE OF TRI-COLOUR FILTERS.

I.

[Read before the Royal Photographic Society.]

THESE experiments were undertaken with the object of determining the best form of filter for tri-colour reproduction by the half-tone process, for use in the tri-colour instruction classes in the London County Council School of Photo-engraving and Lithography.

The following points in particular were examined as to their effects on the accuracy of the colour rendering:—

Firstly, whether it were possible to work with filters which, in conjunction with their respective plates, should follow certain theoretical curves, such as colour mixture curves or colour sensation curves, to which, according to leading authorities, the opacities of the negative records should correspond, or filters with specially calculated curves for half-tone work as assumed by other authorities. As no one appears to have attempted to make filters which would even approximate to some of these requirements, the only filters of this class which we have been able to use are those made by Mr. Ives for use with the "Kromskop," which we are not sure that he would recommend for half-tone work, although he states the principle involved to be the same.

Secondly, the effects of other maxima, notably those which occur when using erythrosin plates in conjunction with a broad banded filter.

Thirdly, the effect of allowing ultra-violet to be recorded together with the violet.

Fourthly, the effect of the loss of the extreme red light, which is never all photographically recorded in three-colour work.

Fifthly, the effect of certain pure colours not being recorded through any of the filters, instances of which occur in two sets of commercial filters.

Lastly, to determine whether the negative records should be even, and end abruptly, and, if so, the precise extent to which they should overlap each other.

PROCEDURE.

Reproductions were made by the various filters selected of a good hand-painted chart in oil-colours, supplied by Messrs. Winsor and Newton, and possessing great variation of colour and gradation, which we used because it was, we considered, a particularly difficult subject to reproduce. In the indirect method, dry plate negatives were made of this with electric light upon the plates for which the filters were designed; these were developed with glycine by factor development, the exposure and, where necessary, the factor, being altered, so that a black to white scale of graded tints placed on the colour chart was reproduced in exactly the same manner in all the negatives.

In order to accurately determine the precise manner in which the various filters were acting with regard to the colours being recorded, and the variation in the character of the record when working on light and dark colours, a series of sets of exposures were made to a nearly normal spectrum produced by a prism grating. The absolute value of these exposures was made strictly proportional to the camera exposures required for each filter and plate, and the series of exposures were made in the ratios of 1, 3, 9, 27. From these negatives, as well as the chart negatives made by the indirect process, contact transparencies were made upon a plate of medium speed, and from these, screen negatives (175 lines to the inch) were made upon wet

collodion. Some sets of collodion emulsion negatives were also made by the "direct" process, in which the screen negative also gives the colour record. All the screen negatives, either made indirect or direct, have been put on to the metal with the fish glue enamel process and rough etched. In the whole of these operations, and also in the subsequent proving, every effort was made to keep the conditions as uniform as possible. No local intensification or reduction was made on the negatives, no work done on the transparencies, no fine etching on the blocks, or overlaying in the printing. Under these circumstances the final colour prints are not brilliant, but form, according to the faithfulness of the colour reproduction, a good practical guide to the working of the filters. Of course, from very poor filters good results could be obtained if unlimited handwork be allowed, but the value of the filters can only be judged according to the truthfulness of a purely mechanical rendering by their aid.

We are aware that in putting results before you that are absolutely untouched, we may be courting expressions of horror from the appearance of all the proofs, especially from those among the audience who have never yet seen a three-colour proof before fine etching, or even one proved without making ready.

But, we repeat, if handwork be allowed, either in retouching the negatives, retouching the transparencies, in local cutting or otherwise chemically "faking" the screen negatives, fine etching on the blocks, or make ready in the proving, no honest comparison of filters is possible, since with skilful etching and re-etching one is able to make a passable three-colour print from an ordinary monochrome original, in fact many of the three-colour postcards of landscapes now sold are simply made from an ordinary uncoloured photograph. While we admit that we have never yet seen a three-colour that could not be improved by fine etching, still we think that the amount of this now done is much greater than it need be and is mostly occasioned by not sufficiently correct filters and inks, and errors in manipulation.

The proving of these blocks has been done chiefly on a hand press by ourselves, and no doubt better proofs could be obtained by an experienced expert prover, especially on a power machine.

With regard to the printing inks used, we believe that they should be more than merely complementary to the spectrum colours recorded, that is, they ought to reflect all the colours not recorded, for instance, the yellow ink should be a minus blue, viz., a tint composed of the mixed colours of the spectrum, after the blue recorded on the negative through the blue filter has been subtracted, the red should be a tint composed of the rest of the spectrum after the colours recorded on the green filter have been subtracted, and the blue should be a minus red, that is, a tint composed of the colours of the spectrum after subtracting the colours recorded through the red filter. Another necessary condition is that when printed in pairs they must correspond as nearly as possible to the three primary colours—red, green, and blue-violet. But both of these sets of conditions cannot be satisfied at the same time unless the filters are acting in the way which we believe to be correct. With all the commercial filters we have yet seen the first condition must be sacrificed, as it would not be possible to use the true complementary colours to the filter records for printing, because in many cases they would be pale tints.

After examining fourteen makers' sets of inks by printing them in pairs, as well as taking spectra photographs of their absorptions, we found that there was not one set that conformed to the desired conditions, so we have had to select the three best inks, each from a different source.

Taking now a set of spectrum records that we consider are approximately correct, and putting those through the spectrum

and recombining the light left, you have the complementary, and beside it we place the inks we have selected as the best available.

The yellow is Brooke Simpson and Spiller's yellow No. 2,956, and you will see it comes fairly near the truth. The minus green has been made for us specially by Messrs. Fleming of Edinburgh, and they call it "New Process F." They say it is fairly permanent, but it is not an easy ink to work with, being stiff, and soon goes "livery." You will see it is still a long way from correct, but much nearer than most reds. The minus red is Messrs. Shackell Edwards' trichromatic blue, and this also you will see is a long way from theoretical conditions, still, again, it is far ahead of some others. It would appear that the difficulty in the blue ink is that directly an ink is made of the shade desired it becomes very transparent to red, even this ink is far too transparent to red in thin layers, at the same time it is not transparent enough to green.

We have used the same inks throughout, and it will at once be seen that these inks are not truly complementary to all the filters, but in most cases it would be impossible to find a complementary nearer, that would at the same time give anything approaching a black when the three inks were superposed, or the primary colours when superposed in pairs. Lamière's filters certainly require a lighter yellow, but otherwise we do not think that by making the inks more truly complementary there would be any all-round improvement; the reproductions might be better in places, but they would be worse in others.

We have carried out these tests with twelve different sets of filters, viz., those of Mr. Ives, Mr. Sanger Shepherd, Messrs. Lumière, Messrs. Farmer and Symmons, Mr. Klein, and others which were made at Bolt Court. Of course, all reproductions, both of the chart and spectrum, have been made by electric arc light using direct current, and, while up to now we have obtained the best results before fine etching by the indirect process, we cannot but recognise that this way of doing ordinary small-sized commercial work in the studio where the screen cameras and powerful arc lights are available, is doomed. The introduction of the new dyes, orthochrome T and pinachrome, make process plates after bathing at least as good as, probably better than, any commercial orthochromatic plates for colour rendering, and certainly much better for ability to give a dot effect on a dry plate suitable for easy printing on the metal.

A set of filters, similar to the best we shall show, can be constructed for direct dry-plate work, with excellent results, the best procedure in our opinion being to use a Commercial half-tone plate,* with quinine for the blue filter, and the same plate previously bathed in a solution of pinachrome and then well washed and quickly dried, for the green and red exposures.

The exposures on the chart on an Ilford half-tone plate, bathed for the green and red with pinachrome, totalled less than twenty minutes, which, considering the small stops used and that the cross-line screen cuts off about three-quarters of the light, is remarkably quick.

Collodion emulsion, used in conjunction with the screen and colour filter, is already in very common use, but with the sensitisers hitherto available it has always been very uncertain and troublesome with regard to speed, colour sensitiveness, and clean working. Sensitisers containing silver, as for example Albert's A added to the emulsion, invariably cause it to go foggy after a short while, the makers refusing to guarantee it longer than twelve hours, and the least dust or disturbance from almost ideal conditions gives rise to a plentiful crop of spots. Messrs. Meister, Lucius, and Bruning have, however, introduced a dye called "pinaverdol," which contains no silver,

but confers an almost even green sensitiveness, a great increase of speed (which, however, largely disappears with long keeping), and no tendency whatever to go foggy, so far as we have been able to see. The emulsion does not attain to its full quality immediately after it is sensitised, but does so when one day old. The plates must be washed well (say, two minutes) before exposure. This considerably accelerates the speed. The emulsion also lends itself to sensitising very readily to the red farther than any dry plate, either by the addition of Penrose C sensitiser or by taking one part of a solution of ethyl violet (1 to 500 alcohol) to 50 of plain emulsion. This also does not fog the emulsion, but it does not attain to fullest speed at once; on the other hand it does not deteriorate with age. This also must be washed thoroughly before exposure, otherwise it will work very slowly. The washing is really no disadvantage, as it enables the plate to be kept moist for a considerably longer time, and then has not to be done before development.

With regard to filters other than our own, in every case the plate recommended has been used, while for our own indirect work we have chosen plates in accordance with our set of comparative plate tests shown at this Society last October. From those we decided that the best commercial plate to use for the red filter (blue printing plate) was the Lumière C, on account of its going farther into the red than any other plate so far on the market, and needing least exposure under a red filter. The best for the green filter (red printing) was the Cadett spectrum, being the only plate then on the market having an even sensibility to green, though since then the new Mawson B is very nearly as evenly sensitive and equally as good as the spectrum under a green filter, and we have found this plate a little easier to work in regard to freedom from fogging and the attainment of good density. An ordinary plate does for the blue filter; we have used as a rule Mawson and Swan's Castle plate.

Some authorities maintain that panchromatic plates are essential, but we have tried the chart on commercial and bathed panchromatic plates, and do not find any advantage in using a panchromatic dry plate for the yellow printing plate; an ordinary plate does just as well if the same gradation in the black and white strip that is always first attached to the original is attained, and by giving the correct exposure and developing with the correct factor, this is possible of accomplishment. Panchromatic plates would be necessary if the argument be correct that the yellow printing negative should record the extreme red, but it is not. This idea has probably arisen from a consideration of the colour sensation (or mixture) curves, but there is no blue filter that we have ever handled, or even seen described, that in practice would record the extreme red during a normal exposure or before the blue was overexposed, and a little reflection will show that for two reasons the blue filter ought not to record the extreme red. For, in the first place, this would need that the red ink should print alone in the deep red, while the correct complementary red to the green filter is a distinctly violet or pinky red—far from a deep red. With a deep red it would be extremely difficult, if not impossible, to match certain colours (e.g., pinks), and, secondly, since yellows in nature are made up of green and red light, it would be found that yellow would record to as great an extent as the red, and prevent it being the least opaque part of the negative, as it should be with the blue filter.

"Toning Bromide and Other Developed Silver Prints," by R. E. Blake Smith, is the title of the latest of the "Photography Bookshelf" series of handbooks, which has just been issued by Hiffe and Sons, and it deals in a thoroughly practical manner with the various methods that have been suggested for modifying the colour of bromide prints.

* We used the Ilford "Half-tone" Plate.

"ONE MAN METHOD."

[Abstract of an address before the Convention of the Photographers' Association of America.]

I BELIEVE in and use a "One Man Method" in conduct of photographic business, just the same as does the painter, sculptor, physician, dentist, and every other of the men who follow as a business art or science and expect their results to be ideal. During my talk I shall touch upon five vital points. First, the advantage of system; second, the successful use of artificial light developing papers; third, the elimination of necessity for retouching; fourth, the avoidance of re-sittings; and fifth, the lever for better prices and increase of income.

"System will move the world"—an old time saying. It will move a world of photographic business; I am now doing four men's work with ease. When I begin to develop the method I now use and teach, Sundays, holidays, and evenings, as well as my day time, found me at work. Now each day discovers some newly-found opportunity to save time, possibly minutes, may be seconds, the endeavour to save time and get improved quality being the impetus prompting my continual endeavour so to do. Add together these minutes and seconds during nine years of constant endeavour to save time and the result is not so surprising. I am each year doing more and better work in less time and at less cost, while prices advance. There is but one possible deduction as to cause system. Not only in the endeavour to shorten time by the discovery of more rapid means, but in a convenient arrangement and the use of good judgment, is system acquired. There should be a place for everything and everything in its place. I print, develop both negatives and prints, and even mount in my dark room, and can reach everything therein without a step. I also know that failure to dust plates before exposure and before development means more time spent on the prints. If the negative is not right in quality time will be required to correct the fault. I think ahead and save time and trouble.

System in the business end is just as necessary. Few of us realise this. Some methodical routine procedure for the business part should be established to suit your conditions and your public and strictly adhered to. Endeavour to systematise in both the working and the business ends of your profession and it will surprise you in its time-saving and money-making results. I have not time to detail advantages in the use of system. The fact of its desirability is apparent to everyone. My idea of a "One Man System" is sometimes misunderstood, as evidenced by the following: A German woman servant called for the portrait order of her mistress. Several friends were in my operating room at the time. Being busy at my work one of them volunteered to meet the customer. Another offered to take the portraits into her, and I shortly followed into the reception room to collect the balance due. As she started to the elevator, the girl said: "Mr. Vaide, I like your von man metod; I have heard of it; I will come here for my picture soon. Your metod is a good von. You have von man to meet you, von man to give you the pictures, and von man to take the moneys. I like your von man metod."

The time limit for my address allows but few suggestions for successful use of artificial light developing papers. Carbon and platinum effects, with their beautiful tonal values, are uniformly possible with these papers. This fact cannot be questioned. Once obtained they must be in the product. The amateur occasionally gets them, why not the professional, and always? The secret is primarily in the negative. The general density must be thin, but it is the relationship of highest lights to deepest shadows that counts. A brunette with black crushed velvet gown, trimmed in white, wearing white hat with white plume, must, as an example, be so treated that after screening down the high lights to a low enough key, prolonged development and exposure for full detail in the deepest shadows will not block the high lights, they being transparent enough to read a newspaper through them. Subject is placed away out under the light; screen (which is the real skylight and is covered with both white and black curtains each but twelve inches square and running on wires) is placed close to the subject—it being known that the movement of a curtain on the skylight far away alters the entire effect. The screen curtains are manipulated until high lights are down to a very low tone. A grey reflector, if needed for the shadow side, is so placed as to illumine the shadow side, but not to project false light. A plain grey background is placed and is shaded on side next to the skylight by placing an opaque covered frame at right angle with the ground and

moving it until the ground is sufficiently shaded to show the lighted side of the subject in some contrast with the background. Quality of negative depends upon screening, exposure, and developer used. I believe in long exposures. Time will not allow the telling of all of my reasons therefor. By conversation during the exposure, the thoughts in the mind of the subject produce a movement of facial muscles (little lines of drawing), which gives a softening effect, lessening need for retouching, and a composite of expressions, besides a better effect of the eyes, the screening allowing the pupil of a light eye to expand, thereby improving expression. Nervous people and children require, of course, shorter exposure and must be placed farther back under the light and less screened; but result is not so round in perspective or pleasing.

I believe, in use of head-rest where possible. Many disagree with me on this, I know, but I would rather get better results and use it than the reverse. I never have an objection raised by a patron. It is placed with the remark, "This is only temporary and will soon be removed," continual conversation thereafter causes forgetfulness of the head-rest and its use is not noticed by the subject. Try this plan.

I now expose for the deepest shadows, and with a developer, which I use for both plates and prints—half and half of metol and hydrochinon, and very much diluted—develop for the detail in deepest shadows, knowing that continued development will not make a single high light too dense. If negative needs more snap after detail is all out, a "coaxer" (made of full strength developer, old developer, and plenty of bromide) is used, and in a few seconds acts on the highest lights. Negative must be thin when fixed out, and the relation of high lights to shadows, so hurriedly explained to you, must exist.

In making prints from such negatives, I place in a small porcelain dish a few ounces of fresh developer and a piece of cotton (not absorbent), and expose this print to a light (three incandescent burners—over them a mirrored reflector, the illumination softened by a sheet of tissue paper, all in a 24 by 24 by 24 inch box)—and after placing the exposed print, while dry, on a sheet of glass, go over it rapidly until developed. If development is too long, and print has no strength, or yellows, expose longer; if too black, expose less; if too grey, add bromide until the whites are clear. Lack of time renders impossible a more detailed and thorough description of this process. I use for a hardener solution for both print and plate fixing bath the following, and I add one ounce of it to every gallon of hypo solution: 15 ozs. acetic acid, 2 ozs. sulphite sodium, 2 ozs. powdered alum. Uniform carbon qualities are actually obtainable with gaslight papers; they are in the product; they are difficult to obtain until once the thing is understood, and then it becomes the easiest process imaginable. These papers are the coming thing.

Negative quality, which I obtain, and that you can get, needs little retouching. You do not need a retoucher in your place. I am not a retoucher—could not retouch if I tried. There is but one thing to learn, not how much to retouch, but where not to retouch. Avoid its necessity by the right negative. Work usually necessary to eliminate defects which appear when a print is for a long time exposed to daylight will not register on paper prints under such conditions as I have outlined. I wish I had more time to go into detail and reasons. Learn where you must not put your pencil, and the likeness is never changed, the modelling is perfect, and flattery comes from lighting and timing and development, and not in the retouching. Time flies, and I can but touch on the subject of avoidance of re-sittings.

I make several negatives of each patron, having obtained in advance their approval of my idea of leaving to me the experiments until they see what they can get. I proof all the negatives roughly, darkly, making them as unflattering as possible. Selecting the best, I retouch them for finished portraits (the little retouching required does not take long). If a fault appears I correct it and reproof until perfect. A criticism once found can be altered, but never eradicated. The proofs I wish to be ordered from must be better than any they have ever before received, as perfect and flawless as the picture; right there the battle is won. I have had but three re-sittings in three years' business in New York City with my exacting Fifth Avenue clientele.

Lever for better prices and increased income. I invariably make one or more large plates of each patron; if the order is to be but for a locket I make at least one 8 by 10, and if the plate is deserving I show a proof of it as perfect as a finished print. It took me until a few years ago to realise the profit by religiously following this plan

every patron. Try it faithfully, not for one month, not three months, not six months, but for a year; then figure up and see where you stand on the proposition. Try it. Whether you are in little or in towns, just try it. The income therefrom for the year will vastly surprise you. If the large plate is not good enough, do not show it. If it is worthy, someone will want one or more prints therefrom. That much is your income-increased.

Better prices follow immediately the production of your own mounts, folders, and effects. Your own individuality, like that of the painter or sculptor, appears in your product, and no one will say to you, "I saw the same thing down at Smith's for so much per dozen."

In developing your One Man System aim for a cheaper material if the desired effect follows, for economy is a money maker as well as is increased prices. I am using the cheapest of everything to be obtained. I get carbon qualities and prices for results. It costs the physician to write a prescription. His pay is for the know how.

MILTON WAIDE.

POTASSIUM BROMIDE AS THE INDIRECT CAUSE OF DICHOIRC FOG.

LÜPPO-CRAMER continues in the "Photographische Correspondenz" his researches on the theory of photographic processes, and writes his current notes to the above subject, and introductorily remarks that dichroic fog so often occurs in practice under conditions in which the ordinary explanations are quite unsatisfactory, that he has led to examine the subject more closely.

As when an acid fixing bath is used the reduction of any dissolved silver bromide by the traces of developer, remaining in the gelatine after development cannot take place, and, on the other hand, the other solvent of silver bromide used is thiosulphate of soda, and only in very minute quantities, there must be certain conditions under which the sulphite is the solvent. In his last note on this subject he pointed out that with certain dilution of the developer the latent action of the sulphite came into play and gave rise to dichroic fog.

It is often said by practical men that large quantities of potassium bromide in the developer, particularly with bromide paper, can produce yellow fog. Few statements could be found in technical literature on this point, though it seems generally well known. Andresen states in his "Chemie der organischen Entwickler-substanzen,"¹ that with certain developing agents of the naphthaline series the proportion of potassium bromide favoured the formation of yellow fog. The said experimenter is of the opinion that this kind of yellow fog is dependent on the poor keeping power of the developing solution, and it almost appears that "dichroic fog" is not meant. Hüllner von Hübl mentions in his book "Die Entwicklung, etc." (1. Aufl., p. 54) that with the exception of glycine a larger quantity of potassium bromide results in yellow fog. Lumière and Seyewetz² on the other hand state "that alkaline bromides appear to be without influence on the formation of (dichroic) fog." In my first work³ on dichroic fog I found this latter statement so far confirmed in that small quantities of bromides did not prevent the occurrence of dichroic fog that was caused by solution of the silver bromide by specific additions of the developer of fog-producing agents, such as the sulphocyanides. The following experiments prove that the formation of dichroic fog is the result of solution of the silver bromide by sulphite, can be directly or actually caused by potassium bromide.

If an unexposed dry plate is developed for twenty minutes in the following developer: hydroquinone 2g., anhydrous sulphite 10g., water 100ccm., mixed with an equal volume of 10 per cent. solution of soda, and 50ccm. and 200ccm. of a 10 per cent. potassium bromide solution is added, with the former strong dichroic and chemical fog is formed, but the dichroic and not the chemical fog with the latter. Pyrogallol and adurol (chlor-hydroquinone) gave under the same conditions 100ccm. K Br still stronger fog, edinol and glycine considerably weaker fog. Pyrocatechine gave, even after twenty minutes' development, no yellow fog, with metol it was only obtained with very

dilute developers, such as 100ccm. of soda 1 : 10 to 200ccm. of metol solution and 100ccm. of potassium bromide and three-quarters of an hour development. A comparative test of this metol developer and the above-mentioned hydroquinone developer was very instructive.

The developing power on the latent image was approximately the same for both solutions. After fifteen minutes' development the image in the metol solution was without any trace of dichroic fog, that in the hydroquinone developer was covered with an intense dichroic fog. Hydroquinone-soda compared with pyrocatechine-potash, with 20ccm. of K Br solution to 200ccm., and with obviously analogous composition, have almost the same developing power.⁴ Yet in the pyrocatechine there was only a faint yellow fog after half an hour, whilst with the hydroquinone a very dense red fog was formed. It must be noted that in all these cases we had to deal with finely divided metallic silver and not with the oxidation products of the developing agent. The appearance of the dichroic fog is, from the above experiments, undoubtedly influenced by the nature of the developing agent, independently of its reducing power on the latent image, which accords with Hübl's statement, quoted above, that the yellow fog so often observed is a property peculiar to hydroquinone, whilst his other remark that glycine never gives rise to yellow fog requires modification.

The tendency of the various developing agents to form dichroic fog, which differs so enormously with approximately equal developing power, appears analogous to the different tendency to the formation of the ordinary chemical fog with equal reducing power on the latent image, which is the case with the developing agents in use, and still more so with a class of bodies, which, according to Andresen, only develop the latent image with difficulty and yet give chemical fog.

The explanation of the action of potassium bromide in the appearance of the dichroic fog in the above-described experiments, it should first be mentioned that the bromide itself as the result of a solution of the silver bromide, does not cause the phenomenon. In a glycine developer, devoid of sulphite, no fog was caused; even with such a large proportion of bromide, whilst with sulphite it did occur. For such a comparative test glycine is very suitable, as without sulphite it does not give oxidation products which stain the gelatine, which might, as with hydroquinone, disguise the dichroic fog. The bromide salt thus obviously only acts indirectly, as it strongly retards the ordinary reduction of the latent image and the formation of chemical fog, and therefore gives the sulphite sufficient time to dissolve the silver bromide, so that the slight direct influence of the bromide on the formation of dichroic fog makes itself felt.⁵ As I have previously mentioned, different makes of plates show very different behaviour as regards the tendency of dichroic fog, and this difference makes itself distinctly noticeable in the case of the fog indirectly caused by the bromides.

MR. JOHN H. AVERY now represents Messrs. Wellington and Ward in London and greater London. Mr. Avery informs us that he is prepared to give his lecture on "Morocco" before any of the London societies, and would be glad of dates as soon as possible. His address is 108, Saverlake Road, Hampstead, N.W.

THE Civil Service Motor and Cycle Agency, Ltd., of which the Service Photographic Society is a branch, have just issued their annual balance-sheet, and from which we learn that the trading for the twelve months ending September 30, 1904, has shown a gross profit of £4,279 2s. 1d. (comparing with £3,839 10s. 1½d. in the previous year), and a net profit of £823 3s. 8½d. Deducting the amount already paid as interim-dividend on Preference holdings of £50 and upwards, there remains a balance of £757 3s. 9½d. to be disposed of, which the directors propose to devote to the payment of the balance of the dividend on the Six per Cent. Cumulative Preference and the Seven per Cent. Preferred Ordinary shares, to pay 5 per cent. on the Ordinary shares, and to carry forward £93 14s. 1½d. (subject to deduction for income tax). The reserve fund, to which has been added the premiums received on the new issue of Preference shares, now amounts to £1,043 11s. 0d.

¹ Eder's Handbuch. Bd. III., 5. Aufl., p. 801.

² "Zeitschrift für wissenschaftliche Photographie." Bd. I., p. 106.

³ "Photographische Correspondenz." 1904. P. 24.

⁴ Lüppo-Cramer "Ueber das Verhältniss des Entwicklungsvermögens zur Abstimmbareit" Atelier des Photographen. 1903. Heft 8.

⁵ Ueber die Verminderung der Löslichkeit des Bromsilbers in Sulfid durch Bromsalz. Compare König, "Photographische Correspondenz." 1903. P. 13. Lüppo-Cramer, ebenda, p. 276.

WHAT MAKES A PHOTOGRAPH UNFIT FOR PUBLICATION?

THIS question was recently set by our American contemporary, "The Camera," as a competition, and the following was the most satisfactory reply received, and the author, Mr. Ernest Rohner, says:—

"I intend to treat the subject successively under three different phases—namely, reproduction from art studies of the nude, ambiguous pictures, and obscene pictures.

"It is, indeed, to be deplored that, with many people, the æsthetic sentiment along some lines is so little developed as to permit the art works of the nude to become offensive to them. However, we will take due consideration of the meaning tacitly implied by the words of the question for publication in an ordinary newspaper. As the mass of the readers of the daily newspapers present the most heterogeneous conglomeration as to age, education, and views, the manager of a daily newspaper must therefore use the most delicate judgment in the selection of pictures intended for publication. On the other hand, we see that the publishers of art journals enjoy far greater liberties, their field being practically unrestricted by the nature of the subject. We find, therefore, these journals to present to their readers, who are the refined and higher educated exclusively, subjects which would, in many cases, be unfit for publication in an ordinary newspaper. Now, art journals, as a rule, do not get into the hands of children; but how many of the hundreds and thousands of little ones do not glance over the pictures published in the daily newspapers? Children, with little experience to guide them, with minds yet in a primitive state of development, are most apt to misunderstand and misinterpret things. Well and fully justified is therefore the discretion of the newspaper manager, exercised along these lines.

"Ambiguous pictures: I am aware that it is not customary to use the word in this connection; however, the term is expressive of the very character of a special kind of pictures. As ambiguity renders the meaning of a speech doubtful, so may it serve to obscure the *motifs* of a picture. This class includes pictures which, under a more or less clever disguise of an artistic nature, suggest, by the costumes and poses of their figures, meanings and actions offensive to chastity and modesty. They minister not to our higher feelings, as the works of art always do, but are intended to gratify our senses only. The cowardice of their disguise makes them contemptible and the baseness of *motif* utterly despicable. See the difference between art and these pretensions! Experience the ennobling influence of a statue of Venus, as its beauty and symmetry of form enchants us; of an Apollo, as its strength grows upon us. Experience, then, the disgust produced by pictures of the ambiguous kind. These pictures vary, of course, in degree of comparative unfitness for publication. For instance, an extreme low-cut evening dress, permissible as it yet may be, cannot but be considered as a distinct antecedent of a sight or a picture decidedly vulgar and disgusting.

"The very character of pictures of this class makes them unfit for publication.

"In obscene pictures not the least effort to disguise their vulgarity is made. They boldly stand for what they are, an affront to delicacy, purity, and decency. We have certainly no consideration for them.

"As a summary, I would say: Good pictures minister to our higher feelings, offering to the healthy mind a healthful pleasure. But pictures appealing to the passions or the sensual feelings are debasing in their effect, and are therefore seldom or never fit for publication—least of all in an ordinary newspaper."

THIS month's issue of the "Optical Lantern and Cinematograph Journal," just to hand, is a bright and readable little production. It is edited by Mr. Theodore Brown, of Salisbury, and published by Heron and Co., Tottenham Street, W.

X-RAYS Used on Oysters.—Pearl fishing in Ceylon has been greatly assisted (says the "Board of Trade Journal") by the X-rays. Their application enables the fishermen to discriminate—and throw back into the sea—oysters of no commercial value. Unless the "Board of Trade Journal" had told us, we were not aware that fishermen were so considerate of what they caught that was not of immediate value to them, or that they carried with them, even in pearl fishing, an X-ray outfit.

ANNUAL REPORT OF ILFORD, LIMITED.

THE following is an extract from the directors' report for the year ended October 31, 1904, to be presented at the eighth ordinary general meeting to be held at Winchester House, Old Broad Street, E.C., on Tuesday, December 20, 1904, at 12 noon:—

The directors beg to report that after payment of working expenses directors' fees, income tax, etc., and making allowance for depreciation and provision for doubtful debts, the net profit for the year's trading is £25,496 14s. 6d. This amount, with £3,254 2s. 6d. brought forward from last year, gives £29,750 17s. for appropriation. It was strongly recommended by the Shareholders Committee in 1903, and approved by the shareholders in general meeting, that the smaller rates of discount allowed by the Company should be made comparable with the much higher rates given by other manufacturers. This has been carried into effect by the directors, with the anticipated result of a considerable reduction in profit, which accounts for the above diminished amount of appropriation. The new factory at Warley commenced work last March, and in consequence of a large number of new hands having to be educated to the work, besides other charges incidental to starting a new factory, the working expenses this year are abnormally high.

The directors have paid an interim dividend on the Ordinary share capital for the half-year ended April 30, 1904, at the rate of 8 per cent. per annum, absorbing £7,600; and for the same period they have paid the dividend on the Six per Cent. Preference Shares, amounting to £5,700. Since then the second dividend on the Six per Cent. Preference shares has been paid. From the balance, £10,750 17s., the directors recommend that £5,000 be written off goodwill, processes, etc.; and, on account of the exceptional expense incurred this year in connection with the Warley factory, they recommend that £4,000 be taken from the reserve fund, which will place £9,750 17s. for disposal. From this the directors recommend that a dividend be paid on the Ordinary share capital for the half-year ended October 31, 1904, at the rate of 8 per cent. per annum, making, with the above interim dividend, 8 per cent. for the year. This will absorb £7,600. On this dividend, by the terms of the profit-sharing scheme, £67½% more or less, will be paid as bonus to the employés. The balance, £1,480 17s. will be carried forward.

The necessity of transferring several employés from Ilford to Warley, where it was impossible to find house accommodation for them, has led the directors to approve a scheme for erecting cottages on a portion of the Company's vacant land there, which is never likely to be required for factory purposes, and nineteen cottages have already been built. Notwithstanding the fine summer, the photographic trade in this country, like all other trades, has been severely depressed, but the Company's sales for the year are only a small percentage less than last year; and, for the past seven months, they have shown a satisfactory increase over the corresponding period of the previous year. The directors regret that early in the year, owing to ill-health, Mr. A. H. Harman resigned his seat on the board; after full consideration they have decided not to fill up the vacancy. One director, Mr. J. Kemp-Welch, retires this year from the board, and being eligible, offers himself for re-election.

VERY Up-to-Date Method.—With a directorate greatly strengthened by recent additions, the North Borneo Company gave its usual annual dinner at the Hotel Cecil last week. It is always a novel event. The guests smoke North Borneo cigars and drink North Borneo coffee, both excellent. They have annually an exhibition of bioscopic views of North Borneo, for which purpose the company specially commissions the Urban Bioscope Company to visit the country. This is an excellent investment, for, as the managing director, Mr. W. C. Cowie, last night stated, the exhibition last year thereby produced half a million of extra capital.

Exhibition.

REDHILL.

The sixth annual exhibition of the Redhill and District Camera Club was held on Friday week. The judges, Messrs. F. Hollyer and W. Cotton Winter, R.B.A., made the following awards:—

Class I.—Pictorial photography, for members only. Section A (open to all members): Medals, Sir Hanbury Brown, Miss J. Reid, and E. E. Robinson; certificate, J. O. Grant. Section B (open to amateurs only): Certificate, W. J. Prikler. Class II.—Portraiture (open to members only): No award. Class III.—Photographs, illustrating the use of photography for purposes other than pictorial, such as topographical, scientific, record work, etc.: Medal, G. E. Priestly. Class IV.—Lantern slides, for members only. Section A (open to all members): Medal, Miss J. Reid. Section B (open to amateurs): No entries. Class V.—Pictorial photography, open to amateurs resident within a radius of eight miles of the Market Hall, Redhill. Section A (open to all amateurs): Medal, Sir Hanbury Brown; certificate, T. Hakdane Harrison. Section B (open to amateurs): No award. Class VI.—Photographs, illustrating the use of photography for purposes other than pictorial, such as topographical, scientific, record work, etc. (open to all within eight miles radius): Medal, Sir Hanbury Brown. Best picture, irrespective of class: Silver medal, Sir Hanbury Brown.

FORTHCOMING EXHIBITIONS.

December 5-17.—First American Photographic Salon at New York. Secretary, S. C. Bullenkamp, Metropolitan Camera Club, 102-104, West 101st Street, New York.

December 12-17.—Sefton Park Photographic Society, Liverpool. Hon. Secretary, H. E. Cubley, 3, Langdale Road, Sefton Park, Liverpool.

December 13-20.—Southampton Camera Club. Hon. Secretary, S. C. Kimber, Oakdene, Highfield, Southampton.

December 23-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 138, Glasgow Road, Wishaw.

January 12-14, 1905.—Boston Camera Club. Hon. Secretary, H. M. Hames, 65, West Street, Boston.

January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 38, Bank Street, Hillhead, Glasgow.

January 20-21, 1905.—South Essex Camera Club. Hon. Secretary, T. Mitchell, 180, Browning Road, Manor Road, E.

January 23-February 12, 1905.—Photographic Society of Marseilles. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.

February 6-11, 1905.—Blairgowrie and District Photographic Association. Hon. Secretary, Wm. D. M. Falconer, James Street Cottage, Blairgowrie.

February 16-18, 1905.—Norwich and District Photographic Society. Hon. Secretary, E. Peake, Rydal House, Earlham Road, Norwich.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

February 25-March 4, 1905.—Birmingham Photographic Society. Hon. Secretary, Lewis Lloyd, Norwich Union Chambers, Congress Street, Birmingham.

March 4-11, 1905.—South London Photographic Society. Hon. Secretary, H. Creighton Beckett, 44, Edith Road, Peckham, S.E.

March 7-14, 1905.—Brentford Photographic Society. Hon. Secretary, F. M. Read, Ferndale, Clifden Road, Brentford.

March 20-25, 1905.—The Cripplegate Photographic Society. Hon. Secretary, John B. Parham.

June, 1905.—Northern Photographic Exhibition. Secretary, F. G. Issot, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

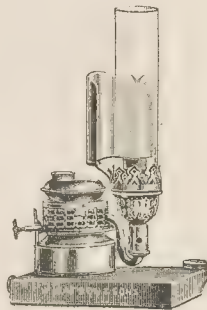
December 31.—Barnet. Nineteen classes. Prizes valued at £500 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

March 31, 1905.—Ilford. £750 in cash prizes for negatives on Ilford plates. Ilford, Limited, Ilford, E..

New Apparatus, &c.

The "Vril" Vapour Lamp. Sold by W. Watson and Sons, 313, High Holborn, London, W.C.

This is an ingenious lamp specially designed for the enlarging and the optical lantern. The lower portion forms a reservoir for methylated spirit, and is provided with a very small wick lamp by which the oval container, seen at the back of and below the reflector, is gradually heated, and as this is filled with a loose cotton mass which is kept constantly saturated with methylated spirit by capillary attraction from the reservoir, the spirit is vaporised and issues from the burner, which is of the normal type, and thus raises to incandescence the mantle.



The chief features of the lamp are its extreme portability, the absence of rubber tubes or loose parts, and that the whole is contained inside the working lantern, and is further sent out fitted to a tray and rod, so that it may be adjusted to the axis of the condenser.

It is compact and simple in use and thoroughly efficient, and will be found of great convenience for both optical projection and enlarging, particularly in those districts where gas is not available.

The Thornton-Pickard Studio Shutter. Sold by the Thornton-Pickard Manufacturing Company, Altrincham.

This shutter has been specially designed for studio work, and possesses some excellent features which render it particularly suitable for the photographing of children, animals, or other subjects requiring absence of noise and conspicuousness. When fitted inside the camera or at the back of the lens, which is the best place for it, it can neither be seen nor heard. It is operated by the usual pneumatic release, the tube of which is fitted with an ingenious tap so that prolonged exposures may be given or the shutter kept open for focussing. Another good feature is that it opens from and closes to the centre, thus giving a full exposure over the whole of the plate.

The construction and workmanship are, needless to say, of the high character which we always associate with the makers.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Dec.	Name of Society.	Subject.
19.....	Society of Arts.....	<i>Musical Wind Instruments.</i> Mr. D. J. Blackley.
19.....	Southampton Camera Club.....	The Exhibition Lantern Slides and Presentation of Exhibition and Club Awards.
19.....	Luton Camera Club.....	<i>Lantern Slide Making.</i> Mr. John H. Gear, F.R.P.S.
19.....	South London Photo. Society.....	Excursion, Lantern Slide, and Print Competitions.
19.....	Bowes Pk. and Dis. Ph. Soc.	<i>The Societies Outings.</i> Mr. F. Cardozo, Hornsey.
20.....	Society of Arts.....	<i>Street Architecture.</i> Mr. Thomas Graham Jackson, R.A.
20.....	Nelson Photographic Society.....	Coinc Camera Club Visit to Nelson.
20.....	Glasgow Southern Photo. Assn.....	<i>R. & J. Beck's Novelties in Hand Cameras and Lenses.</i> Mr. Wm. F. Slater, F.R.P.S.
0.....	Hackney Photo. Society.....	<i>Architectural Photography.</i> Mr. H. W. Bennett.
20.....	Border City Camera Club.....	<i>Principles of Composition.</i> Mr. Geo. H. Hill.
20.....	Architectural Assn. Cam. Club.....	<i>Photography for Architects.</i> Mr. Arnold Mitchell, F.R.I.B.A.
21.....	Blairgowrie and Dis. Ph. Assn.....	<i>Manuscript Magazine.</i> Mr. L. Falconer, Jun.
21.....	Boro' Poly. Photo. Society.....	Latest Date for Receiving Slides and Prints for the Exhibition.
21.....	North Middlesex Photo. Society.....	<i>Elementary Photographic Chemistry.</i> Mr. W. Taylor.
21.....	G.E.R. Mechanics' Institution.....	<i>Instant Photography.</i> Mr. H. Main, B.Sc., F.E.S.
21.....	Cricklewood Photo. Society.....	Beginners' Night.
22.....	London and Prov. Photo. Assn.....	<i>Notes.</i> Mr. T. E. Freshwater, F.R.P.S.
22.....	Hull Photographic Society.....	<i>Neatide Making.</i> Demonstrated. Mr. J. Hollingworth, M.R.C.S.
22.....	Southport Scientific Societies.....	<i>Women's Beauty and its Influence.</i> Mr. C. H. Brown.
22.....	Rodley and District Ph. Soc.	Y.P.U. Members' Portfolio.
22.....	Batley and District Photo. Soc.	Members' Lantern Slides.
22.....	Watford Camera Club.....	Informal Meeting.
22.....	Richmond Camera Club.....	Paper by Mr. L. P. G. D. Taylor.
23.....	Wakefield Photo. Society.....	<i>Kirkstall Abbey.</i> Mr. C. B. Howdill, A.R.I.B.A.
23.....	Aberdeen Photographic Assn.....	Exhibition—Scottish Federation Prize Slides for 1904.
23.....	Watford Photographic Society.....	<i>Some Holiday Lantern Slides.</i> Miss Kate Smith and Mr. C. R. Girardot.

ROYAL PHOTOGRAPHIC SOCIETY.

A PAPER was read at the meeting held on Tuesday evening last, December 13, by Messrs. A. J. Newton and A. J. Bull, in which they record the result of further tests of orthochromatic plates and colour sensitizers. In the absence of the illustrations projected as actual spectrum records a detailed report of the paper can possess little value, but it is interesting to note that in the series of experiments on which the exhibited results were based the authors have attempted to remove a source of error in ascertaining the comparative speeds of the colour-sensitive plates. Instead of exposing plates behind a Chapman-Jones screen until a certain number just shows when developed in a certain empirical way, viz., with a glycine developer, using a factor of six, they now make a series of graded series of exposures the basis of comparison, thus taking account of the gradation which the plates are capable of rendering. In doing this they expose through a graded engraving-black carbon transparency to an acetylene light placed 2 metres from the plate and coming through an aperture 5 millimetres in diameter. By varying the exposure and the development factor it was found possible to bring the various plates fairly closely into line so far as rendering the graded scale in the same manner. A series of figures having been obtained in this way to represent the relative speeds of the plates under these particular conditions, exposure to the spectrum of a prism grating were made in the proportion to the speed numbers. The spectrum exposure was indeed fourfold, the plate being exposed four times in the ratio of 1, 3, 9, and 27. The same factor was used in the development of the spectrum test as was found necessary in the case of the speed trial.

In addition to the examination of a number of commercial plates, the authors undertook the comparison of a series of sensitizers applied to the plate by bathing in the case of gelatine emulsion, or by addition to the emulsion in the case of collodion. The dyes examined included those already on the market, such as pina-

chrome, pinaverdol, and homocol, as well as others which at present it was, stated, are not commercially obtainable, e.g., katchron and pericoll.

In the discussion Mr. Kenneth Mees criticised the use of the spectrum as a test of practical value in the comparison of plates. However valuable it might be for certain purposes, the exposure of the plate through three filters of definite composition would supply all the information which was required for practical work, and the examination could be made so that different workers could reproduce the tests of others.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

An interesting announcement was made by the secretary at a recent meeting of this society. He said it had been well known that the executive hoped to total a membership by the end of the year 200, but he was pleased to report that, a month ahead of time, the numbers were now 203. This statement was received with cheer as was the further announcement that from next January the ordinary meetings of the society would be held in the larger Collyer Hall, the present smaller hall being used for elementary evenings. The occasion was the annual Lecturette Competition, and Messrs. Tryhorn and Gore, of the West Surrey, had kindly come down to act as judges. The conditions were that lecturettes might be on any subject, but should not take more than fifteen minutes in delivery. Six competitors entered, the medal going to Mr. F. W. Jeffery for a lecturette entitled "Odds and Ends from an Amateur's Bag." Mr. J. O. Gardiner, the excursion secretary, took second place with a series of slides illustrating the society's excursions for the past three years. As usual in competitions of this sort, the slides were of unequal merit, and the judges strongly advised that members should content themselves with fewer slides and aim at a higher quality. In all the sets submitted there were several slides which might with advantage have been omitted, as their presence only served to bring down the average of the set. The judges were also rather severe on the literary quality of some of the lecturettes.

CROYDON CAMERA CLUB

INTENSIFICATION by bleaching, with an acidified bichromate salt, followed by redevelopment, was brought forward by Mr. Sellors last week, who dealt with the subject in a very complete and able manner.

The process as a method for reducing contrast, and also as a cure more or less, for halation, has long been known, thanks to Eder, but as a method of intensification pure and simple it was left for Mr. J. S. Teape, and following him Messrs. Welborne Piper and Carnegie, to recently bring it prominently to the attention of photographers. Messrs. Hurter and Driffeld, however (as was pointed out by Mr. Mees), without claiming any originality, in 1898 showed that an increase of density of 25 per cent. would be obtained by the method in question; and, speaking from recollection, MM. Lumière and Seyewetz in 1900 again drew attention to the subject. But irrespective of all claims as to who originated the idea, Mr. Sellors said there was no doubt the process was simple, sure, and generally satisfactory. The negative to be intensified is first bleached in the following bath:—

Potassium bichromate	10 grains
Hydrochloric acid	5 minims.
Water	1 ounce.

It must then be thoroughly washed to remove all traces of the bichromate salt, exposed to any bright light for a short time, and then re-developed with any ordinary developer, and again washed and dried. All operations can be conducted in artificial light, weak daylight, but too bright a light was to be avoided, as having tendency to cause stains. He had tried using the bath at high strength, allowing further time for its action, with precisely identical ultimate results, but had as yet made no experiments as to varying its relative proportions, which had been stated to alter the result. Pyro gave a markedly greater intensification than the more modern developers owing to the non-actinic character of the image.

Turning to the subject of "halation," Mr. Sellors showed that by bleaching the image, followed by partial re-development, and the fixing in the ordinary hypo bath, those parts of the film nearest the glass, where halation showed most, were dissolved out. He preferred

weak developer, so that the right moment to stop could be more easily gauged. Should the negative be too thin after it came from the fixing bath it could be brought up to correct printing depth by re-bleaching and re-developing.

In the discussion which followed, Mr. Mees said, in reference to partial re-development as a cure for halation, he could not agree a weak developer was best for the purpose. A weak developer could not be assumed to even approximately travel through the film, reducing as it went; a dilute developer, as a fact, might traverse the film entirely before development started. He advocated the application of the strongest possible developer. It had been suggested that washing after bleaching might be considerably shortened by immersing the negative in an acid sulphite solution. Such a course, in his opinion, was absolutely harmful. The colour would certainly be discharged, but under certain conditions an insoluble chromium body would be formed, and its presence might afterwards produce stains and streaks. It was much safer to rely on a thorough washing to remove the bichromate.

Mr. Salt said, also on the halation-cure question, that he should prefer to dry the negative prior to its being re-developed. A dry film resisted penetration of a liquid far more than a wet one, though the contrary had frequently been stated. He agreed with Mr. Mees that a strong developer should be employed for the purpose.

The President (Mr. S. H. Wratten) reminded his hearers that, although halation chiefly existed at the base of the film, still much might be done by the old-fashioned remedy of rubbing the film down. As to Mr. Salt's contention, this might be correct; but if the negative was allowed to dry unequally the gelatine would afterwards absorb the developer at a varying rate, which would be undesirable.

Mr. F. W. Hicks, changing the subject somewhat, said he had recently lost a 15 x 12 negative through unequal development. He attributed it to insufficiently mixing his pyro soda developer.

Mr. Mees said this might well be so. Strong soda solutions took a long time to uniformly mix. He had found a vigorous shaking for five or ten minutes in a flask was required. While such a degree of exactitude might not be required in ordinary work, still it pointed to the exercise of greater care in this direction than was usually given.

Patent News.

The following applications for patents were made between November 28 and December 3, 1904:—

Paper.—No. 25,897. "Improvements in and relating to the coating or preparation of paper or other material for photographic purposes." James Harris, Paul Gillard, and Henry Heain Molyneux.

Plate.—No. 26,066. "Self-developing dry plate." William Fraser Cloughton Kelly and John Arthur Bentham.

Papers.—No. 26,247. "An improvement in the manufacture of sensitive photographic printing papers of the class known as self-toning printing out papers." Ernest Charles Morgan.

Microphotography.—No. 26,371. "Improvements in microphotography or photomicrography and apparatus therefor." James Anthony Weale.

Cameras.—No. 26,372. "Improvements in photographic cameras." Friedrich Kalkner.

Last week Mr. B. G. Cooper gave his lecture entitled "Photographic Records," before the Kingston Photographic Society. The lecturer commenced by stating that a branch of the society had been formed with the object of obtaining records in the form of lantern slides, negatives or prints, by any permanent process such as platinumotype, of Surrey subjects either past or present. As an example, some slides were shown of Kingston during the floods of ten years ago, also of the King's Proclamation being read. The National Photographic Record Society had kindly lent some slides for exhibition, and also some very fine prints. There was a very interesting collection of local subjects, Mr. W. M. Robertson having given some very valuable slides. At the close of the meeting, Mr. Cooper asked that anyone who was in possession of any subject of interest would kindly send the same to him.

Commercial & Legal Intelligence

A MAN, giving his name as Alexander Moore, address, 14, St. Kilda Street, Belfast, and occupation, traveller for the American Photo Artist Co., 24, Gresham Street, Belfast, was arrested by Head Constable O'Hara on a charge of having been on the premises of Mr. Ambrose Doherty, grocer and spirit merchant, Irish Street, with intent to commit a felony. The accused was brought before Mr. Henry Newell, J.P., at the police barrack. He was remanded in custody until the petty sessions.

PHOTOGRAPHS for Nothing: Expensive Frames.—James Goldsmith and Co., assignees of Messrs. Wechsler Bros., trading as the United Artistic Company, sued Mary Hannah Plows, wife of Mr. Alfred Plows, auctioneer, Colliergate, York, for 18s. 6d. balance of an account for 45s. price of a picture frame. Wechsler's agents go round the city and offer to enlarge photographs for nothing, and after receiving permission to do so they return with the picture framed and make exorbitant charges for the frame. The plaintiff, in reply to Mr. Plows, said that he had purchased Wechsler's debts and thirty of the debtors were women. Mary Hannah Plows said that she ordered the picture unknown to her husband. A man and woman came to her house and asked her if she would have her photograph enlarged. They said she could have it done for nothing. She consented, and gave them a photograph to enlarge. They subsequently called with samples of framing and asked her to select one for the photograph, and she did so. When they returned with the picture framed they charged 45s. for it. His Honour: Why did you pay all that money for the picture? Mrs. Plows said she did not like to let her husband know. When she had paid 27s. she told her husband, and he told her not to pay any more as she had paid enough. His Honour: I should think so! You agreed to pay 45s. It is a great pity, for if you had told your husband he would have told you it was not worth the money. Mrs. Plows: The same man never came twice. Twenty different ones called for the money. Mr. Plows said that the real value of the framing and glazing of the picture was 2s. 8d., and if the plaintiff's charge was not a complete fraud he did not know what was. The debts were incurred by women without the knowledge of their husbands. His Honour (to plaintiff): You gave £3 for the debts. What was the value of the whole? Plaintiff: £15 or £16. His Honour said Wechsler assigned his debts in that way because he was afraid of being exposed if he came into Court himself. Mr. Plows said the matter had been exposed in the "Yorkshire Herald," and had been cried down in every town in the country. His Honour said it was very foolish for Mrs. Plows to be taken in when her husband was so peculiarly qualified to give an opinion as to the real value of the frame. Mr. Plows said the man never said what the frame was to be until he brought it round with the picture in it. They were going about York now defrauding poor people. His Honour (to plaintiff): I do not think you should mix yourself up in transactions of this sort. It is a fraud, as Mr. Plows has described it. I shall not help you in the matter at all; I do not like it; it is fishy. I should like to have seen Wechsler. I shall give judgment for you, Mrs. Plows, with costs, for I do not believe in tempting poor people and then the man not daring to come into Court. He passes the debt on to some one else for a nominal sum, thinking to escape exposure.

THE public examination of William John Le Couteur, photographer, of 16, Brook Street, Grosvenor Square, S.W., took place at the London Bankruptcy Court on December 9, before Mr. Registrar Brougham. The statement of affairs filed by the debtor disclosed unsecured liabilities amounting to £615 13s. 5d., and assets nil. Replying to questions put by the official receiver, debtor stated that the receiving order was made on the petition of a creditor, the act of bankruptcy being the non-compliance by the debtor with the requirements of a bankruptcy notice duly served upon him. In November, 1899, whilst carrying on business as a photographer, a receiving order was made against him. His liabilities then amounted to £3,915 19s. 10d. No dividend was declared, and he had not obtained his discharge. For some time after that failure he acted as managing director of a company called the Photographic Association, Limited, carrying on business at 16, Brook Street, W., for which he received a salary of £6. per week until June, 1903, when the debenture holders of the company appointed a receiver. He afterwards assisted

his wife in a similar business carried on by her at the same address, but in May last an injunction was obtained against him by the petitioning creditor, who had acquired the business from the company's liquidator, restraining him from being connected with or interested in any photographic business within a certain radius. Since then he had been without occupation and he was dependent upon his friends. He alleged his present position to have been caused through the petitioning creditor's debt for costs incurred in the injunction action. His household furniture was subject to an antenuptial settlement made in September, 1896. Debtor was questioned at some length with regard to a circular sent to the members of the Photographic Association, Limited, in which he said that the association would in future be known as "The Photographic Club," and that unexpired subscriptions would be honoured by the new club. The circular went on to state that "Mr. Le Conteur hopes to do more than he could when embarrassed by the limited company." Debtor explained that when he issued that circular he intended to carry on the business. The lease of the premises and everything was in his wife's name. The association was sometimes called "The Amateur Association," but the latter association was really a branch. The association was in the habit of assisting amateurs of all descriptions, not amateur photographers particularly. He had never heard of the Amateur Association being wound up. The official receiver said the Amateur Association was wound up in the early part of the present year. Debtor said that must have been another amateur association. It came as news to him. Replying to further questions, debtor said the injunction was obtained against him in May last, and he had not done any photographic business since then. He was now living by doing a little business on commission. If it had not been for the adverse judgment in the injunction proceedings he would not have been in his present position, but he still hoped to be able to upset that judgment. The only debt he really owed was one of £10 due to two men who could ill afford to lose their money, and with the leave of the Court he would pay them as soon as he possibly could. The other liabilities were all incurred either in the legal proceedings, or in connection with the company. A creditor wished to question the debtor upon a letter he had received from the official receiver, but the Court would not allow this to be done, on the ground that the debtor could not help what the official receiver had done. The creditor pointed out that the official receiver wrote the letter upon information supplied by the debtor, but the Court declined to allow it to be put in as evidence. Debtor admitted telling the official receiver that the whole of the plant on the premises in Brook Street belonged to his wife. The examination was ordered to be closed.

News and Notes.

"FALLOWFIELD'S COURIER," for December contains some seasonable lines, and also with it is issued a coloured supplement of the Falloroll Camera, which is an excellent piece of colour printing.

THE latest cinematograph film issued by Messrs. Gaumont, of Cecil Court, is one depicting the incidents in the late Wilson Barrett's well-known play, "The Sign of the Cross."

MR. A. H. BAIRD, of Lothian Street and Brighton Street, Edinburgh, has forwarded us a copy of his neatly got up price list of select optical lanterns and accessories for this winter.

WE have received from Robt. W. Paul, 68, High Holborn, W.C., a descriptive circular of the Nernst-Paul optical electric lantern, together with various other projection arc lamps and fittings.

MR. A. W. W. BARTLETT has, we hear, resigned the secretaryship of the Royal Photographic Society, in order to assume the position of advertisement manager to one of the leading photographic firms.

WE have received the 1904 number of the "Christmas Bookseller," which gives one not only a complete list of the books published this fall but, in the majority of cases, a short criticism is included, which gives one an idea of the literary and pictorial merits of the work.

MR. J. C. BURROW, F.R.P.S., of Camberne, the well-known scientific and mining photographer, has been officially informed that the international jury of the St. Louis Exhibition has awarded him a silver medal for his underground mining photographs, sent through the Home Office.

MESSRS. W. WATSON AND SONS, of 313, High Holborn, W.C. request us to announce that their antinous release can now be supplied for the Cadet and Guerry shutters, and can be obtained in lengths up to 15 ft. A small charge is made for adaptation to the shutter.

THE following are the particulars of the Photographic Prize Competition instituted by the "British and Colonial Druggist":—First prize, £3 3s.; second prize, £2 2s.; two prizes of £1 1s. each; and six of 10s. 6d. each. A certificate will accompany each prize. No competitor may send in more than six pictures. Each picture must be, from beginning to end, the work of the competitor. Photographs must be mounted, and each bear on the back the name and address of the competitor, with particulars of the camera, plate, and developer used, and the date on which it was taken. A selection of the pictures sent in will be exhibited at the Chemists' Exhibition at the Royal Opera House, Covent Garden, London, W.C., from March 13 to 17, 1905. The competition is open only to amateurs connected either as principals, assistants, or apprentices with the wholesale or retail branches of pharmacy or allied callings. The photographs must have been taken subsequently to December 31, 1903.

WE beg to call the attention of readers to a letter in our correspondence columns from the well-known trade retoucher, Mr. T. S. Bruce, of Hampstead. We fear we have done an injustice to Mr. Bruce's long-established system of postal instruction in retouching by two replies to correspondents, which we gave in our issue of the 9th inst., headed respectively, "Opinion Wanted," and "Occupation Wanted." Mr. T. S. Bruce has called upon us and proved conclusively, by written testimonials from firms of note and professional retouchers, and employees, that his postal method is undoubtedly effective, and equally so as the personal instruction. It is perfectly clear that both by the postal and the personal lessons, Mr. Bruce is aiding the young professional retoucher to better and quicker finish, in this country and abroad; and also thoroughly initiating the novice, and, therefore, should meet with full and merited appreciation from the profession he benefits. The fact that Mr. T. S. Bruce has been before the photographic public since 1886 speaks for itself and we have every confidence in advising readers who need such instruction to avail themselves of his services.

THE second annual exhibition in connection with the Ilkeston Art, Camera, and Field Club was opened last week by the Mayor (Alfred man R. Hunt). The judges were Mr. C. Barrow Keene, F.R.P.S., and Mr. T. W. Scottton, Derby. Appended is a list of the prize winners:—Members' Classes.—Class A: Landscape, seascape, and river scenery: Silver medal, withheld; bronze medals, F. P. Sudbury and F. Chambers (Stanton); certificates, W. Shakspeare, G. W. Wooliscroft, and A. Wallis (Long Eaton). Class B: Portraiture: figure study, animals, and still life: Silver medal, T. W. Smith; bronze medals, F. R. Lee (Shipley) and W. Shakspeare. Class C: Architecture: Silver medal, Armitage Wallis; bronze medal, G. W. Wooliscroft. Open Classes.—Class D: Picture postcards: Silver medal, withheld; bronze medals, E. Seymour, F. Whitaker, and F. Judge. Class E: Landscape, seascape, and river scenery: Silver medals, C. R. Foxall, T. Wright, and E. J. Jarvis; bronze medal, withheld. Class F: Portraiture, figure study, animals, and still life: Silver medal, T. H. Middleton; bronze medals, E. Seymour and J. W. Barnes. Class G: Architecture: Silver medal, T. Wright; bronze medal, E. H. Atkin.

EXHIBITION at the Wellcome Photographic Club.—Since the firm of Burroughes, Wellcome, and Co. founded a camera club in connection with their institute at Dartford an annual exhibition of members' work has been held there, and the fifth of these was opened on Saturday, December 10, by Mr. R. Clay Sudlow, the manager of the works. Awards in the shape of plaques were this year made to notable exhibitors, and Mr. John H. Gear, who acted as judge, conferred these upon W. H. Powkes ("Shades of Evening"), F. S. Clarke ("The Berelict"), W. Gray ("Birches and Bracken") and H. W. Lane ("Misty Sunrise"). The committee of the club can be congratulated on bringing together a collection of prints which exhibit a good deal of technical merit, and though many of the members, fortunately or unfortunately, are innocent of pictorial aspirations, there are one or two of their number who show promise of doing some very creditable work in this direction. The medallists

photograph of Mr. Fowkes, "Shades of Evening," is a strong piece of work, and, in comparison with another print by another worker, supplies an interesting object-lesson on the power of the photographer to free himself from the limitations of his subject, both negatives having been exposed on practically the same scene and within a few seconds of each other. In addition to the members' work, a number of photographs of Egyptian scenes by Mr. Henry S. Wellcome were displayed.

The Pollak-Virag telegraph is the invention of an Austrian, and a demonstration of it was given in London last week. At the transmitting end the message to be sent is punched out on a typewriter at the rate of 3,000 words an hour, and is reproduced on a perforated tape, which shows a series of small holes in what seems to be bewildering confusion. These holes, however, resolve the writing into its vertical and horizontal components. The perforation can be done at any spot, and the prepared tape sent to the transmitting office. There it is inserted in the aperture of the transmitting instrument, and by the perforations the electrical impulses are created and recorded at the receiving station. From the time the tape leaves the typewriter no further manual operation takes place. In the receiving instrument the impulses created by the two series of perforated components of the writing are received in two telephones, and the vibrations they cause in the diaphragms are communicated to a mirror, which makes vertical or horizontal movements according to the character of the impulse. The combination causes a third motion, by which the reproduction of handwriting is actually obtained. But the writing is so minute that it is almost invisible, and therefore a ray of light is made to fall on the mirror, and is reflected on to a sensitised photographic paper, whereon it traces the message in legible form. The paper passes through a developing and fixing apparatus, and the telegram runs out of the instrument as a broad tape on which the message is clearly photographed. This process is accomplished in ten seconds, and that length of time after the transmission has begun the first part of the message is photographed at the other end, ready for delivery, and continues thereafter running out at the rate of over 40,000 words an hour.

It will be remembered that early in the summer of this year Messrs. W. Butcher and Sons inaugurated a competition for the purpose of making "Coxin," a daylight system of developing, more generally known amongst the photographic community of the country. Twelve illustrations were given, typical of the twelve months of the year, and all the competitors had to do was to decide which month each illustration represented. In addition to the sixty-eight prizes offered to competitors, the firm gave duplicates of the first five prizes to those dealers from whom the successful prize-winners purchased their "Coxin." The following is the list of prize-winners:—First prize, Humber motor bicycle, J. Mason; dealer, Mason, Bradford. Second prize, 25-guinea billiard table, Harry Hadfield; dealer, Hadfield, Milsbridge. Third prize, Monarch gramophone, C. H. Laverack; dealer, Boots, Brighton. Fourth prize, ½-plate outfit, William G. Hodge; dealer, Boots, Hammer-smith. Fifth prize, No. 4 carbine, F. Williamson, jun.; dealer, F. Fallowfield, London. Postcard Cameo Camera: F. R. Harker and G. C. Haigh. Half-plate Photo Outfit: J. Eakin and H. Green. No. 3 Carbine Camera: Herbert Hadfield and H. J. Briant. Postcard Midget Camera: J. G. Hobman and A. E. Smith. No. 0 Midget Camera: H. Minett, O. Seers, J. R. Topp, F. A. Izod, Edith Williams, Annie Whitehouse, E. G. Riches, W. Laxton, R. Pearson, and O. G. Shaw. No. 3 Express Camera: H. Berrill, S. Eastman, J. E. Shillocock, W. Johns, and F. M. Tydeman. No. 2 Express Camera: F. W. Parkin, M. S. Baker, P. H. Fearnley, W. H. Howitt, and H. Froom. No. 1 Express Camera: W. Bridges, jun., F. Lockwood, A. Leak, J. L. Carr, and J. Clark. No. 3 Pilot Camera: E. C. Izod, J. Hadfield, Miss E. A. Cross, E. S. E. Betteley, S. J. Whillans, E. Backhouse, W. Burbridge, W. Baird, W. H. Beaumont, and A. McDonald. The Sketch Camera: Mary A. Finney, W. Gibbins, A. W. Nash, D. W. Neall, W. E. Roberts, May E. Riches, D. T. Richards, S. Thompson, H. A. Collin, R. Milner-White, G. W. Blythe, W. R. Hewlins, M. Hatch, A. B. Haynes, C. Milnes, G. Milligan, A. S. Lewis, G. T. Mathers, W. R. Vickery, and H. B. Adams.

EDINBURGH Photographic Survey Exhibition.—In the presence of a large gathering, the first exhibition of photographs and prints and

drawings of Edinburgh, organised by the Edinburgh Photographic Society, Survey Section, was opened at 38, Castle Street, Edinburgh, last week, by Lord Provost Sir Robert Cranston. Mr. J. Tudor Cundall, B.Sc., chairman of the society, presided, and there were also present, Mr. Geo. McCrae M.P.; Bailie Mitchell and Dobie; Councillors A. A. Murray, McArthy, and Macfarlane; Provost Mackie, Leith, and Mr. Morham, City Architect. The chairman said that this was the first time they had had an exhibition of this character—collecting together photographs and views of old Edinburgh. The idea of such a survey was initiated by their former president, Mr. Eddington, five years ago. Their beautiful city had changed very rapidly, and it was most important that some record of these changes should be preserved. In that respect he hoped that this exhibition would be brought widely before the citizens of Edinburgh. They hoped to collect duplicates of as many pictures as were available. But they had lamentably inaccessible premises, but they hoped for better things. He hoped it was only a beginning of what was to come. He then called upon the Lord Provost to open the exhibition. Sir Robert, who was given a very cordial reception, said he was fully satisfied with the magnificent display. He considered it was his duty to tender to Mr. Eddington the best thanks of the City of Edinburgh for the inauguration of such an exhibition as they had there to-day. The present premises were very inadequate, but he considered that with the goodwill of the Council, they could try to find a room in the Council Chambers which would be suitable for such an important display. Everything that lends to the pleasure of the citizens should be encouraged. Such an exhibition showed what a wonderful development had taken place in the last fifty years. They had laid the foundation of something they could hardly see the end of. The City of Edinburgh never had a Town Council who were willing or more anxious to benefit and do everything for the city than it had at present. They had realised how their duty was to make it as attractive as they possibly could, without waste of money. But money was not wasted that went to beautify the City of Edinburgh. Sir Robert then declared the exhibition open.

LORD REAY distributed the prizes gained by the successful students at the Northampton Institute, Clerkenwell, last week. Mr. L. B. Sebastian, chairman of the governing body, presided, and there was a large attendance of students and their friends. Dr. Walmesley, the principal, said the educational and social work of the institute had shown successful development during the session 1903-4. But the need of increased accommodation was being painfully felt. The establishment of a technical optical section had been amply justified by the results obtained, and it presented an opportunity for the foundation of a "British Institute of Technical Optics" which would tend to bring back to Clerkenwell the position it once held of being the centre and focus of the optical trade of the world. Lord Reay, in the course of an address, congratulated Dr. Walmesley on the success with which the great and important work of the institution had been carried on. The question of apprenticeships was of great importance to the working classes. He had been informed that in London there was no opening for apprentices, and therefore boys who wished to become apprentices had to go into the provinces. A corrective must be found for that condition of things. By the reintroduction of the apprenticeship system the increase of the number of unemployed and of unskilled workmen in London would be prevented. The time had come when the place of the polytechnics in the educational system of London should be clearly defined in order that there should be no overlapping. His views entirely coincided with the development that had been going on in the Northampton Institute, but he did not agree with the development that was going on in some of the other polytechnics. As a result of the passing of the Technical Instruction Acts, the polytechnics came into existence to promote technical education without regard to other kinds of education, but it had been found necessary to have preparatory classes of one kind or another. The time had now come when these polytechnics should do the work for which they had been constituted. They should not be called upon to provide for the continuation of the general education of the students. It was not the work of the polytechnics to give secondary education of any kind that could be obtained elsewhere, and for which the ratepayers were already obliged to pay. It should be the aim of the polytechnics to be the training places of workmen and workwomen, and in this way a well-ordered educational system would be established.

Correspondence.

- *** Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.
- *** We do not undertake responsibility for the opinions expressed by our correspondents.

THE ASSOCIATION OF PHOTOGRAPHIC EMPLOYEES.

To the Editors.

Sirs,—The reference in your last issue to an Association for employees is very welcome to those who first moved in this direction in 1890-1, and on their behalf I (as originator of the movement) beg heartily to thank you for your fair and sympathetic attitude. To your remarks let me only add that something more was most decidedly done in the past than merely to "suggest that the thing should be done." See your own esteemed journal for the last weeks of 1889 and first weeks of 1890, your "Almanac" for 1890 and 1891, "Photography" for January 9, 1890, etc. A meeting held January 21, 1891, at the Polytechnic, resolved on the formation of such a society. Work was undertaken by a committee, a branch office or two established in London, one in Edinburgh, etc. In June, 1891, the thing was abandoned solely from lack of members. Only a meagre half-hundred, out of all our thousands, made application, and the bulk of these "broke out in a cold perspiration" when asked to forward subscriptions. Offices, rules, books of account, cards of membership, all were ready, but the photo workers were not.

It is possible we were wrong in giving in, even if only a dozen applicants were willing to join and to pay. It looked very hopeless at the time, however.

Since then an attempt has been made to avail ourselves of a permission to join another society, but recently it has been resolved by that society that only "distributive, not productive," photographers are admissible.

Consequently, within the past few months a number of assistants have been organising a committee to again form an Association of Photographic Employees. When your article appeared we had already pulled into nearly final form all the (of course provisional) rules, forms, etc., for floating the Association. At the outset membership will be solicited on the basis of the provisional rules, which are the quintessence of fifteen years' experience. In several months' time the whole matter will be submitted for confirmation or amendment by a general meeting of members.

Several points are raised by yourself and your correspondents which we would like to answer here, and we wish to point out that the failure of the older proposal was useful in warning us of the pitfalls to avoid:—

1. Would there be a society on strictly trade union lines like labourers' or artisans' union, or would an Association of Employees be formed just as the professional employers have formed one? Reply: A trade union like carpenters' or even like shop assistants' societies has been tried and cannot be made a success; at any rate not at the start. A professional association, like the employers', will be the first form of the attempt. If the members want to register it as a trade union later, they can do so quite easily by resolution of a general meeting. By the Taff Vale decision a young registered trade union is liable to have all its funds swallowed up and confiscated through the least illegality (authorised or unauthorised) committed by any one of its members. Until the law is altered, it will be best to found an unregistered society like the splendid organisation, the Original Society of Paper Makers (hand workers), which embraces 96 per cent. of the calling, and has a reserve of £3 per member in hand, but has never registered. To guard against fraud and embezzlement the entire work will be vested in a good number of substantial trustees, and trustees will be invited from the professional and learned associations of our calling. Within the above limitations the Association will do all the work of a trade union, but will have "Defence, not Defiance" for its motto.

In a word, we hope and believe we shall secure the good will and hearty assistance of the photographic employers. Our attitude will be that employment and labour are a mutual service, and our

aim will be to help to jointly advance the interests of our disorganised and chaotic profession.

2. Would it be a *sine quâ non* that applicants should have served an apprenticeship? Will examinations be held and certificates be granted? Reply: Apprenticeship cannot nowadays be insisted on. Nearly all societies now say: "Apprenticeship or so long a period of employment at the customary rates of wages." So also re examination; we cannot make any entrance examination. With a few customary provisions, the fact of employment in the trade under usual terms for a fair length of time must suffice to admit. But afterwards we will require members to prove by any one of a number of means that they are worthy of being championed and their position advanced. Either qualification by apprenticeship, long employment at high rates of pay, or examination will be required to be proved before the "associate" will advance to "member," and from "member" to a higher grade. The examination referred to may be either (a) a purely practical one by a joint board of our own members and of scientific and commercial examiners, or (b) by production of the P.P.A. new certificates, or (c) by the City and Guilds or Chamber of Commerce certificates, plus a short practical exam., or (d) by the Regent Street Polytechnic certificate.

3. There will be benefits, as well as professional and legal assistance. Members will pay a small sum for only the professional help twice the sum to add unemployed benefit thereto, thrice the sum for a further title to sick pay. Membership above thirty years of age will be graduated, on the usual actuarial rates customary in benefit societies, but this will not affect the purely professional subscription.

4. Scales of salary, hours of labour, half holidays, etc., all come within the scope of the Association, and much can be done by friendly negotiations to secure the recognition of fair terms of employment.

We have secured a very earnest and very experienced organiser of such associations to kindly act as hon. secretary, and he may be addressed as follows:—Mr. Geo. Palmer, Hon. Secretary Assoc. P.E., 20, Bishopsgate Street Without, E.C. What is wanted at the moment is not correspondence requesting us to "send on full particulars and oblige," but promises to help, and criticisms and suggestions for our rules. All correspondence must at this stage contain stamps for reply; and an entrance fee of 1s. will be deducted to any applicant who encloses it, such payment to hold good till he sends a regular subscription.

Fees of this character sent in the initial stage will help to pay the cost of the expensive preliminary work.—Yours faithfully,

London, December 12.

ASSISTANT.

BARNET £500 CASH PRIZES COMPETITION, CLOSING DECEMBER 31.

To the Editors.

Dear Sirs,—To make perfectly clear a point which has been raised by one intending competitor, we beg leave to draw attention to the following:—

General Conditions, 3.—The words "the same print" should be understood to mean "a print from the same negative."

Class 9.—Lantern Slides.—From negatives on Barnet plates films is implied.—Yours truly,

ELLIOTT AND SONS, LTD.

P.S.—May we ask you to kindly call the attention of your readers to the fact that the Barnet Competition absolutely closes on 31st inst. Barnet, Herts, December 7, 1904.

THE BOVRIL COMPETITION.

To the Editors.

Dear Sirs,—In reply to your correspondent's inquiry, a list of successful competitors was published in the "Daily Telegraph" and "Daily Express" of November 21.

All the photographs are being returned to competitors as quick as possible, and a printed list of successes is being enclosed with each parcel. The few photographs not yet returned will be sent off before the 15th inst.

The first two prize-winners were published in the "Illustrated London News" on the 19th ult.

will be readily understood that the large number of photographs involved considerable delay in the adjudication and subsequent repacking of the photos.—We are, dear, sirs, yours faithfully,
BOVRIL, LIMITED.

London, December 9, 1904.

LEARNING RETOUCHING.

To the Editors.

Gentlemen,—Will you kindly permit me to comment upon your answer to "Inquirer," "Occupation Wanted," in the correspondence columns of last week's issue of the *BRITISH JOURNAL OF PHOTOGRAPHY*. "Inquirer" wishes to know if there is a chance of livelihood if he learns retouching, he being well skilled in art and having taken many first-class certificates; but he thinks it cannot be remunerative as he is told three hours must be spent on each negative. To this you reply to the effect that the photographic market is overstocked, and advise him to turn his talents in some other direction, whilst correctly informing him that three hours need not be spent on each negative. A second query of "Inquirer's": "Do you think it possible to gain a knowledge of the method of retouching through postal lessons?" meets with this reply: "Yes, but not so well as by personal instruction." Now, I wish to point out that if any man should learn the art of retouching, surely it would be one to whom it would come easily, as undoubtedly it would "Inquirer," who is already well up in drawing and shading—enough, I may remark, I have had some of my most successful pupils from those who have never had a lesson in drawing in their

life. I am a trade retoucher and teacher of retouching by postal and personal course, and at one time I was in exactly the same position as "Inquirer," and was then told the market was overstocked, and there was no hope for me. That was about twenty years ago, but I learned retouching, and have never regretted it, as I have made much better living at the art than I ever expected or hoped to. My profession and trade is overcrowded, and would be aspirants discouraged wholesale, but I maintain there is room for really workers in every line and direction. If everyone failed to try they were struck down by the bullet of depression and buried in a blanket we should have a world of dead men. Every actor, every artist, etc., cries out "stinking fish" and warns off the new ones, but new blood must come along or it all ends in a standstill. As an employer of retouchers I have found that out of every ten replies to my advertisements that only about five applicants have been really up to the mark. My difficulty was to get first-hands. With regard to "Inquirer's" "three hours . . . spent on each negative," it is absurd!

Forty-five minutes to one hour on an ordinary cab. neg., should be the limit, unless of exceptional difficulty, and this for best finish. The leading firms expect, I believe, about eight cab. negs. a day, and less important firms want a larger number. Finding professional retouchers, especially apprentices—who rarely get much time to devote to retouching, and when they do have no professional teacher to attend to them—so backward, I have made their improvement by quickening a speciality, and with most gratifying results. My pupils have obtained situations with the leading West-end and provincial firms, and many have greatly advanced their market value. Others through having their wives taught retouching, have been able to devote themselves entirely to photography, have formed businesses and become successful photographers. I have changed the occupation of many who were in the same boat as "Inquirer," and to their gain.

There is not a great living to be made at retouching, but, at least, a comfortable one can be secured by any good retoucher, properly equipped, who only displays a little energy and who does not sit in the fence. My brother has been round the world three times, going from place to place as a retoucher, and taking his chance of situations. The market may be overcrowded with weak and derivative retouchers, and I believe it is, and—as with every other branch of work—then all the more reason why they should be improved and not discouraged and turned back.

In your reply that postal lessons are not so good as personal, I may state that I have been teaching by postal course for over

ten years, and have found it equally as effective as the personal instruction, for the pupils are more self-reliant.

I have dozens of high-class testimonials from professional photographers and retouchers all over the world—my latest being from New Zealand, and this pupil was already a good retoucher, but writes that he prefers my methods. If you will refer to the *BRITISH JOURNAL OF PHOTOGRAPHY*, March 15, 1901, under heading "Retouching Lessons by Post" in "Answers to Correspondents" columns, page 176, you will find you then gave my postal system this criticism: "We congratulate both tutor and pupil. The specimens of work sent are very good indeed, and do the greatest credit to Mr. Bruce's method of teaching by post."

I assure you my postal pupils are just as smart as the personal. Finally, I think it would be better for trade all round if every one took a brighter view of things and tried to stir business up rather than depress it with gloomy forebodings.

Several of the halfpenny daily papers have, by their alarmist leaders thrown the country into a chronic state of hump, and closed up hundreds of thousands of pockets that might otherwise have been open as usual. Depression is catching, and the people "follow my leader" like a lot of sheep.—I am, gentlemen, yours faithfully,
Hampstead, December 12.

T. S. BRUCE.

On the 5th inst., at Unity Hall, before the members of the Bowes Park and District Photographic Society, Mr. W. P. Watmough gave a demonstration of "Intensification, Reduction, and Toning," by "tabloid" photographic chemicals. The compact form, ease of manipulation, and reliable keeping qualities of these products appeal conclusively to the amateur photographer, who, with limited dark room accommodation, can by this means have at hand formula for all branches of work, and readily make up the quantity of solution necessary only for the amount of work to be done, and thus ensure having clean and fresh solution each time. Their value to tourists with the camera, owing to their portability, cannot be exaggerated. Mr. Watmough proceeded to tone some lantern slides and bromide papers by means of "tabloid" copper ferrocyanide, when, in place of three ten ounce solutions necessary in the ordinary way, one "tabloid" product to each ounce of water was sufficient. The different tones obtained on both slides and paper by their immersion in the bath for shorter or longer periods was clearly shown, specimens being passed round at different stages of the process. Mr. Watmough pointed out that the developer used in the first instance had some effect in the resultant tone, it being found that Amidol developed prints toned somewhat better than any other. A film was then cut in half and one half intensified by means of mercuric iodide and sodium sulphite, and afterwards developed by means of Amidol, a process always recommended in order to obtain the best results. A comparison was then made with the half not treated to show clearly the increase of density obtained. Another film was treated in the same way, but reduced by means of "tabloid" potassium ferricyanide. The demonstration was followed with great interest by the members, who kept up a fire of questions, to which Mr. Watmough readily replied.

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It may also be obtained from all Booksellers, Photographic Dealers and Railway Bookstalls.

Answers to Correspondents.

- ** All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.**
- ** Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.**
- ** Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & Co., 24, Wellington-street, Strand, London, W.C.**
- ** For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.**

PHOTOGRAPHS REGISTERED:—

- W. G. Smith, 162, Oldham Road, Middleton. *Two Photographs of Two Christmas and New Year Post Cards, containing Four Views each, and Greeting.*
- W. Cartmale, Bank House, Lichfield. *Photograph entitled "The King Leaving Lichfield Cathedral." Photograph entitled "Bird's-eye View, Lichfield."*
- H. Dunning, Bridge Street, Usk, Mon. *Photograph of Llangibby Castle House, Monmouthshire.*
- R. Wilkinson, The Studio, Hornsea, Yorks. *Two Photographs of the Rev. C. E. Little.*

PAINTINGS REGISTERED:—

- W. Cartmale, Bank House, Lichfield. *Painting entitled "The Walk, Maple Hayes." Painting entitled "Market Day, Lichfield."*

H. HETHERINGTON.—If you turn to p. xvi of last week's issue you will find the advertisement you require.

S.—We are unable to satisfactorily answer your query without seeing a print showing the faults you complain of.

PROMPTNESS.—We think you have just cause for complaint, for although the weather has been bad, it has hardly warranted such delay.

W. A. DOUGLAS (Albany).—It would be better for you to wait till you arrive here, and then either take private lessons or else seek a situation with a first-class firm.

A SMALL PROFESSIONAL.—It is utterly hopeless to expect Parliament to pass any such Act as you desire. If you deal in apparatus and materials you ought to be able to get dealers' terms.

"PHOTO. ARTIST" asks: "How can I become a member of the R.P.S.?" In reply: On application to the Secretary of the R.P.S., 66, Russell Square, W.C., a form can be obtained which, when filled up, is submitted to council, and election will follow, as a rule, in due course.

H. COLLEY BRIERLEY asks: "Can you tell me the cause of films coming out positive instead of negative? Some films used on a voyage to India and developed out there have done so, and as some of them are otherwise very good I shall be much obliged if you can tell me how to remedy them, if possible. Is it any fault in the manufacture?" In reply: This phenomenon is known as reversal of the image, and is generally due either to extreme under exposure, prolonged development, or excessive over-exposure. It is in no way due to the manufacture of the films. The only remedy is to make a negative by copying in the camera or contact.

SENSITISING FILMS.—"ERYTHROSINE" writes: "I invoke your help to advise me in extending my knowledge of sensitising gelatine emulsion for the different colours. If plates are used no trouble is experienced, but with films there is no certainty of results. The only cause of failure that occurs to me is in the free alkali used. Even with erythrosine (Hochst), no good result is obtained. Do you think the ammonia may affect the celluloid so that fog producing actions are set up in the emulsion?" In reply: We certainly cannot accept the suggestion that ammonia

would have any action on the celluloid and set up a foggy action. The difference in behaviour between films and plates is far more likely due to difference in the composition of the emulsion. As colour-sensitive films can now be obtained at the same price as ordinary, we fail to see what the particular advantage in home sensitising is.

"AN ANXIOUS ONE" writes: "Being a constant reader of the B. J. I should be obliged if you would kindly enlighten me on the point: Myself and a friend went out taking views together. We took two negatives of one particular view, my friend taking one negative; I kept the other. Now I have had an offer from a firm to sell a print to them for reproduction one process only. What I want to know is this: If I sell to the firm a print giving them the rights of reproduction, would that affect my friend, or myself, should my friend at any time have an offer or wish to sell a print from his negative for reproduction? He is in his own business and I am in my own." In reply: Two or two million people may take the same view from the same standpoint at the same or different times, and each has a perfect right to dispose of a print for reproduction without legally or morally damaging the other and without prejudicing himself if the other at any future time sells the print or otherwise disposes of the negative.

"STANFIELD" writes: "I placed an order for local view postcards with a firm of publishers and printers of postcards verbally through the medium of their London representative. The views were to be my selection, and their photographer was requested by me to meet me at a specified date and place and take same, the set of views to be my series, which you will see by enclosed card is marked 'London Bazaar Series.' At the time of ordering I produced an estimate from a Continental firm, showing a great difference in price of printing (from own negatives), remarking to the agent that I could get a series of fourteen local views at 2s. 6d. each, showing him that with the 2s. 6d. extra added to the Continental firm's price was a long way under his price, adding that to get my own views, and quickly (as he added), I would not mind paying extra price; also that he would not do the next edition unless he could come down to the Continental price. An important point, I think, showing that he fully understood they were copyright, is the following circumstance, viz., the firm sent about five views, with the wording 'London Bazaar' omitted, and I told the agent I would return them unless an allowance was made; this at first they refused to do, saying they would take them back and reprint. I pointed out to him that would be a dead loss to them, as I should not allow them to sell them at their retail shops, or wholesale in their general conditions, as they were my copyright. Eventually they made allowance. Why did they make the allowance if they were not convinced they had no right to dispose of them? I have since had an edition printed abroad from these same sil prints, and they now write saying I am infringing their copyrights, and intend issuing an injunction. I contend they own my copyrights; that they took the views by my order; that they have no right to reprint them other than for me. What is your opinion?" In reply: We think in a case of this sort verbal agreements are a great mistake, the necessary time and trouble involved in putting the facts into writing are small that in view of future business, and the ease with which such must go through when everything is set down in black and white, this is warranted. The local views were taken at the instance of our correspondent, not by him; apparently he has paid nothing for the making of the negatives, and they were never in his possession, and were simply to be used and for his series of postcards. The copyright belongs to the firm who made the negatives. The fact that a second edition was to be produced at a lower rate seems to us to be utterly beside the question of copyright. Again, the allowance made by the firm to avoid reprinting. We consider that the firm in question hold the copyright, or can hold it if required, and that our correspondent, having put himself in the clutches by having the cards reproduced elsewhere, had better make the best terms he can.

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EX CATHEDRA.

Lunar Photography. Thanks to the great telescopes and the photographic plate, we know the surface of the moon—the one which it presents to us—better than we know our own planet. There are no dark lunar continents. Perhaps the finest example among photographic maps of the moon is Professor W. H. Pickering's new work, "The Moon," just issued by John Murray. The lunar craters are depicted with a fulness of detail which was impossible in the days of the draughtsman, and is one more testimony to the value of the camera to the astronomer.

* * *

Ah Sin and Art. Every one who has any love for art must feel regret when some masterpiece in sculpture or painting is borne away by an American millionaire to the other side of the Atlantic. But it comes as a surprise to find the same sentiment expressed by a Chinaman who writes to the "Chronicle" from Hong Kong to this effect. He has a suggestion to make which is a further sign of his Western knowledge. Why, he asks, is not more done in the way of photographically reproducing the contents of European galleries? Possibly he is not aware of the extent to which reproductions are issued; but the fact that such a protest should issue at all from the Far East is a sufficiently surprising fact.

* * *

Photographs on Visiting Cards. Acute distress of mind is professed by the "Daily Chronicle" at the suggestion that visiting cards should be illustrative. Mr. John Smith will be seen in person on his card, and Madame's, perhaps, will be embellished with the picture of

her favourite poodle. Was it not Mr. Barry Pain's "Eliza's Husband" who favoured the idea of a neatly-decorated card—a conventional flower in the top left-hand corner—but was deterred from it from apprehension of an increase in the normal price of a shilling for fifty? There is really no cause for alarm. Probably no one is sufficiently fond of his own features to leave them in miniature on the card trays of his friends. The mind of a town traveller may see novelty in the idea, though many of his predecessors have adopted it. Because of this very opportunity of self-advertisement the "Globe" shrinks from the proposal, foreseeing the card of the newest trade millionaire, no longer decorously bald, but drawn up in such terms as: "What's the matter with Blank's pickles? Adults love them. Children cry for them. Buy them."

* * *

Impure Washing Soda.

It is not so very long ago that a case of adulterated washing soda cropped up, and this week two grocers and oilmen were fined for selling washing soda containing Glauber's salt (sulphate of soda). It was argued for the defendants that the material was sold as soda crystals, and that that term did not imply washing soda only, but was used to describe many forms of crystallised soda. But while various fancy names may be given to washing soda in a retail way, "soda crystals" in the alkali trade means crystallised carbonate of soda, free from caustic alkali, and certainly containing no more than minute quantities of sulphate of soda. The sophistication of a substance so largely employed in photography should not be disregarded, for the effect of sulphate of soda will be felt, not only in the feebleness of alkalinity of the carbonate, but in the restraining action which the sulphate exerts in development. If there is any doubt of the purity of a supply of washing soda the pure crystallised carbonate of soda should be used, and, indeed, those who purchase chemicals on the small scale for their own use only will be well advised to employ it invariably.

* * *

New Names for Metric Measures.

Those who have been reared in the metric system will have to become accustomed to some new terms in its nomenclature if the suggestions of the "Pharmacopœia Committee of the Pharmaceutical Society are adopted by the Board of Trade. By the Weights and Measures Act of 1897 the cubic centimetre, which is not precisely the one-thousandth part of the litre, ceased to be a legal measure of capacity. In place of it the "millilitre" was adopted officially, being defined as the exact thousandth part of one litre. The difference in actual work is too small to be of the slightest importance, so far as everyday photography is concerned. In fact, the processes of volumetric analysis which would be vitiated in accuracy by the employment of c.c.s. instead of millilitres.

are very few indeed. But millilitre is never likely to come into popular usage, and it is now proposed to abbreviate it to "mil." The tenth part of a millilitre is to be called a "decimil" and the hundredth part one "centimil." No doubt, while the handwriting of physicians so frequently leaves room for the scientific use of the imagination, such safeguards against errors are most desirable, but for practical purposes, either of chemistry or photography, there is little to be gained by getting rid of the cubic centimetre.

* * *

An Emulsion Patent.

Great sensitiveness and fine grain are claimed for a process of emulsion preparation, for which protection has been granted in Germany. The description given by the patentee, Herr J. Gaedicke, shows that the process is certainly roundabout, sufficiently so to be uncommercial, we should think; but it does not convince us that there is any actual novelty or advance. In brief, the method is said to consist in the preparation of a slow, unripened emulsion, which is afterwards rendered sensitive by ammonia or other alkali, the alkali being finally neutralised with an acid. It is stated that the emulsion is allowed to set at once and forthwith pressed through canvas and washed. It is then liquefied, with possibly the addition of gelatine, and diluted to twenty times the weight of the dissolved gelatine. It is then warmed to 165 deg. Fahr. and a few cubic centimetres of ammonia or trimethylamine added. The whole is digested at 105 deg. for from one to four hours, and the alkali then neutralised by the addition of tartaric, citric, oxalic, or sulphuric acid. The emulsion is then ready to be used. Photographic literature of the eighties contains many such prescriptions for the preparation of a more rapid emulsion, though it was usual to remove the ammonia by washing. It is difficult to see how any benefit is expected from citrate or sulphate of ammonia in the film.

* * *

Supplementary Exposure.

For some years it was one of the articles of faith of the old worker that a supplementary exposure enabled better results to be obtained, particularly in cases of under-exposure. Many devices were arranged by means of which the supplemental or flash exposure, as it was sometimes called, could be made, and both white and red light were used for this purpose. A patent has been recently taken out in Germany with the same intent, for the placing behind a sensitive plate or film in the dark-slide of a phosphorescent surface, and allowing the two to remain in situ for from twelve to twenty-four hours. The patentee states that during exposure the rays that produce the latent image partially penetrate the plate or film, and produce a faintly phosphorescent image, which by continued contact with the plate produces a better exposed image, and considerably softer images, whilst increased orthochromatic action is obtained, so that yellow, green, orange, and red appear proportionately much stronger in the negative, and blue and violet much softer than when the light-absorbing and light-emitting screen is omitted. This action, it is stated, is much stronger if the dark slide be warmed for a few minutes after exposure. Some four years ago, Captain Colson suggested that a better exposed result was obtained if the plate was exposed through the glass and the film was backed up by a piece of white card or other reflecting material. In this case, of course, the film was practically in contact with the reflecting surface. What the precise result would be when a comparatively thick glass support is interposed between the phosphorescent surface and the light sensitive film remains to be proved. At first sight, at any rate, it hardly suggests fine definition; nor is it

possible to quite accept the statement that a better orthochromatic rendering is to be obtained.

* * *

Honours to English Men of Science.

At the anniversary meeting of the Chemical Society, the Copley Medal was presented by the President to Sir William Crookes "for his experimental researches in chemistry extending over a period of fifty years." Photography may be proud of such a man, who early graduated in photographic work, and who, it may be remembered, in the early days of this Journal, occupied its editorial chair. Then, again, at one time, when wet-plate photography was virtually the only photographic process in use, the names of Mawson and Swan were as familiar as household words. Mr. Swan is now Sir J. W. Swan, whose name is known all over the world, and on the same occasion he was presented with the Hughes Medal, awarded to him "for his invention of the incandescent electric lamp and his other inventions and improvements in the practical applications of electricity. Not directly included in the award are his inventions in dry-plate photography, which have so much increased our powers of experimental investigation." Though not directly connected with photographic work among the week's announcements of awards may be noted that the first occasion of the Lavoisier Gold Medal being awarded to a British man of science is the receipt by Professor Sir James Dewar, F.R.S., for his researches on the liquefaction of gases. To complete the tale the distribution of the Nobel prizes is announced, Sir William Ramsay having been awarded the £8,000 prize for chemistry research, and Lord Rayleigh, Professor of Natural Philosophy at the Royal Institute, that for physics.

* * *

The First American Photographic Salon.

Judging from the reports in our American contemporaries, this exhibition has been a decided success, numerically, at any rate, notwithstanding the rabid opinion it has met with in certain quarters, for no less than 9,000 prints were entered of which 2,000 passed an ordinary jury, and this number was still further reduced to 350 by the jury of artists. The "Photo-Era" says:—"The work of the jury upset many of the preconceived ideas of the Salon Committee. Many prints which a jury of photographers had passed in previous instances were rejected as unsound, and some work lacking in some technical points was declared to be artistically good. The majority of the gum-bichromate prints submitted were rejected, and those accepted were almost wholly straight work. The mixture of hand work and lens work was almost always disastrous. Photographs were judged as such, and examples of brush work were judged as paintings. One of the jurors said on this point: 'Some of this brush work must be regarded as painting, and much of it is better than a poor painter could do; but when photographers place their work on the level of painting, it must be judged as painting, and be as good as the work of a good painter.' The most important point with the jury was the truth of the values. Every picture in which values were not correctly and harmoniously rendered was rejected. This was an innovation, for previous salon juries have considered mainly the question of tone. While tone is one of the fundamentals of art, line is far more important, and value supreme, and both of these essentials have been much neglected in the past by photographers. Now that a new standard of judgment has been set up by a wholly competent jury, we may expect to see definite progress towards photographic truth."

Grave
Error
in Star
Photographs.

Professor Turner, in last week's "Nature" discusses a very disturbing matter which has lately been noted in regard to photographic star records in the Circular No. 11 of the International Astrophotographic Conference of July, 1900. If there is one class of evidence more than another held as supplying irrefragable data it is the negatives taken of the stars and planets, when subjected to certain well-known corrections; but in measuring the photographs of the planet Eros, taken in the winter of 1900-1, when it made a very near approach to this earth, a serious discrepancy has been observed between the photographs taken in Paris and those in Algiers, with instruments as precisely similar as the constructor could make them, although the plates were used the same way, and measured similarly, with careful attention to certain known sources of error. It may be said that it is rather late in the day to make this discovery—four years belated—but, as Professor Turner points out, the measurement of the plates involves enormous labour, and has only been partially accomplished even yet. This error may be briefly described as a variation in the relative positions of the stars on the negatives taken, instead of their being in one constant position. The actual difference may appear but slight, yet, when it refers to objects at such immense distances, it means entire absence of the exactitude anticipated and expected. The error is not the same in all, but it ranges over half a second of arc, and, as Professor Turner writes, "We want to measure the hundredth of a second." The extraordinary delicacy of measurement involved will be seen if we reckon this up into ordinary figures. The focus of the telescopes used is not given; but let us assume it to be twelve feet. Half a second of arc variation then would mean about the three-thousandth of an inch—that is to say, taking a concrete example, a star on one plate does not coincide with its position on another by a distance equal to the thickness of a page in the "B.J.P. Almanac" split into six! "It is disappointing," he says, "to find no satisfactory suggestion as to the cause of error in the paper which gives an account of it." Professor Turner goes on to say: "It seems more likely to the writer that the cause may be sought in the object-glass of the photographic telescope, and, to be more precise, in an error of centring of the crown lens relatively to the flint. Such an error is well known to opticians, and is easily detected in the visual telescope by the fringe of colour on one side of a star image, when slightly out of focus. But the images formed by a photographic telescope are not examined by the eye in the regular course of work, and such an error might therefore escape detection until revealed by such a comparison of measures as is given above. The stray light on one side of the image would not be strong enough to affect the sensitive film in the case of faint stars, but for a bright star it would spread the image in that direction, and so introduce a spurious displacement of the centre. If this explanation be correct, the error can both be detected and eliminated by turning the object-glass through 180 deg." The whole matter is so important, and, we might say, unanticipated, that we may expect to see it well discussed, and probably to the benefit of our optical knowledge; we do not anticipate that it will in any way prove that the photographic aspect of the question will need reviewing.

THE CARBON PROCESS FOR PICTURES IN
VARIOUS COLOURS.

At the present time there seems to be an increasing desire amongst photographers and their patrons for pictures in a variety of colours, such as various shades of reds, browns, blues, greens, etc., and the demand has to be met. A very general method of meeting it is by toning bromide pictures in various ways, but it must be admitted that it is a somewhat troublesome one, especially when several different solutions have to be employed. The "boiling" method for browns or sepias is perhaps the least troublesome, and the colours obtainable with it are good. It is, however, when we come to some of the other colours, such as blues, greens, reds, by toning, that the trouble steps in, with all but those who take extra pleasure in photographic manipulation. There is also the doubt—and a serious one it is with some of the methods—as to the stability of the results when they are obtained. Furthermore, it is a difficult matter, with all but the most experienced, to obtain, with some colours, say, half a dozen or a dozen prints all of the same identical tint. This may not be a serious matter with the amateur, but with the professional the case is different. His pictures must all be of the colour ordered by his customer.

The process that yields the greatest variety of colours with certainty is, undoubtedly, the carbon process, and with it there is no question of getting the prints of exactly the same colour, while of their stability there is no question. All manufacturers of the tissues are now issuing some twenty or more different colours, and the tints of these vary with the different makers, although they may bear similar names. Therefore, he who cannot get a colour or tint to suit his taste must indeed be difficult to please. The carbon process is one of the simplest of all to work, yet there seems to be two objections to it.

The first objection is that if the tissue be purchased ready sensitised, a dozen pieces must be taken at a time, when often only half a dozen, or less, prints are required, and, as the tissue will only keep for a couple of weeks or so, the rest is wasted, unless it be stored in a chloride of calcium case, and that is not possessed by every one. Still, if some of the dozen pieces have to be wasted, the loss is not, after all, very great; yet one does not like wasting material. The second objection is this: If the tissue has to be sensitised by the user, the idea seems to prevail that it is a troublesome business unless suitable drying arrangements are at command. To dispel this idea is the object of the present article.

In all the text-books great stress is laid on the conditions under which the tissue, after sensitising, must be dried in order to avoid partial or complete insolubility and other troubles. These are such as avoidance of noxious vapours from drains, fumes from burning gas, dust, etc.; also that the tissue must not be dried too slowly. It is true that all these precautions have to be taken when the tissue is dealt with in large quantities—as in its manufacture—or when large sheets are concerned. When, however, small pieces—say up to 12 by 10, or even larger—are required there is no difficulty in the way if the following method be adopted. With it the tissue may be sensitised and dried in any ordinary room in full daylight, while at the same time it will be protected from injurious fumes even if gas be burning in the place, while injury from dust is avoided. The method is not new, as it has before been referred to in the JOURNAL, but it does not appear to be so generally known to small workers of the carbon process as it deserves to be. If it were, it would doubtless be the one most generally

Borough Polytechnic Photographic Society.—The tenth annual exhibition of this society will be opened on Tuesday, December 27, at 7 p.m., by the Mayor of Southwark (the Rev. A. W. Jephson, M.A., L.C.C.), and will close on Saturday, December 31. Admission free.

employed by those desirous of producing pictures either on paper or as lantern slides in a variety of colours.

Here is the method. First the sensitising bath is made. A convenient strength is two ounces of bichromate of potash in three pints of water. When dissolved, a dram or two of liquor ammonia is added. The quantity of ammonia is very immaterial, so long as it is sufficient to neutralise any free acid that may be in the bichromate, as any excess flies off as the tissue dries. The solution may be used over and over again, or until it becomes a pronounced brown in colour. Various additions to the bichromate solution have at times been suggested, but they are quite unnecessary, and are not used by practical workers, or by makers of tissues. There is a decided advantage in sensitising one's own tissue that may be pointed out here, namely, that it may be sensitised to specially suit different types of negatives, and that with the same solution. It is tolerably well known nowadays, in the carbon process, that a negative which has harsh contrasts should be printed in a strongly sensitised tissue, and one lacking in contrasts in a weakly sensitised one, in order to get the best results the negative is capable of yielding.

The tissue is immersed in the solution—adhering air bubbles, of course, being removed—and allowed to remain according to the degree of sensitiveness desired. A long immersion means a highly sensitised tissue, by reason of the quantity of solution absorbed by the gelatinous coating. A short immersion, on the other hand, produces a less sensitive one, suitable for flat or feeble negatives. As a rough guide to time, it may be mentioned that for a medium type of negative, if the tissue be allowed to remain in the bath until it just becomes flaccid, it will be about right. When the tissue has absorbed the requisite quantity of solution (large or small), it is removed and squeezed on to a ferrotype plate, or one of tin, zinc, or the like, which has previously been rubbed over with French chalk or been very slightly waxed, and then reared up in some place, where it will dry in a few hours—say on a mantel-shelf with the tissue next the wall. When dry, it can be stripped off the plate, and is then ready for use; it will be perfectly flat, and will possess the surface of the plate upon which it was dried. Now, it will be seen that, while drying, the gelatinous surface will be perfectly protected from all injurious fumes, and also from dust, while the paper, yellowed by the bichromate, will be ample protection from light, whether day or artificial.

A word should be said about the squeegeeing. If a highly sensitised tissue be desired, this should be lightly done, only sufficiently heavy to just remove, or rather equalise, the superfluous solution. If a very lightly sensitised one is wished, the squeegeeing may be done heavily, so as to remove as much as possible of the solution, even from the paper backing. It will now be seen that the sensitising and drying of carbon tissue in small quantities is an exceedingly simple and certain operation, while the working of the carbon process, as most know, is simplicity itself.

THE first Bohemian concert of the "Gramme" Recreation Club, which has been founded by the employees of Messrs. J. J. Griffin and Sons, Ltd., was held on Saturday last at the Holborn Restaurant, Mr. T. Briggs (director) in the chair, and he was supported by Messrs. Pennell, Cornute, Thompson, and Shepherd. A most enjoyable evening was spent, and the efforts of the following artists were particularly appreciated:—Miss Pesenti, Mrs. Reid, and Messrs. Wilson, Wiles, Read, and Williams. So successful were the whole arrangements that it is hoped to give further concerts from time to time.

SODA.

THE case of adulteration to which we refer under "E. Cathedra" is a reminder of the confusion which would seem to exist in the minds of many photographers as to the different substances, which are loosely called "soda" in the wholesale or retail trade. Caustic soda, washing soda or sodium bicarbonate might each be supplied to a person who asks for "soda": which he would get depends on the status of the salesman. Now, in photographic work the most commonly used sodium alkali is sodium carbonate in the crystalline form, the "soda crystals" of the Tunbridge Wells case. Usually it is specified as "soda carbonate, cryst." in formulae, but if the crystallised form is not specified it is safe to assume that the crystals are meant. Dry, or anhydrous, sodium carbonate, which is the only other form of carbonate in the retail trade, is not likely to be meant by a writer unless he specially directs its use. It is the strongest form of sodium carbonate to be obtained, and, roughly speaking, will do the work of three times its weight of the crystallised salt. This latter, sold as "soda carb. cryst.," "soda crystals"—washing soda—should contain, if pure, 37.07 per cent. of the dry sodium carbonate. Bottled samples, supplied to photographers, which we have examined, have contained a little in excess of that proportion—a fact which naturally comes about from the efflorescent property of the salt. Commercial washing sodas are not so pure as this. We have found them to contain 34 per cent. of dry carbonate, which is a little less than the standard quoted by the analysts called for the prosecution in the Tunbridge case. So long as they are within a per cent. or two of this figure, however, there should be no reason to complain of the carbonate in development and for other photographic purposes. But it will be different if a sample so impure as those taken at Tunbridge is being used. The percentages of sulphate of soda found by the analysts were:—

34 p.c.	18.78 p.c.	61.87 p.c.	60.7 p.c.
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The differences in these figures are explained by the supposition that the sulphate had been added to the carbonate after the manufacture of the latter. The percentages of crystallised carbonate were:—

64 p.c.	78.89 p.c.	35.29 p.c.	39.2 p.c.
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which figures must be divided by three, roughly, to obtain the percentage of actual dry sodium carbonate.

The moral of these figures is that apparent vagaries in development may be capable of explanation on examination of the chemicals, and, though that course is not usually the one which the photographer is in a position to take, the moral is no less pertinent when it takes the form of advice to purchase reputable brands from reliable sources, and to recollect that a trifle saved in chemicals may work out to the spoiling of the ship for the proverbial ha'porth of tar.

LORD WILLIAM NEVILL appeared recently at the Tunbridge Wells County Court upon a judgment summons in respect of a debt of £20 for photographs, due to a local photographer named Glanville. On behalf of the judgment creditor, it was stated that the debt was originally about £70, and it was in respect of photographs of Lord William and his family and of some graves. Lord William Nevill told Judge Emden that he was entirely without means, and, although he lived in Eaton Square, he was dependent upon his friends for everything. The sale of his book produced about £400, most of which was distributed among his creditors. His debts at the present time were over £3,000, and he had no means of paying them. The Judge held that there was not sufficient evidence of means, and he made no order. He remitted the fine of £5 imposed upon the debtor for not appearing at the last Court.

THE STEREOFACITOR.

A NEW ATTACHMENT FOR THE STEREOSCOPE.

UNDOUBTEDLY nothing photographic is more beautiful than a well-executed stereogram as seen in the stereoscope, especially a stereoscopic transparency. It is not every photographer, however, who possesses the means of obtaining stereoscopic negatives, in spite of the various easy methods of working with one lens only, or who, having the means, can always spare the necessary time, or rely on his apparatus being at hand exactly when opportunity favours. There are sure to be many excellent pictures which the worker, perhaps, regretfully wishes he had taken stereoscopically, in order to receive the full advantage of the admirable relief which is evidently there present, though thrown away, in the monocular photograph. To such the following description of a very simple method by which a pair of ordinary non-stereoscopic prints or transparencies may be viewed in remarkably realistic relief may possibly appeal, besides proving attractive also to the more serious body of stereoscopic workers.

It goes without saying that actual stereoscopic relief cannot

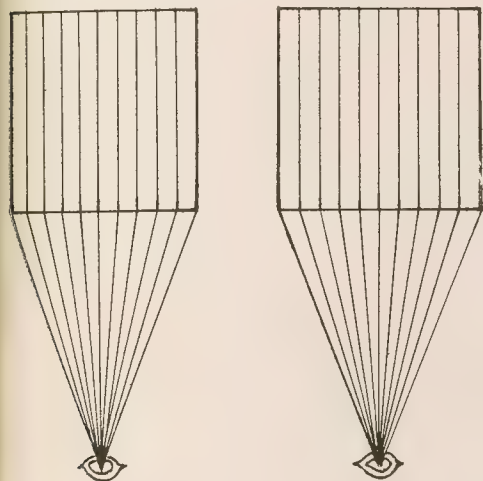


Fig. 1

be obtained by the use of two similar pictures. Far be it from the writer to resuscitate this ancient and exploded heresy, which, however, appears in its time to have misled many. The method of using the two similar prints now to be described is such that, while under examination in the special holder provided for the purpose, they virtually cease to be similar prints, becoming in reality a pair of dissimilar pictures. This may sound paradoxical, but is, as will now be shown, not only possible, but easily accomplished.

Suppose, for example, we take the case of a couple of squares divided with a number of equally spaced vertical lines, as in Fig. 1. When a couple of these similarly divided squares are placed with their centres in line with the axes of the eyes, the rays proceeding from the different lines of each diagram will be absolutely identical. If, however, these two diagrams are inclined equally so that their outside edges are nearer to the observer than the point of junction, as shown in plan by Fig. 2, the rays reaching the eyes are no longer at equal distances apart, as will be readily seen. The rays proceeding from the division lines on the squares are, in fact, further apart on the left-hand side of the diagram A and

closer together on the right-hand; while in the diagram B this condition of affairs is exactly reversed. In other words, when viewed in the manner described, a pair of similar pictures have become dissimilar.

Of course, it is not suggested that even two dissimilar pictures will necessarily give a stereoscopic effect unless certain other conditions are fulfilled. Nor will the inclination of two similar pictures in the manner described reproduce the state of things obtaining in a pair of ordinary stereoscopic prints. It will, however, go very far towards this consummation, especially when the artificial dissimilarity is assisted by a simple expedient in mounting. Two exactly similar prints are obtained and trimmed to a suitable size, say about $3\frac{1}{2}$ in. by 3 in., taking care that all horizontal parts of the pictures are level with each other. The two prints must be cut to precisely the same size and include an identical amount of subject. Next carefully rule with a pencil and trim off one-eighth of an inch from the right-hand side of the right picture and a similar amount from the left-hand side of the left picture, as shown by the dotted lines in Fig. 3. Then mount the two prints in the same relative position, at about one-eighth of an inch apart, seeing that they are perfectly level. Thin cardboard should be used

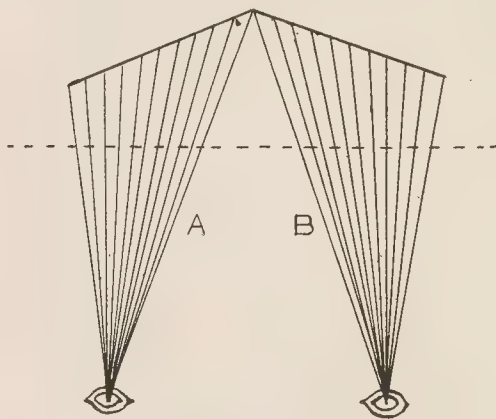


Fig. 2.

for the purpose. When the prints are dry any necessary spotting or burnishing may be done, and a line is now scored lightly with a penknife down the centre of the card between the pictures, so that it will readily fold in the middle. The cardboard should not be cut right through, and, in any case, a hinge of gummed paper or thin tape at the back will be an improvement.

The slide is now ready for viewing, for which a special holder is required. To this the writer and inventor has given the name of the "Stereofactor," as fairly well expressing its peculiar function and use. It consists of a pair of metal grooves inclined to each other at an angle of about 140 degrees, with, in the centre, a pair of upright springs forming a clip to hold the slide. This device is readily fashioned in thin brass, aluminium, zinc, or tin by any one handy with tools, or will be made to order by any metal worker for a small charge. It can be screwed to the slide holder of the stereoscope, but it might equally well be provided with spring clips at the bottom to grip any holder; and, indeed, this would be necessary if the instrument used were one of the aluminium construction now popular.

In use, the slide is bent in the middle and inserted between

the springs of the upright clip, the bottom of the slide resting in the grooves below. The slides should be examined in a bright light, falling equally on both pictures, and with the holder as far removed from the eyepiece as it is possible for the observer to see comfortably in sharp focus. A single picture will then be perceived, possessing remarkable relief and realism. So much is this the case that many to whom the effect has been shown have been unable to distinguish between the relief produced by this means and that resulting from the display of actual stereoscopic slides. It should be noted that the use of the holder for viewing the latter is in no way interfered with, but that the two descriptions of slides may be viewed alternately without any alteration of the instrument, except that the focus will differ slightly in each case, which is easily allowed for in the modern pattern of stereoscope.

It may be stated at once that every subject is not suitable for this method of inspection. Since the sensation of relief obtained is not secured by the ordinary means of stereoscopy, but is largely suggestive and imaginative, it is requisite that relief should be as fully as possible rendered in the picture. That is to say, the prints selected must be bright, vigorous, and well modelled, with the divers planes properly differentiated. Unless this condition is secured the result will be disappointing. The sensation of relief is apparently,

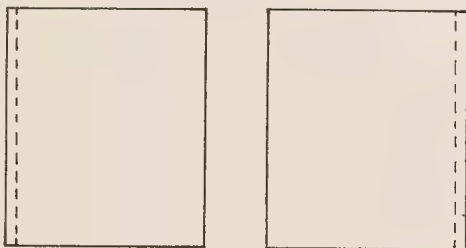


Fig. 3.

to a great extent, caused by a favourable conjunction of what are known as the criteria of distance, which seem to receive an added emphasis by the combined use of the stereoscopic lenses and the stereofactor attachment. That a certain kind and degree of relief, varying according to the suitability of the subject, may be perceived under favourable circumstances even in a single photograph, the well-known "Verant" of Dr. Moritz von Rohr amply proves.

A great merit of the stereofactor attachment is the variety of material which may be pressed into service as slides. Picture postcards, both plain and coloured, ordinary portraits, advertisements and engravings cut from the illustrated journals, may be suitably trimmed, mounted, and adapted for viewing. Duplicate pairs of transparencies or lantern slides are also available, and afford striking pictures. The mounting, once understood, is amazingly simple, and dozens of excellent slides may be made in an evening. The interest of the stereoscope is, needless to say, immensely enhanced, and its scope greatly widened. There soon comes a peculiar fascination in watching for suitable subjects and promptly making or obtaining an extra copy.

Of course, the stereofactor picture can never expect to supersede the legitimate stereoscopic slide. Such a thing is not for a moment desired or suggested. It is merely intended to occupy its distinctive place as a useful accessory to the stereoscope, enabling many previously impossible sub-

jects to be included in the worker's harvest of slides. We have used the word distinctive advisedly; for while in many cases the rendering of relief by the stereofactor is not inferior to that of ordinary stereoscopy, in some instances it is distinctly superior. This is, after all, only what might be expected, considering the totally different principle on which the two systems proceed. Curiously enough, the apprehension of relief as shown by a stereofactor picture, being so much a matter of suggestion, appears to vary in different individuals, although in the majority of cases the effect is at once recognised and appreciated, in one or two instances the observer has professed utter inability to see any relief whatever. The same thing has, however, in a somewhat different form, been said of the ordinary stereoscopic slide. It would seem that there are some people whose power of visual accommodation, psychical perception, or whatever it may be preferred to call it, is less developed than that of others.

A. LOCKETT.

ON THE DEVELOPING PROPERTIES OF PURE SODIUM HYDROSULPHITE AND OF SOME ORGANIC HYDROSULPHITES.

ALKALINE Hydrosulphites.—The developing properties of hydrosulphurous acid and of alkaline hydrosulphites were shown for the first time in the year 1887⁽¹⁾. In order to use these substances as developers, they must be produced in the dish at the moment of developing, owing to their unstable nature as they speedily lose their developing power.

Hydrosulphurous acid was originally formed by the addition of granulated zinc to a solution of sulphurous acid. In addition to the hydrosulphurous acid, the liquid contained hydrosulphite of zinc. The images produced were weak and fogged.

Hydrosulphite of soda, prepared by adding granulated zinc to bisulphite of soda, gives results which are inferior even to those supplied by the solution of nascent hydrosulphurous acid⁽²⁾.

No practical improvement having been made in the stability and purification of hydrosulphurous acid or of its salts since its developing properties were indicated, the results obtained by development with that substance have not improved.

Quite recently the Badische Anilin und Soda Fabrik has succeeded in obtaining pure anhydrous hydrosulphite of soda by treating with sulphurous anhydride sodium suspended in ether⁽²⁾. The resulting product has the appearance of a white powder, is unalterable in dry air, is readily soluble in water, while its aqueous solutions only decompose slowly.

Our study of the developing properties of this substance has proved them to be widely different from those of the impure product formerly experimented with.

The aqueous solution of pure sodium hydrosulphite acts as an energetic developer, the image obtained being very vigorous, but fog forms within a few seconds, and increases as development is prolonged.

It is possible, however, completely to avoid this fogging by the addition of a sufficient quantity of 10 per cent. solution of potassium bromide to the developer, and the use of hydrosulphite solutions suitably diluted and sufficiently acidulated by sodium bisulphite. The following proportions appeared to us to give the best results:—

Water	...	...	...	1,000 cc.
Hydrosulphite of soda	...	...	...	20 cc.
10 per cent. solution potassium bromide	...	...	...	70 cc.
Commercial bisulphite of soda	...	...	...	100 cc.

With this developer a normal exposure may be developed.

¹ A. & L. Lumière, "Bulletin de la Société Française de Photographie," 1887.

² French Patent No. 336,942.

in about three minutes. An excess of sodium bisulphite does not appreciably prolong development.

If the hydrosulphurous acid is freed by adding an acid to the hydrosulphite solution, it becomes brown, and loses considerably in developing power, the image being less vigorous and considerably more fogged than with the hydrosulphite of soda.

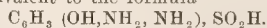
Notwithstanding its energetic action, hydrosulphite of soda is not of practical use, owing to the strong smell emanating from its solutions.

Organic Hydrosulphites.—A study of the properties of hydrosulphite of soda led us to endeavour to prepare hydrosulphites of organic bases themselves possessing developing properties, in such manner as to obtain saline compounds of which the acid of a mineral nature and the base of an organic nature are both developing substances. Hitherto among analogous bodies only those were known which were formed by the combination of two organic compounds, one acting as acid, the other as base. In this class are included metoquinone (quinomet) and hydramine.

We succeeded in obtaining various organic hydrosulphites—at least, what the study of the properties of these bodies led us to suppose to be such, their instability, however, rendering analysis uncertain.

(1) **Hydrosulphite of Diamidophenol.**—By mixing equimolecular aqueous solutions containing equal quantities of chlorhydrate of diamidophenol and hydrosulphite of soda, a crystalline precipitate, formed of white flakes, is obtained within a few seconds. If the solutions are sufficiently concentrated the mixture resolves itself within a short time into a crystalline mass. Concentrated solutions of soda sulphite, soda bisulphite, or soda hyposulphite give no such precipitate with solutions of chlorhydrate of diamidophenol; we may therefore suppose that it is hydrosulphite of diamidophenol which is formed. Further, the study of the properties of the compound, purified by washing in water, in alcohol, and then in ether, confirms this theory. In fact, this compound possesses all the properties of diamidophenol and of hydrosulphite. If, after it is precipitated in the aqueous solution, one attempts to dry the crystalline mass on a porous brick, it becomes suddenly hot, gives off a quantity of sulphurous acid, and becomes a charred mass.

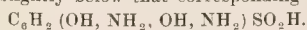
Quantitative analysis of the sulphuric acid in this substance, after oxidising the hydrosulphurous acid by bromine water, gives numbers nearly corresponding to, although slightly lower than, those equivalent to the formula



No certain conclusion, however, as to its composition can be drawn from analysis, as this substance is constantly losing sulphurous acid.

It is slightly soluble in cold water (solubility 1-600), but readily dissolves in sulphite of soda (solubility $2\frac{1}{2}$ per cent. in a 3 per cent. solution of anhydrous sulphite); it is but slightly soluble in alcohol, and insoluble in ether.

(2) **Hydrosulphite of Diamidoresorcine.**—Mixed solutions, even of low concentration, of chlorhydrate of diamidoresorcine and sodium hyposulphite produce a crystalline precipitate, which is formed under conditions similar to those existing in the case of such formation with chlorhydrate of diamidophenol, and which, when isolated and purified in the same way as the latter, contains at the same time the properties of hydrosulphurous acid and diamidoresorcine. Its solubility in water and in solutions of soda sulphite is similar to that of the product given by diamidophenol; it is as unstable as the latter, and constantly gives off sulphurous acid. Analysis of the sulphuric acid by the same means as before gave a result slightly below that corresponding to the formula



(3) **Hydrosulphite of Triamidophenol.**—Chlorhydrate of

triamidophenol (obtained by reduction of picric acid) in aqueous solution has a similar reaction on the solution of hydrosulphite of soda, and produces a crystalline precipitate, the formation of which is slower than in the case of diamidophenol and diamidoresorcine; its solubility in water is greater, and its other properties are similar to the two latter substances.

(4) **Hydrosulphite of Paraphenylene-Diamine.**—We succeeded in obtaining with chlorhydrate of paraphenylene-diamine and hydrosulphite of soda, working under the same conditions as before, a somewhat unstable crystalline compound possessing the properties of hydrosulphurous acid and paraphenylene-diamine. Its formation is less rapid, and it is more soluble in water than the compounds produced by the amidophenols.

Hydrosulphites obtained with Aromatic Monamines.—Operating in the same manner as with the amidophenols and diamines, we have been able to prepare unstable crystalline compounds with hydrosulphite of soda and chlorhydrates of aniline, of ortho and paratoluidine and of commercial xylydine, i.e., with bases not having developing properties. On the other hand, simple monamine-phenols and substituted products therefrom, such as paramidophenol and metol, gave no such compounds.

The Developing Properties of Organic Hydrosulphites.—We have tested the developing properties of the above-described new compounds. The constitution of those furnished with developing bases, such as diamidoresorcine, diamidophenol, triamidophenol, and paraphenylene-diamine, might lead us to expect these substances to possess great developing powers. We found that all these substances appear to act in practically the same manner. In simple aqueous solution they develop very slowly and give a feeble image, while they are but slightly soluble in water. If, however, they are dissolved in a solution of soda sulphite, energetic developers are obtained, but these give a deep fog, even when alkaline bromide and bisulphite are used. The compounds resulting from hydrosulphites and monamines do not appear to possess developing properties.

In short, pure hydrosulphite of soda, employed in the manner we have herein indicated, constitutes a rapid and very energetic developer, which may be used with the addition of a large quantity of sodium bisulphite without appreciably prolonging development; this, as we know, not being the case with organic developers.

On the other hand, the unstable combinations of hydrosulphurous acid with organic developing bases are of no importance as developers, and do not realise the expectations which might be raised by their constitution.

A. AND L. LUMIERE AND A. SEYEWETZ.

THE suggested formation of a photographic society for Cromer made a short time ago is beginning to take definite shape. Mr. D. Dulleys is acting hon. secretary pro tem., and it is intended to convene a meeting of all interested at an early date.

"LA FOTOGRAFIA ARTISTICA" is the title of a new international monthly review, which is published at Turin, and is the most sumptuous of all photographic monthlies that we have yet seen. The first number contains three full-page photogravures, a magnificent specimen of bromide printing, and a trichromatic print. The text is in Italian and French.

At the meeting of the Hackney Photographic Society, held on the 13th inst., two lantern slide competitions were decided as follows:—

1. For Set of Three Slides, "Scenes Typical of London Life."—Awards, First prize, W. Selfe; second prize, W. A. I. Hensler.
2. For Set of Four Slides from Negatives taken at Society Outings.—Awards: First prize, F. E. Roope; second prize, F. W. Burt.

A MORAL FOR THE NEW YEAR.

BY AN OCCASIONAL CORRESPONDENT.

In the early vagrant days of photography, when the elder ones of the present generation wore ankle-strap shoes and curls, an elderly barber in a Midland town invested in a camera and plunged into the "likeness business." We were primarily interested in him because his windows displayed penny toys—much more wonderful they were than those wonderful ones sold on Ludgate Hill. The old man was, in his way, a department store. He was a newsagent as well as toymen, and he took orders for funerals. His funeral cards (which he did not print, but was merely agent for) were in great demand. On Friday and Saturday evenings he opened a butcher's shop, and on Sundays he acted as assistant verger. How he managed to dovetail these and other businesses I do not know; the only rule I do remember was that shaving took precedence of everything; but all else, including hair-cuts, stood aside when a sitter came to the upper room which he called his gallery. There were no ethics to trouble his mind in those days; the amateur had not appeared on the scene, and so of course the associate question of "photographer and dealer" was still in the future. He went his way, untouched by any stress of modern competition, and when he departed this life he left his shop and two hundred pounds in the bank to his children.

A couple of seasons ago I went into the country for a holiday. Those who remember the summer of 1903 will not be surprised to hear that my holiday was one long downpour. I used to watch the rain trickling down the window panes, and listen to the wails of my landlord, who was the local photographer. We smoked a good many pipes together over the discussion of business, and I am sorry to say he taught me the reprehensible habit of smoking in the studio. Taking one time with another he ought to have cleared thirty shillings a week—that would have been a good "wage" in that locality, and his work was certainly not deserving of more than that wage, for it was the cheapest of uninspired commercialism. As it was, I doubt if he cleared half that amount, and he was in a grievous plight, for the wet season had washed away his hope of paying rent by lodgers. I was paying him twenty-five shillings for a week's lodging, and he could not afford to quarrel with that, and so I enjoyed to the full the pleasure of loading pompous good advice on a submissive listener. But he did not like it, and used to squirm and protest under my invective. Worst of all, his wife overheard us on one occasion, and, as lean fare was gradually turning the poor woman into a scold, she went for him after I had finished, and rubbed in pepper where I had merely supplied a little seasoning.

When I had been there four days, and wet misery had driven us to each other's company, and him to confession, I pointed out to him that, although he had spent four days without a single sitter, there was not a clean thing about the studio except the outside of the skylight—and the rain was to be thanked for that. How could he expect any self-respecting person to dress in a stuffy dusty room, and then lean against a dirty and broken rusty stile, when three miles away they could be photographed in clean surroundings, amid real palms, and by either the instantaneous or permanent process as required? If he had spent the four days in useful work, instead of idling, the studio would look presentable; and if he had always devoted a share of his dead time to keeping things in order they would never have come to the present pass, nor would trade have been so wretchedly bad. He swore amendment, and on the strength of it tried to borrow two pounds.

I left him at the end of the week. The last I saw of him he was gazing gloomily through the rain-bleared window. Probably he was thinking over his numerous good resolves.

About three weeks since I passed through this same village—hence this little story, as you will learn if you read to the finish. I called on my old landlord, and the first thing I saw

was a new show case, planted in the little garden before the house. It was home-made; and no great shakes at that, but it was a step in the right direction. The work in it showed that in whatever way my friend had improved, he had stood stock still pictorially—it was as bad as ever. I knocked at the door, and a man opened it—a man I had never seen before. He told me that poor Blanc had gone smash last autumn twelvemonth; and he had been running the business a year, and was contemplating matrimony. He was hopeful of making a good business. Eventually he wanted to clear a hundred a year for living expenses, in addition to rent. I went into the old studio and recognised old friends. A few stout nails and some paint had given a new lease of life to the rustic stile, and the upholstered chair had had the dust thrashed from it, and been treated to a new fringe. He had even attempted to make the old camera look respectable—with very indifferent success. But what struck me most was a personal attack. Before I had been with him ten minutes he told me I would vignette beautifully (sixpence a dozen extra for vignettes), and that I certainly ought to provide for posterity to the extent of a 12 by 10 enlargement, guaranteed permanent, and with as much hand work on it as was possible for four-and-sixpence. He was certainly what our Yankee friends term a "hustler," and before I quite knew where I was I found myself before the camera.

He told me that vignettes were very popular, and he showed me with much pride his snow pictures, which he hoped to display for the winter trade. He had covered an umbrella with cotton wool, and some spatter from a toothbrush did the rest. He had started a threepenny club for enlargements, and had eleven subscribers. It surely seemed as though he was on the high road to success.

His predecessor—who had never hinted at making a few shillings by photographing me—had drifted into the nearest town, and earned a precarious livelihood in an auctioneer's sale room. His wife, poor woman, swelled the scanty income by occasional day work.

And now for the moral. I think it is an obvious one; but one that has needed pointing to some people ever since the question was first asked: "Is photography played out?" And why have I told the story? Well, ostensibly to give a useful hint to some struggling men who find work slow to come. But between you and me and the Editor I have a more personal reason. I have a dozen vignette photographs which I dare not give to my friends; and I have a bromide enlargement which certainly shall not go down to posterity; and if I tell my story to THE BRITISH JOURNAL OF PHOTOGRAPHY I shall receive in return the needful to recoup me the amount I laid at the shrine of business enterprise applied to photography.

At the Birkenhead County Police Court last week, his Honour Judge Bowen Rowlands, K.C., heard two claims brought by an artist and photographer named R. T. Ford (Ford and Co.), of King Street, Egremont, for money alleged to be due for photographic work supplied. The first case taken related to a claim for three guineas for an opal enlargement against a Mrs. Billington, who lives at Penketh Road, Liscard. His Honour gave judgment for the plaintiff.—The second case was brought by Mr. Ford against a Southport lady named Mrs. Hargreaves. According to the case for the plaintiff presented by Mr. Hands, Mrs. Hargreaves called at the plaintiff's studio in November, 1901, and gave an order to Mrs. Ford for an enlarged photograph of her husband. The price of this was to be three guineas, and it was to be sent to defendant's address at Southport. About an hour and a half after Mrs. Hargreaves had left Mr. Ford received a note from her cancelling the order. Mr. Ford wrote back saying he could not allow this, as he had commenced the work. The enlargement was afterwards finished. Mrs. Hargreaves wrote refusing to pay for it. Judgment was given for the defendant, with costs.

THE GUM-SPLODGER.

"I TELL you there is only one process, and that is gum!" oracularly remarked the Gum-Splodger, as he laid down the law with determination.

"Umph! That's all very fine; for my part, I like a nice clean, sharp picture, and I like to know what I am looking at," returned the Dabbler.

"Well, you can get anything you want with gum; it is the one and only process for artistic results——"

"Oh, that's all nonsense. Gum is only of use for broad effects!" The Dabbler pulled at his pipe fiercely, snorting the while in disgust.

"Is it? I tell you you can get any effect with gum; I am tired of reiterating it. Use fine paper, and the picture is full of detail; use rough, and you lose it. I repeat, it is the only process for the artist."

"Yes; and how many gum workers are there who turn out a decent print?" the Exhibitor put in his spoke, shifting uneasily the while. He did not seem to promise conversion, to judge from his voice.

"Every worker can turn out decent prints with a little practice."

"Umph! You forget that in order to get a good print you must have a suitable—a thin negative——"

"Then reduce your old fogged things to a proper degree of thinness."

"You are very rude; let me finish! Then, again, in my opinion only about one in every twenty negatives is suitable for gum treatment," continued the Exhibitor.

"Yes, you have all the old fallacies at your finger ends, I see."

"Now, listen to me!" The Exhibitor knocked the ashes out of his pipe and sat upright. When he did that, it meant either he was going to be dreadfully severe, or say something very important. The Gum-Splodger listened and the Dabbler went on smoking in silence.

"I think this extravagant extolling of gum as the one and only process is doing a great deal of harm; its enthusiasts—as is often the way of enthusiasts—work their hobby to death and weary those who would be earnest disciples."

"You two are going to quarrel, as usual, I can see!" growled the Dabbler.

"Hold your tongue and listen, absorb the wisdom about to issue from my lips! This superiority of gum for anything and everything——" The Exhibitor frowned, paused to collect his thoughts. "Far be it from my wish to decry gum; I am well aware of its tremendous advantages, and there is nothing to touch it for certain things, but—I do think harm is done at the present time, and in this way: Men who are able to do good work in certain ways are being turned into messers in gum. What do we expect them to become? They are even told to ignore technique until they are full-blown artists (though there is reason, mind you, in the doctrine, if you look at it the right way). I have a quarrel with that first. What a world of masters we should produce on those lines in music, painting, and other things! Yet in photography, of all things—a craft that is built upon the mechanical, optical, and the chemical—oh! I have no patience!"

"And therein lies much of the trouble; you are the type of your intolerant set, and you are all much alike. No patience! That is the wisest and truest thing you have said so far."

"Well, now, about this gum. I tell you I think much harm is being done, and it is very sad."

"Go on, you always have something that is excessively illuminating to impart." The paster of sticky pigments was goaded a little; he sneered.

"You forget, you mad Gummer, it is only about one in

a hundred workers who can hope (often by a fluke) to turn out a good thing in gum. I know men, earnest and good workers, clever and artistic, who used to do the most beautiful things in carbon and platinotype; they have become bitten with this beastly gum fever, and are simply rabid. Now, instead of producing fine things in carbon and platinotype, they turn out hideous smudges in gum. It has spoilt many clever workers."

"Nonsense! You make yourself ridiculous!"

"Now they are Gum-Splodgers, and their prints—well! you never have a failure in gum; no matter how bad the thing is, it is a 'sketch'! So long as it is gum——"

The Exhibitor stopped suddenly, for the Dabbler was snoring and the Gum-Splodger was searching with uneasy eyes for a suitable weapon.

STINGER

THE PRACTICAL PERFORMANCE OF TRI-COLOUR FILTERS.

II.

Now to consider the character of the spectrum and chart reproductions in detail.

No. 1. Ives' Kromskop filters, in conjunction with a Lumière C plate. In these filters, which exhibit maxima most markedly, we have a much greater variation in the character of the record with variation of exposure than in any of the others, while the excessive overlap, more particularly between the red and green negative records, render the reproduction of the spectrum in the longer exposures very unlike the original. The region which is reproduced red extends in the second exposure into the green part of the spectrum, while in the longest exposure it only goes as far as the orange-red at wave length 6,300. The middle of the green at about wave length 5,500 is reproduced as yellow in the second exposure, while in the fourth the whole of the orange-red, yellow, and green from wave length 6,300 to wave length 5,100 is rendered as yellow. Green hardly occurs at all in any of the spectrum reproductions.

In the chart reproduction the bright reds are too orange, for the reason that they are somewhat recorded in the green negative, so that the crimson is not quite full strength, while the yellow is full strength. Yellows reproduce more or less orange because they are more recorded in the red negative than in the green, and hence have more crimson than blue-green printing upon them. Greens as such do not appear, while blues, not being sufficiently recorded in the green negative, are reproduced plus a good deal of crimson.

No. 2. Messrs. Sanger Shepherd and Co.'s filters, for the spectrum plate. These filters have abrupt absorptions, and show comparatively slight variation with exposure, the blue of about 4,900 is, excepting the highest exposure, reproduced as black, while the region rendered as yellow extends in the highest exposure too far into the green (up to 5,650). The regions reproduced as red, green, and blue-violet are fairly correctly placed, and the ultra-violet is almost entirely cut out. There is only a very small amount of red recorded, due to the plate recommended and used—viz., the Spectrum.

A general comparison of the chart with the spectra shows that in the reproduction of the chart the reds, not being well recorded, are too pale; the yellows are good; the greens have not enough blue ink on them because they are partially recorded in the red negative, and are also degraded with crimson. The dark blues show the effect of the unrecorded gap by being reproduced too violet in hue.

No. 3. Lumière (of Lyons) filters. In this case the red, green, and blue filters were used on the Lumière C, Lumière A, and Lumière extra-rapid plates respectively. With these filters, which have abrupt absorptions, there are no overlapping

regions, even with the highest exposure, so that the spectrum is reproduced by three isolated bands of red, green, and blue-violet. A drawback to such filters is the somewhat long exposures required.

The disposition of these bands is such that the light blues are about correctly recorded in the blue and green negatives, as one of the black gaps comes in the deep blue of the spectrum, and the green negative records the blue-green only. The black gap in the yellow and yellow-green causes oranges to be rendered too red, since the green in them is not recorded in the green negative. Dark greens, especially yellow-greens, are from the same cause much degraded with crimson. Yellows are too red because they are not fully recorded in the green negative; crimsons and purples are rendered well.

Nos. 4 and 5. Messrs. Farmer and Simmons' filters, published in "The Photographic Journal," June, 1901, for use with Lumière B for red filter, Lumière A for green filter, and Mawson and Swan lantern for the blue filter. There are two blue filters given, one to let the ultra-violet be recorded and the other to absorb it.

(There has been much conflict of opinion as to the advisability or otherwise of recording the ultra-violet. From a purely theoretical ground it cannot be correct to record any colour that is not seen by the eye in a three-colour reproduction, and the effect might easily be a bad one. If any colour but the blue and violet reflect much ultra-violet, they are bound to reproduce much lighter than they should—this actually is generally the case in light yellows and scarlets—and also the blues will be generally too dark, since the exposure might be sufficient before the blues had been fully recorded. However, much of the ultra-violet is said to be absorbed in practice by the lenses and glass used for filters, and in the reproduction of our test chart there is little difference between those filters passing the ultra-violet and those stopping it, when acting on dry plates, but still sufficient to be visible.)

In both sets the yellow band is shifted to much towards the green, owing to the red filter extending too far, and while it is true this will make the red filter much quicker, it is a disadvantage in the case of deep reds, as they will not be sufficiently recorded.

With the second blue filter region about 4,700 and extending in the higher exposures from 4,500 to 5,000 is rendered as blue, which is the dominant colour of that region, but the greater part of the violet is rendered as black. The most interesting point to be noticed with these two sets of filters is the manner in which the greens are degraded. In the case of the darker greens the insensitive band in the blue-green causes too much crimson to be printed on them, while with the light greens, the extension in the spectrum reproduction of the yellow into the green region of the spectrum indicates that too little blue ink is the cause of the light greens reproducing more yellow in tone than green.

No. 6. Mr. Klein's filters, for collodion emulsion. Filters recently prepared and lent for test by courtesy of Mr. William Gamble.

The red is correct, except that it records a band in the blue-green with long exposure. Green filter does not extend far enough into the blue, but is otherwise correct. Blue filter, probably a rhodamine, simply absorbs the green and with long exposure on the A sensitised collodion emulsion allows a band in the orange to record, producing there a light, almost white, band. In practice these two white bands would not, unless in exceptional cases, affect the result; still, one would have thought they might have been avoided without any sacrifice of transparency. With these filters the dark greens reproduce as brown, the light blues are too dark, and the dark blues too violet. The other colours reproduce well.

The remaining filters are liquid ones, all having been prepared

at the Bolt Court School, and used in glass cells having an internal separation of 5 mm.

No. 7. Collodion emulsion, sensitised with known colour sensitisers. Albert's emulsion, to which is added 4 cc. of pinaverdol, 1 in 500 alcoholic solution, per 100 c.c. of plain emulsion for yellow and red printer (blue and green filters), and for the blue printer (red filter) two parts of ethyl violet 1 in 500 alcoholic solution is added to 100 parts plain emulsion.

Blue filter contains:—

Quinine sulphate (solution effected with acetic acid)	... ..	0.5 per cent.
Victoria blue	... ..	0.1 "
Crystal violet	... ..	0.005 "

This cuts out all but between 4,000 to 5,000. This filter, however, is not stable and must be freshly made to give this absorption.

Green filter contains:—

Naphthol green	... ..	0.4 per cent.
Naphthol yellow	... ..	0.04 "

This records from 6,000 to 4,800.

Red filter contains:—

Fast red	... ..	0.05 per cent.
Tartrazin	... ..	0.25 "

This records from 5,800 to near the end of spectrum.

The green filter might, with advantage, extend a little farther towards the violet. The colours are fairly correctly placed, and the spreading with long exposures is entirely due to the nature of the film, since the same filters used on a dry plate do not spread to anything like the same extent. On the face of it the greens should record nearly as well here as in any filter; as a matter of fact they do not, neither in this case nor in the case of an even narrower green—Mr. Klein's. This would seem to be due to the contracted scale of gradation rendered with emulsion, since the same filter works very well with a dry plate that is much less sensitive to spectral green, the result being that, in the case of emulsion, whites and light colours are well exposed before greens and other deep colours have had sufficient exposure to be properly recorded.

No. 8. Sometimes, with direct work, the yellow printer is made on a wet plate and a plain water filter. The spectrum tests would lead one to suppose that pure blues would be reproduced rather too darkly and the ultra-violet recorded by the wet plate to give a violet tinge to all colours, other than blue and violet, that reflect it, which, as a matter of fact, does happen in the cases of raw umber, brown madder, and vermilion when unmixed with yellow.

No. 9. Bolt Court "A." The composition of filters we have used on dry plates (indirect method) is as follows:—

Blue filter, 0.5 per cent. quinine sulphate, used with a Castle plate.

Red filter, 0.25 per cent. Biebrich scarlet, used with a Lumière C plate.

Biebrich scarlet is not the best dye to use, owing to its requiring some alcohol to dissolve it, and we have since substituted:—

Fast red	... ..	0.5 per cent.
Tartrazin	... ..	0.25 "

This is made up to give exactly the same absorption. Rose Bengal could be used instead of the fast red, perhaps with a little gain in transparency and abruptness of absorption. We have such a filter made up to test its permanency.

The green filter for the red printing plate has been varied, as we shall describe.

In this set the green filter is acid green 0.05 per cent., quinine sulphate 0.5 per cent., used on a Westendorp and Wehner orthochromatic plate.

This green filter was adjusted to a typical erythrosin plate,

with its band of insensibility in the blue-green, so as to fill up this gap as far as possible, and at the same time to render perfectly the three inks used for printing. To do this the record extends more towards the blue than the yellow, in order to correct to some extent the usual want of transparency to violet in the crimson printing ink. The result of this is that in the spectrum reproduction the yellow is reproduced black, while the blue, although fairly correct in position, spreads with increasing exposure until it extends from 4,400 to 5,100. The extreme violet is also recorded slightly in the green negative, this is also reproduced as blue instead of blue-violet. In the chart the reds are well rendered with these filters, but the oranges are too red and the yellows too orange for reasons similar to those given for Lumière's filters. Dark blues are rendered too light, and dark greens, not being sufficiently recorded in the green negative, are degraded with the crimson ink. This set of filters is of interest in that, while they will reproduce the printing inks perfectly, they fail on other colours.

No. 10. Bolt Court "B." The same red and blue filters, and green filter made up as follows:—

1 per cent. solution of fast green B.S.	...	1.5 cc.
1 per cent. solution of tartrazin	...	1.5 cc.
1 per cent. quinine sulphate	...	100 cc.
Water up to	...	200 cc.

This green filter was used with the "Spectrum" plate, and was designed to give an even record throughout the yellow, green, blue, and violet of the spectrum, in order to prevent the crimson ink from printing in the blues, since, owing to the want of transparency of crimson printing inks to violet and the transparency to some extent of blue printing inks to red, the result obtained by printing these together is often not what it should be—a blue-violet colour—but a dark purple. In this series of reproductions the blue and blue-violet regions will be seen to be reproduced as blue while the reproduction has somewhat in the yellow.

With these filters the dark blues are somewhat too light with the inks used, but with the usual commercial blue inks they would be better. The two colours upon which this filter fails are yellow and green, neither being sufficiently recorded in the green negative by the time the whites are fully exposed, the blue and violet of the white recording as well as the green, the result in each case being the printing of too much crimson.

No. 11. Bolt Court "C." This is a green filter, designed to record evenly between 5,000 and 6,000. In this green and the next the records are pretty even throughout the exposures. The filter was made up of equal parts of naphthol yellow S.L. (saturated solution in water) and 0.02 per cent. naphthol green, and was used with the Spectrum plate. With this filter one would expect to see blues too dark, but the advantage of a narrow even green, correctly placed, is that average greens will be fully recorded on a normally exposed subject. Practically all colours were fairly well rendered by this except the dark blues, which were too violet, because they are not sufficiently recorded in the green negatives.

No. 12. Bolt Court "D." The green filter in this case records the yellow, green, and blue of the spectrum up to 4,600, where it commences to change to violet. The third spectrum of this reproduction is perhaps the nearest to the original in the whole series. The plate used for the green negative was again the "Spectrum," and the composition of the filter was as follows:—

Naphthol yellow	...	0.03 per cent.
Naphthol green	...	0.01 "

This filter gave the best general rendering of all those tried, the dark greens were only rendered as green with this and the preceding green filter.

A. J. NEWTON AND A. J. BULL.

PREPARING TRANSPARENCY PLATES BY THE ALBUMEN PROCESS.

ALTHOUGH the albumen process has fallen into desuetude, the following notes by Mr. A. J. Jarman, in "Wilson's Photographic Magazine," may induce some to try it:—

The quality of an enlarged negative depends in a great measure upon the quality of the transparency from which it is made. There are a number of methods that can be employed to produce a good transparency for enlarging purposes. The carbon process yields excellent transparencies when a special tissue is used, also wet collodion, and the gelatine dry plate. When the last-named plate is used a special plate is necessary, and the developer must be changed in its composition if the best results are to be obtained. A rapid gelatine dry plate produces a transparency possessing a considerable amount of grain, which, being magnified, produces in the enlarged negative a coarse and objectionable result. The consequence is that an enlarged print made from such a negative shows very clearly that it is an enlargement. The main cause of this is that the transparency from which the large negative has been made was defective. The difference in two prints of the same size, one made from a negative taken direct, and the other from an enlarged negative, is always apparent unless the transparency from which the enlarged negative has been made was faultless. The ordinary dry plate being ready at all times is generally used because it aids rapid production, but the results are only too often very indifferent in character.

It is well known to many of the older photographers that some of the finest results ever obtained in the way of enlarged negatives were produced when the transparency employed was made by the albumen or collodio-albumen process. The finest transparencies that have ever been made for the stereoscope were also produced by this process. A transparency produced by this means possesses the soft and delicate qualities of albumen combined with clear shadows and strong high-lights which characterise collodion. It possesses all the qualities necessary for the production of perfect enlarged negatives. The method of production about to be described will enable anyone to prepare the plates from which these beautiful transparencies can be made. The basis is a collodion film, which can be produced in two different ways. First by a collodion emulsion, and secondly by use of a solution of nitrate of silver in the usual dipping bath. The first plan is somewhat intricate, although it would be the best if the plates were to be made upon a large scale. The second method, being somewhat more simple and easily applied, will be described here.

In the first place, decide upon the size of the plates it is intended to use, procure a number of them, clean them well in a hot bath of common washing soda (about half a pound of soda to one gallon of water), rub them well upon both sides with a small mop made by wrapping pieces of clean, white rag upon the end of a clean strip of wood. Rinse the plates one by one in a stream of water, then place them in a clean tray containing a mixture of muriatic acid (one part to twenty of water). This will rid the plates of any trace of soda. Make up the following, which is to form the substratum for a preliminary coating previous to collodionising:—

Albumen (white of one egg)	
Distilled water	50 ounces.

Do not allow a vestige of the yolk of the egg to become mixed with the albumen. Shake this mixture vigorously three or four times during the day. Then, after allowing to stand over night, filter through two thicknesses of cheese cloth tied over the top end of a kerosene lamp chimney, so that when the chimney is inverted it can be inserted into a wide-mouth bottle or placed in one of the rings of a retort stand. This filtered mixture may now be poured into a glass graduate and the plates taken, one by one, from the acid bath, rinsed in a stream of water from a faucet, and one side of the glass coated, the excess of the albumen mixture being returned to the graduate by allowing one corner of the plate to touch the top of the graduate. The plate must now be placed in a clean rack to dry. The rule to be adopted in coating plates with a substratum is to coat the side opposite the diamond cut, because a glass-cutter who is a master of his business always chooses the rougher side for his cutting stroke. When the plates have all been coated and dried they are ready for the next operation of collodionising and sensitising. Procure a half-pound bottle of collodion ready

iodised—the longer it has been iodised the better—and make up a solution of nitrate of silver as follows:—

Nitrate of silver	2 ounces.
Distilled water	20 ounces.
Iodide of potassium	2 grains.

Shake this solution well, stand it out in the sunlight for one day, filter it into a glass dipping-bath, and it is ready now for use.

The following albumen solution must be prepared and kept ready at hand for use after collodionising. It should be allowed to stand for twenty-four hours after preparation and before being used. All albuminous preparations have to stand some time before they can be filtered and used to insure a thorough and intimate admixture of the albumen with the other ingredients, as otherwise the albumen will clog up the pores or meshes of the filtering material, and completely prevent filtration.

Albumen Solution.

Albumen solution (of fresh eggs)	8 ounces.
Strong water ammonia	2 drams.
Bromide of potassium	10 grains.
Iodide of potassium	50 grains.
Distilled water	3 ounces.

The albumen must be well beaten up in a clean basin with a silver or silver-plated fork until it is well broken up, the bromide and iodide of potassium must be dissolved in the three ounces of water, then added to the albumen, lastly the ammonia. This mixture can be filtered in the first place by tying a piece of cheese cloth over the top of a glass funnel, and rubbing the mixture through it with a small stiff bristle brush. After this operation, it may be filtered through the lamp chimney-filter already described. It is now ready for use, and must be employed in the following manner:—

Three graduates will be required, two four ounces and one eight ounces. Each four-ounce graduate must be filled with the albumen. The eight-ounce graduate is to receive the excess of solution after coating each plate. Now proceed as follows:—Take one of the dried glass plates, coat it with the iodised collodion, drain the excess into the bottle, move it to and fro in the air, to cause the excess of ether to evaporate, then place it upon the dipper and insert it directly into the nitrate of silver bath without stopping. These operations may be carried on under a deep yellow-coloured light, not necessarily under ruby light. Move the plate up and down in the silver bath a few times, then allow it to stand still for about two minutes, lift the plate up. If a 5 by 7 plate, grasp it by the sides between the middle finger and thumb of the left hand. Drain off the silver solution, wash both sides of the plate carefully in a gentle stream of water from the faucet. Allow it to drain for a few seconds upon one corner. Now apply enough albumen to just cover the plate, and drain this albumen into the eight-ounce graduate. Turn the plate around and again coat with albumen, this time taking the second graduate. Drain again into the eight-ounce measure. The plate must now be put in a very clean rack to dry. The use of the two graduates may now be easily seen. It is to prevent any possible contamination of the albumen in use.

Where a sufficient number of plates have been coated, stand them away in a dark, warm closet to dry. As soon as dry they are ready for the next operation, which consists of sensitising the plates once more. This will render the bromo-iodised albumen surface sensitive to light. To accomplish this another nitrate of silver bath will be required, made up as follows:—

Recrystallised nitrate of silver	600 grains.
Distilled water	20 ounces.
Glacial acetic acid	10 drams.

The plates must now be dipped into this bath and allowed to remain in the solution for five or six minutes, using a glass or hard-rubber dipper, the same as employed in the previous sensitising. The plate must now be washed well, and flowed over with a strong solution of gallic acid, the strength being near to saturation point. The plates must now be allowed to dry spontaneously in a warm closet. They may then be packed the same as ordinary dry plates or placed in a dry, grooved plate box ready for use. Great care must be exercised to prevent the surface of the plate from coming into contact with the fingers, as every mark will show upon the development. Transparencies may be made with these plates either by contact or in the camera. If made by contact the negative should

be first varnished. The time-exposure will be about fifteen times as long as that required for an ordinary gelatine transparency plate. It will be found to be an advantage to over-expose rather than under-expose, because the development can be kept well under control. It will also be observed that the acid nitrate bath will turn a reddish-brown colour after the plates have been sensitised, but this will not prove detrimental to the sensitising of the plates. Having made an exposure upon one of the plates, develop in the following manner. The solutions for pyrogallic development must be made up as follows:—

1.—Pyrogallic acid	192 grains.
Alcohol	2 ounces.
2.—Potassium bromide	24 grains.
Distilled water	2 ounces.
3.—Ammonium carbonate	160 grains.
Distilled water	2 ounces.

Take twelve minims of No. 1 in a clean glass graduate, one dram of No. 2, and six drams of No. 3. Rinse the plate in a running stream of cold water, drain off the excess, then with one sweep flow the developer over the plate. Rock the plate a little, return the developer to the graduate, then flow again. Keep the developer in motion upon the plate by tilting. The image will now quickly appear. It will look very different from an ordinary gelatine plate. The image will be very thin when viewed by transmitted light. It will be very full of detail, but may require strengthening. This is done by applying a small quantity of the following developer with a few drops of a thirty-grain nitrate of silver solution added.

Pyrogallic acid	12 grains.
Distilled water	6 ounces.
Citric acid	3 grains.

The first developer must be washed off and about half an ounce of the above used to flood the plate. It will be observed now that the image becomes very much strengthened. As soon as the required density is attained, wash the plate and fix it in a solution of hyposulphite of soda, four ounces to twenty of water. When fixed, wash the plate for about a half minute in a gentle stream of water. It may now be placed aside to dry. Upon examination it will be observed that the image is of a wonderfully delicate character, possessing all the beautiful gradation necessary for the making of a first-class enlarged negative.

Ferrous oxalate developer may be employed with these plates which also gives excellent results.

It may be advisable to point out here that care must be exercised in the practice of making albumen transparencies, particularly in the developing of the exposed plate, which is accomplished by holding it by the top left-hand corner after it has been wetted, then pouring only just enough developing solution upon the plate to cover its surface, and admit of its being rocked slightly, so that the developer can be made to flow forward and backward upon the plate. To undertake to develop in a tray like an ordinary gelatine dry plate is not at all necessary. The developer used for the albumen dry plate should never be allowed to come into contact with a tray that has been used for another kind of developer. The quantity of solution required for development is very small. It is also pointed out here for the benefit of those who are not acquainted with the wet-collodion process that the dipping bath and dipper referred to consist of a vertical glass vessel made in various sizes. The one best suited for the above class of work would be eight inches wide and ten inches high, so that a plate 8 by 10 could be inserted, the depth of the vessel being about one inch, all the above being interior measurements. The dipper also mentioned is made either of glass or hard rubber, the latter being the best suited for the purpose. This implement is for lowering the plate into the bath and lifting it therefrom without contamination from the fingers. The plate may be dipped into the nitrate of silver solution for sensitising, and withdrawn at will. When the sensitising is completed, the dipper should be returned to the silver solution and allowed to remain there at all times until required for use. These glass dipping baths and dippers can be purchased from any large photographic stock dealer, fitted into a suitable case with cover for their complete protection from breakage or the action of light. All these processes for a small amount of wet-plate work, as this process is called, may be carried out in

ordinary dark-room with ordinary caution, provided that no ammonia is permitted, as this would be liable to injure the plate of silver solution. All that will be necessary will be to set this class of apparatus in a separate part of the dark-room upon sheets of thick blotting-paper, so that any solution of nitrate of silver that may be spilled will be instantly absorbed. The little trouble necessary to the production of the albumen transparency will be amply rewarded by the production of a transparency that has never been equalled by any other known process. It must be understood that only part of the wet collodion process is necessary to carry out the work required has been described. There being no protosulphate of iron employed, nor liquid developer made up with the above iron salt, nor other chemicals are used in the wet-collodion process, an ordinary dark-room may be employed to prepare these special plates without fear of injury to the gelatine dry-plate process that may be carried on in the same room. Development of prints made upon paper sensitized by artificial light may also be carried on under these conditions. The slight odour coming from the ether and alcohol of the collodion will not be in the least detrimental.

Exhibitions.

SOUTHAMPTON EXHIBITION.

By A SPECIAL CORRESPONDENT

Year to year the progress made by the Southampton Camera Club is exemplified by the improvement of the members' contributions to the annual exhibition, and this year, both in quality and quantity, the advancement of the members' work is very striking. Indeed, the late Mr. J. C. S. Mummery and H. Snowden Ward (Mr. F. H. Ward was unable, through illness, to be present), took the unusual step of appending the following remark to the award list: "The Club is to be congratulated on a stronger show in the members' classes and a general improvement in the same." As in former years, the same system of free transit between the three "Southern" exhibitions of Hove, Southsea, and Southampton, the offering of a special award to the exhibitor whose collection of exhibits is deemed the best by the judges of all three exhibitions (which are different at each exhibition), and comprise nine of the most well known judges of the day, and the preparation of large and high-class quality plaques, with separate design for each club, has resulted in securing the support of the best exhibitors, and throughout the whole of the exhibits arranged in the admirably lit art gallery there are but a very bare number of even indifferent works, and none that could possibly be called bad.

The catalogue, which is well printed, on good paper, and includes no less than four bromide photographs, and no advertisements not directly connected with photography, shows that there are 722 exhibits, comprising 196 members' productions and the remaining 526 in the open classes. This does not include the postcard section, which comprises over a hundred very beautiful cards of all styles, and to the visitors a never-ending source of pleasant interest.

Dealing with the members' classes first and the names in alphabetical order, the first frames we notice are those of F. E. Allen, A. C. Berry, and R. C. Batt, the latter of whom received an hon. mention for his Swiss scene, "Brienzen." L. Besley takes the first award in the portraiture class, with his picture "The Brushmaker," and deservedly receives an hon. mention for his landscape "The Fisher," which is an early morning river scene of good composition and full of atmosphere. R. T. Christopher has several exhibits, the most noteworthy of which is an old doorway, titled "The Cloister Door," in which the light and shade has been carefully treated. C. C. Cook is a prolific exhibitor, and his series of exhibits are well worthy of careful notice. He receives an hon. mention for "The Gathering Storm," in which the tone values of the rocks and sea and sky are carefully preserved, resulting in a very pleasing marine study. His other landscape, "A Lonely Shore," is treated in a much lighter manner. His "R.P.S." frame, "A Street of the Past," also receives an hon. mention. He takes the club's plaque, and the special medal given by the Editor of the "Photographic News" for the best slides in the members' class,

with a series of four Normandy street scenes. C. Daw is to be congratulated upon securing his first award, with "An Entrance to the Nave, Winchester"; his portrait study, "The Duet," will also repay inspection. H. Essex has a good, but somewhat hackneyed, subject, "An Old Street, York," and he receives a medal for his landscape, "A Moorland Glen." G. Fidge has five exhibits, of which the best is "Declining Day." A. E. Henley is recognised as the best photographer of flowers in the club. As in last year, he takes the first award in the still-life class, with No. 129, "Anemones," a graceful arrangement, together with good lighting and careful handling, takes this plaque. His other two frames in this class, "Old White Roses" and "Luscious Grapes," also call for special mention. His large number of architectural studies are somewhat uneven in their results, but two or three of them must have run the winners very close. The brothers C. D. and W. R. Kay are accountable, and deservedly so, for a large number of the awards. C. D. Kay's No. 33, "A Forest Glade," not only receives the first award in the landscape class, but also takes a special award for the best picture in the members' classes, a silver medal, presented by the Editor of the "Amateur Photographer." In addition to these awards he takes the champion gold plaque for the best average club exhibits. His street scene in the architectural class are especially good, and if they err slightly on the score of heaviness this fault is fully compensated by the variety of treatment and different stand-points. W. R. Kay also has a large number of exhibits, and, without exception, each one is worthy of close examination. His landscape, No. 43, "The Close of Day," is certainly one of the gems of the exhibition. A long foreground effect, beautifully subdued, with a middle distance of rushes and an extreme distance of mountains, surmounted by soft and appropriate clouds, has produced a picture full of individuality, and one which may be studied with advantage by those who maintain that photography is nothing but a mechanical process. Others of his landscapes, "On the Hillside," "River Clouds," and "Golden Autumn," three totally different subjects, call forth nothing but the strongest admiration. In the portraiture class he receives a bronze medal for "Improvisators," but we much prefer No. 55, "Portrait of an Artist," the lines of which are especially pleasing and the composition gains from its very simplicity. Mr. Kay takes the first award in the architecture class, No. 99, entitled "A Glimpse of the Nave." This is a composition again essentially simple, and a strong lighting effect lifts it out of the commonplace. No. 81, "A Gray and Grief Worn Aspect of Old Days," deserves more than a passing glance, and No. 121, "Syringa," is the better of his two flower studies. A further plaque, and also an hon. mention, falls to Mr. Kay for lantern slides, of which he enters three sets, all of which are of extreme beauty and technically perfect. Unquestionably the best of Mr. G. F. E. Kenny's exhibits is his medalled picture, "The Ambulatory, St. Cross," which is full of vigour and sunshine without being aggressively strong. Mr. S. G. Kimber, the hon. secretary, has entered four of his architectural studies, all of which are well known, and although each of them has been medalled in other exhibitions no award has fallen to this worker.

Messrs. S. E. and W. A. Max Mills show three exhibits between them, all of good pictorial quality. Mr. H. W. Miles is to be congratulated upon receiving a silver medal for his picture "On the Thames," but the one we most admire of his ten exhibits is No. 132, "A Gray Morning, Windermere," a quiet, restful lake scene, in which the relative planes are carefully preserved and the title well borne out. Miss Powell's "Study of Hazel Nuts" could not be passed over, and Mr. W. H. Trigg's two exhibits deserved better hanging than they received. Mr. G. Vialls has a large and interesting number of frames. He receives a medal for his flower study, "Rowans," and an hon. mention for No. 54, "Question," which is a somewhat original study of an old man's head. His landscapes are well thought out and skilfully produced, and, in addition to No. 54, he has a first-class figure study in No. 65, "The Evening Sun," in which an old man is seated outside his cottage door with the evening sun striking on the paper he is reading. T. M. Weaver has three architectural subjects, one of which, "The Crypt, Winchester," receives a mention. No. 100, "To the Altar, Christchurch," is also a very capable rendering of an unusually difficult subject.

In the open classes J. A. Angus has a good thing in 221, "Harvest Time," as has J. B. Anderson in No. 556, "The Cloister Door, Melrose." C. H. Austin has four exhibits, including his picture medalled at the "R.P.S." A. H. Avery's "Day Dreams" is a great favourite with visitors, and he receives a plaque for his unrivalled little seascape,

"Homeward by the Evening Light." Herbert Bairstow's "Street in Rouen" is perhaps the most effectively mounted print in the exhibition, and he receives a mention for 532, "A Vegetable Shop." Miss E. M. Barrows, 490, "The Three Graces," is well known. Mrs. G. A. Barton shows seven of her inimitable figure studies, which must have placed her in a most favourable position, when the judgment for the "Special Award" was considered. She receives a plaque for No. 525, "A Country Gentleman," and her whole series is expressive of that individual treatment which we always look for from her and obtain.

A. Bedding's architectural works are not up to his usual high standard, only one, No. 595, "The Undercroft, Wells," being worthy of special mention. Mr. Graystone Bird shows several of his outdoor figure groups, and we congratulate him upon striking out a new style in No. 403, "Childhood's Joys," which unquestionably is the most attractive study of children in the exhibition. Arthur Black's "A Wayside Cottage," is one of the best things in its class, the strong sunlight on the figure and the cottage having been skilfully controlled, and the whole production is picturesque to a degree. J. Howard Burgess, 610, "Fleecy Flocks the Hills Adorn," is the best of his series; and Robert Burnie and G. A. Booth send some capital slides of still life and natural history studies. G. H. Capper shows two fine landscapes, 263, "Light at Eventide," a very pleasing wood scene, and 336, "Toilers of the Harvest," which is a well rendered and breezy cornfield picture. W. Clayden's, "A Gleam of Light," and W. A. Clark's three architectural studies are well known. Of the latter we admire "A Flood of Light" immensely, but think that about two inches of the right hand side of the picture might be trimmed off with advantage. Mr. Clark receives an hon. mention for his lantern slides. A. E. Coleman's exhibits are on original lines, his No. 398, "A Game of Nap," being a pattern for all makers of figure studies. P. W. Crane receives an hon. mention for No. 554, "To the Altar, Wirksworth," but we think this far behind his crypt study, which took an award here last year. One of the finest portraits ever exhibited is W. Crooke's "Sir Henry Irving," which is awarded a plaque. We would suggest that this print might be framed close up rather than with the broad ornamental gilt slip, which greatly detracts from the beauty of this fine masterpiece. A. de Silva's (548) "Torcello Cathedral" is a quaint piece of architecture. It would be impossible to praise too extravagantly Rev. H. W. Dick's set of slides, for which he receives a plaque. Mrs. Dumas, Dan Dunlop, and Miss M. C. Eames are responsible for some interesting exhibits, and C. E. Etches shows two of his soft, suggestive landscapes, which, year by year, we are accustomed to see and admire. G. H. Faux has four frames, of which No. 326, "Off Lowestoft," is infinitely superior to the others. D. M. Filshill's two exhibits compare favourably with that worker's usual productions, being far too heavy in tone.

R. Forbes, No. 512, "Waiting," is one of the most charming figure studies conceivable, and receives hon. mention. H. A. Game has entered only two frames, but what he lacks in quantity is more than compensated for in quality. His 288, "The Far Off Sun Darts Distant Beams," which receives an hon. mention, is a charming snow picture, the skilful massing of light and shade and the beautiful gradation being beyond all praise; and his other frame, No. 412, "Friends," is in nowise behind his snow picture in composition or technique. W. H. Goy sends two remarkably fine sets of slides, one of still life and the other of landscapes, which earns him an hon. mention. We must give expression to a feeling of disappointment as we examine Dr. Grindrod's numerous exhibits, as nothing in this present exhibition will bear comparison with the portrait of Sir Henry Arbuthnot Acworth, medalled here last year, and the frame selected for hon. mention, No. 492, "A Village Scholar," was, if we mistake not, exhibited here in 1902. C. J. Hankinson shows several delicately treated open air figure studies. H. P. C. Harpur has five entries, which, with the exception of his architectural study, are amongst the best in the exhibition. In his set of slides he has one, "The Bridge, Norwich," which for its rich quality has no superior. This is W. A. I. Hensler's first year as an exhibitor at Southampton, and his work, both frames and slides, is of sterling worth; his picture No. 251, "On the Hillside," receiving an hon. mention, and his 327, "Reflections," is in no way behind it in pictorial merit. His slides are patterns of what slides should be, although we would suggest that a warmer tone might be more appropriate to his landscape set. J. Hepburn, like Mr. Hensler, makes his debut at a Southampton exhibition, and we hope that he

will become an annual exhibitor. He shows seven figure studies, which for distinctiveness and simplicity of treatment have no superiors, a series, in the exhibition. For No. 500, "When Once Life's Drawn Near the Gloaming," he receives a plaque; and "Granny Tired Bairn," "The Village Doctor," and "Sunday Morning," are examples which gain from the fact that, although they represent subjects of everyday occurrence, they have been treated with such masterly hand as to entirely lift them out of the commonplace. A. Hill has a print in No. 334, which is of a very fuzzy nature. It is entitled "The Clouds Lay Cradled Near the Setting Sun." There is, however, such a feeling of vastness and strength that the somewhat obscure manner of representation is overlooked, and the beauties of the picture grow upon one with more intimate acquaintance. His other frame, "Mo Nighean," is a gum print of a somewhat peculiar portrait study, being possibly the nearest approach we have seen to the work of Demachy.

Harold Hood has a good thing in No. 246, "Cliff Dwellings," as does E. Hoppé, in the "Burden of Age" (454). Mr. C. B. Howdill's "The Sculptor" is too well known to require more than a passing word of praise, and Dr. Ivatt's "Old Archway, Norwich," deservedly receives an hon. mention. Miss Brenda Johnson's portraits are characteristically forceful, and No. 399, "Study of a Head," is a particularly attractive production. Fred Judge has a good quality landscape in 262, "November," and Ellis Kelsey takes a plaque with his lantern slide of night scenes. D. W. Kyle's flower studies show remarkably good technique. H. C. Leat has several exhibits, and we admire his rain scenes very much. Viscount Maitland sends one landscape and two figure studies, of which No. 445, "Study of a Head," reminds us very much of Romney's portraits. Arthur Marshall has a large collection of exhibits, and the judges of the Hove, Southsea, and Southampton exhibitions consider his the best collective exhibit, and have therefore given to him the special award. He also receives a plaque for a wonderfully attractive picture, "The Student," and a special hon. mention for the well-known picture, "Shadows." He also receives an hon. mention for No. 376, "Hauling Sail," and amongst his other frames is the "R.P.S." medalled picture, "Devotion." B. J. Mitchell has three exhibits, his slides showing good quality.

Bernard Moore has a good thing in 360, "The Ford," as has Paterson (468) "The Search." W. Northwood shows a good landscape in No. 346, "The Crest of the Hill." G. W. Perkins has a good study of rushing water in No. 335, "The Lotefos"; his other landscape "Evening on the Mawddach," is of a much quieter nature and very pleasingly mounted. O. G. Pike has several of his natural history studies, including 643, "A Story of Two Worlds," depicting in four prints the hatching of a chicken, from the cracking of the shell to the perkiness of a fully dried chick. Messrs. A. and F. Read have two exhibits, for one of which they receive a plaque. This is No. 322, "Shadows," and depicts a partially overgrown churchyard, among the tombstones of which the sun casts soft and illusive shadows. Bale Rider has a good landscape in No. 305, "November," and in this architectural class he deservedly takes the plaque with his charming picture, "In Gloucestershire." Dr. G. H. Rodman shows a large number of very first-class radiographic slides of molluscal shells. W. H. Rogers has two landscapes, and the poorness of No. 358, "Woodland Pool," is amply compensated for by the soft and picturesque "Waning of Day," No. 343. Mr. F. R. D. Scroggs has four exhibits, all of even quality, although his picture (280), "Threshing Thro' It," is, of course, the best known.

As far as we are aware, Mr. E. Seymour is not an old exhibitor by any means, but there is no denying that his this year's still life productions have stamped him as one of the best flower photographers we have. Indeed, there has been no more consistent medal winner in this year's exhibitions than Mr. Seymour. He receives an hon. mention for his "Chrysanthemums" and his "Currants," and in a greater degree his "Nettles" are triumphs of still life photography and the admiration of all the visitors to the exhibition. C. J. Sheath has a good sunny landscape in No. 353, "In the Calm Dew and Freshness of the Morn." John Spark has three exhibits. His picture, "Impensive Mood," No. 381, is a wonderfully clever production, and must have run the winners in the portraiture class very close. J. Stabb's slides of "Lightning," and Dr. W. W. Stanthorpe's and L. J. Steele's frames and postcards are well worthy of studied attention, and Miss Hilda Stevenson's portraits are among the most attractive in the class.

H. Gordon Stollard has a particularly good thing in No. 295, "A Sussex Lane," and P. G. Terras' (417) "A Spanish Maid" is one of our greatest favourites. Mr. F. G. Tryhorn's slides are of splendid quality, and he receives an hon. mention for them. B. Ward Thompson shows two large frames, being photographs of a collection of old lustre ware, and he must have applied very considerable skill to have obtained such perfect technical results as he has.

T. E. Waltham, E. B. Wain, Rev. E. G. Watts, and W. H. White each show a number of exhibits, which will more than repay a passing inspection. J. M. Whitehead sends four exhibits. As would naturally be expected, they are all of the highest possible standard. Indeed, Mr. Whitehead gains the distinction of being the only exhibitor in the open classes who has been awarded two plaques. The first of these is given him for No. 354, his well known picture "Desolation," and the second is won in the flower class for his equally well known decorative study, "La Tulipe." Mr. B. C. Wickison's "The Vesper Hour," will always be received with intense admiration. It occupies the centre of one of the walls of the gallery, and has received an hon. mention. H. Wild's and H. Wormleighton's slides are of the best, and if T. Wright's exhibits are not quite up to his usual standard they are, nevertheless, of very excellent quality. A. B. Fellowes-Prynn receives a plaque for a smart little dog study of excellent technique, entitled "On the Qui Vive."

The postcard class is composed of a large quantity of very beautiful work. A. W. Cooper receives the plaque for his "Woodland Mist," which is one of a very fine series submitted by this worker; and Rev. E. T. Clarke takes the second award for "The Lavatorium, Gloucester."

Space prevents the mention of many workers whose exhibits are a continual source of enjoyment to the visitors at the exhibition, and whose work is extremely good and interesting. The complete list of awards is appended.

LIST OF AWARDS. Members' Classes.

Class F.—Landscape, River Scenery, and Marine.—Plaque: C. D. Kay, W. R. Kay. Mention: C. C. Cook.

Class G.—Portraiture and Figure Studies.—Plaque: L. Besly. Medal: W. R. Kay. Mention: G. Vials.

Class H.—Architecture.—Plaque: W. R. Kay. Medal: C. Daw. Mention: C. C. Cook, T. M. Weaver.

Class J.—Flowers, Animal and Natural History Studies.—Plaque: A. E. Henley. Medal: G. Vials.

Class L.—Members who have never won an Exhibition Award.—Silver medal: H. W. Miles. Bronze medal: G. F. E. Kenny, H. Essex. Mention: L. Besly, R. C. Batt.

Class K.—Lantern Slides (any subject).—Plaque.—C. C. Cook, W. R. Kay. Mention: W. R. Kay, H. Essex. Gold plaque for best average exhibits: C. D. Kay. Silver medal presented by the Editor of the "Amateur Photographer," for the best picture in the members' classes: C. D. Kay. Silver medal presented by the Editor of the "Photographic News," for the best set of slides in the members' classes: C. C. Cook.

Open Classes.

Class A.—Landscape, River Scenery, and Marine.—Plaque: A. and F. Read, J. M. Whitehead, A. H. Avery. Special mention: Arthur Marshall. Mention: B. C. Wickison, W. A. I. Hensler, H. A. Game, Arthur Marshall.

Class B.—Portraiture and Figure Studies.—Plaque: W. Crooke, John Hepburn, Arthur Marshall, Mrs. G. A. Barton. Mention: Dr. C. F. Grindrod, R. Forbes, Herbert Baisrow.

Class C.—Architecture.—Plaque: P. Bale Rider. Mention: P. W. Crane, Arthur Marshall, Dr. E. Ivatts.

Class D.—Flowers, Animals, and Natural History Studies.—Plaque: J. M. Whitehead, A. B. Fellowes Prynn. Mention: C. E. Walsley, E. Seymour.

Lantern Slides.

Class E.—Any Subject.—Plaque: Rev. H. W. Dick, Ellis Kelsey. Mention: W. H. Goy, R. Burnie, W. Farren, F. G. Tryhorn, W. A. Clark.

Postcards.

Plaque: A. W. Cooper. Bronze medal: Rev. E. T. Clark. Special award for best collection at Hove, Southsea, and Southampton exhibitions: Arthur Marshall.

SEFTON PARK PHOTOGRAPHIC SOCIETY.

THE sixth annual exhibition of this society was opened last week. The society has now eighty-one members, and the collection on view this year includes nearly 200 exhibits, divided, according to subjects into classes, eight for members only and three open. The awards, adjudged by Dr. J. W. Ellis, Dr. Thurston Holland, and Mr. C. F. Inston, are as follows:—Class A: Three excursion prints, H. E. Cubley (silver medal); three ditto, F. B. Bolshaw (silver medal); "Lym Lake," "An Old Gate," and "On the Shore," by Thomas Robinson (bronze medal). Class B: Woodland study by W. Riding (silver medal); "An Idyll," by J. Seddon (bronze medal). Class C: "Maidenhair" (portrait), by Herbert Broad (bronze medal). Class D: "A Norman Font," by H. E. Cubley (silver medal); "In Birkenhead Priory," by A. W. Parr (bronze medal). Class E: Set of lantern slides, by H. E. Cubley (silver medal). Class F: Set of slides for beginners, by A. W. Parr (bronze medal). Class G: For enlargements not retouched, "When Earth and Sky and Sea do meet in one harmonious glory," by W. H. Tomkinson (silver medal); "A Misty Morning," by C. N. Ellis (bronze medal). Class H: Contact prints, "Sandhills," by F. Massey (bronze medal). Class J (open for juniors): "Cousins," by F. B. Simpson (bronze medal). Class K (open pictorial): "Apples," by E. Seymour (silver-gilt medal); "Chemical Industry," by J. W. Towers (silver medal); "Winter," by J. E. Latham (silver medal); "Winchester Cathedral," by S. G. Kimber (bronze medal). Class L (open lantern slides): H. Wormleighton (silver medal); F. G. Tryhorn (bronze medal). Class M (open champion class): "A Gleam of Light," by W. Clayden (silver-gilt medal); "A Shaft of Light," by S. G. Kimber (silver medal). The exhibition will remain open during the evenings of the present week.

FORTHCOMING EXHIBITIONS.

December 28-31.—Wishaw Photographic Association. Hon. Secretary, Robert Telfer, 138, Glasgow Road, Wishaw.

January 12-14, 1905.—Boston Camera Club. Hon. Secretary, H. M. Hames, 65, West Street, Boston.

January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.

January 20-21, 1905.—South Essex Camera Club. Hon. Secretary, T. Mitchell, 180, Browning Road, Manor Road, E.

January 23-28, 1905.—Lancaster Photographic Society. Hon. Sec., R. T. Simpson, 21, Cheapside, Lancaster.

January 28-February 12, 1905.—Photographic Society of Marseilles. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.

February 6-11, 1905.—Blairgowrie and District Photographic Association. Hon. Secretary, Wm. D. M. Falconer, James Street Cottage, Blairgowrie.

February 16-18, 1905.—Norwich and District Photographic Society. Hon. Secretary, E. Peake, Rydal House, Earlham Road, Norwich.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 25, Bank Street, Hillhead, Glasgow.

February 25-March 4, 1905.—Birmingham Photographic Society. Hon. Secretary, Lewis Lloyd, Norwich Union Chambers, Congress Street, Birmingham.

March 4-11, 1905.—South London Photographic Society. Hon. Secretary, H. Creighton Beckett, 44, Edith Road, Peckham, S.E.

March 7-14, 1905.—Brentford Photographic Society. Hon. Secretary, F. H. Read, Ferndale, Clifden Road, Brentford.

March 20-25, 1905.—The Cripplegate Photographic Society. Hon. Secretary, John B. Parnham.

April, 1905.—International Exhibition, Genoa. Sec. Gen., Piazza Fontane Marose 18, Genoa.

April 3-15, 1905.—Photographic Society of Ireland. Hon. Sec., R. Benson, 35, Molesworth Street, Dublin.

June, 1905.—Northern Photographic Exhibition. Secretary, F. G. Issot, 62, Compton Road, Harehills, Leeds.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Dec.	Name of Society.	Subject.
26 to 31...	Boro' Poly. Photo. Society	Tenth Annual Exhibition.
27.....	Nelson Photographic Society ..	Open Night.
27.....	Hackney Photo. Society	Photography Slides.
28.....	G.E.R. Mechanics' Institution	Silver Printing and Toning.
28.....	North Middlesex Photo. Soc.	Technical Meeting.
29.....	Watford Camera Club	(Scenes on the Pennsylvania Railroad.
29.....	Richmond Camera Club	Mr. W. H. Rau.
29.....	Leigh Photographic Society ..	Paper by Mr. G. Ardaser.
		The Amateur Prize Slides (1904). The Secretary.

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.

On the 15th inst. Mr. Human read a paper on "Colour Sensitised Plates," illustrated with lantern slides, made upon the majority of colour sensitive plates on the market, a Reeves' water colour chart being used as the test, and supplemented with a number of fine flower studies.

Mr. Rapson said that the pot metal screens used by Mr. Human would contain a certain amount of black, which to some extent would influence the colour rendering, neither depth of colour, or tint, or the exposure ratio being any guide as to the true amount of colour correction a screen would give, a commercial screen he had, with a ratio of six, giving less colour correction than one dyed with ammonia picrate with a ratio of two only. Mr. Dyer pointed out that a ratio of, say, five, with one batch of plates, would require seven, or perhaps two, with another batch of plates, even by the same maker, and also was of opinion that the idea so often put forward that colour sensitive plates without a screen were better than an ordinary plate in taking a sunset, was not according to fact. The chairman said that better results upon colour sensitive plates were obtained in a bright light than in a dull one when using screens.

The hon. secretary announced that on December 29 Mr. Herbert Starnes would read a paper, entitled "A New Printing Process."

CROYDON CAMERA CLUB.

FOLLOWING his exposition on "Intensification," a note of which appeared last week, Mr. T. M. Sellors explained and illustrated a means of surfacing bromide prints, originated by himself, and apparently new, so far as the immediate purpose is concerned, although a somewhat similar method has long been employed for the so-called "fixing" of crayon and other handwork on the surface. The method in question, at first sight, may seem to be an heroic one and fraught with danger to the picture, but in Mr. Sellors' hands this was not so. It consists in partially melting the gelatine in the emulsion by means of steam, projected on to the image from a pipe in connection with a closed vessel containing water vigorously on the boil. An ordinary kettle, if its spout extends upwards, will suffice, but is inconvenient in use. Mr. Sellors showed a rough and ready appliance, constructed out of a tobacco tin, which served its purpose admirably, a tube about eight inches long, rising straight, with its free end bent over at an angle of about 45 degrees, being soldered to the lid. The jet of steam is directed on to the print, and the latter kept constantly on the move; the gelatine in the emulsion is thus brought almost to the melting point and acquires a semi-gloss, which is in a great measure retained. Heavy shadows—which so often show an inclination to be sunken—are thrown up and the whole image brightened and enriched to a remarkable extent. On the other hand, the dead matt surface—should it exist in the first place—naturally disappears, but what is lost in this direction may be more than compensated for in the other. With the very rough papers, owing to the small quantity of gelatine they contain, the effect is not so pronounced. The method in question is also applicable to carbon prints, provided they have not been alumed. It would appear desirable to temporarily attach the print to be operated upon to a board or other support somewhat larger in size. Mr. Sellors omitted to do this, and having inadvertently introduced his thumb between the orifice of the pipe and the print skipped like a little lamb for a second or two, much to the edification of all present.

During the evening the president (Mr. S. H. Wratten) informed the members that Messrs. C. E. Kenneth Mees and S. E. Sheppard had been unanimously elected honorary life members of the club as a token of appreciation of their photographic research, which was received with considerable applause.

New Materials.

The "Vivid" Flash Powder. O. Sichel and Co., 52, Bunhill Row, London, E.C.

This new powder gives an extremely brilliant flash and ignites quickly. It is sold in a wooden box, the lid of which serves to measure out the required quantity. To ignite the powder a small piece of paper is crumpled up and placed on the heap and the edge lighted. As soon as the flame reaches the powder the flash goes off. The powder should be placed on a piece of tin or an iron shovel. We prefer the latter as it can be held at a convenient distance without danger to the operator. The powder must not be used in confined magazine flash lamps.

"Titelitt." O. Sichel and Co., 52, Bunhill Row, London, E.C.

Here we have a new method of titling negatives. The outfit consists of a sheet of glass on which are about a thousand small opaque letters, with which is also a bottle of cement. To title a negative, the letters required are removed from the glass plate and cemented to the film side of the negative. The process is simplicity itself, and the letters absolutely permanent.

Patent News.

The following applications for Patents were made between December 5 and December 10, 1904:—

Colour Photography.—No. 26,573. "Colour photography." Edward Russell Clarke.

Development Apparatus.—No. 26,660. "An apparatus for facilitating the development of photographs in daylight." Frederick Harriott Goodwin.

Dark-Room Lamps.—No. 26,864. "Improvements in and relating to photographic dark-room lamps." Ernest Adolf Jahn.

New Books.

"The Optical Dictionary." Edited by Charles Hyatt-Woolf, and published by the Gutenberg Press, Limited, Fleet Street, London, E.C. Price 4s.

A compilation giving the meanings of the chief terms in visual and photographic optics. Each item necessarily receives the briefest notice, but perhaps one feature of the book which will particularly recommend it to students of optics is the inclusion of synonyms for technical terms used by writers on optics in French and German.

"Pour les Débutants." By MM. C. Puyo and E. Wallon. Published from the office of "La Revue de Photographie," 44, Rue des Mathurins, Paris.

Photography is not mentioned in the title, but the names of the authors and the place of publication sufficiently indicate to those who casually take up this little work that it is a text-book for the photographic beginner. It is the second of the series of manuals which is appearing under the supervision of the talented editorial committee of our handsome contemporary, "La Revue de Photographie." In the first Major Puyo described his own practice of the gum process, though why the committee did not persuade M. Demachy to take people into his confidence is a legitimate matter for inquiry. Now Major Puyo associates himself with M. Wallon, and the result is a workmanlike volume for the beginner, neatly produced, and with a few well-chosen illustrations.

Commercial & Legal Intelligence

SUMMONED at Marlborough Police Court on December 16 for exchanging for sale improper picture cards and stereoscopic slides, Alfred Rose and Alfred Coop, of 65 and 135, Regent Street, W., were each fined £20, with five guineas costs.—Solomon Goldstein, of 335, Weston Road, for a similar offence, was fined £10, with three guineas costs.

J. EDMUNDS AND CO., LIMITED.—The above-named company has been registered, with a capital of £1,000, in £1 shares. Object: to acquire the business of chemists, druggists, dealers in photographic apparatus, magic lantern manufacturers, opticians, etc. No general public issue. Registered without articles of association. Registered office, 33, High Street, Kingsland, N.E.

BREACH OF CONTRACT.—*Birmingham Photographic Company v. Birmingham, Shaw, and Co.*—This case came on for hearing at the Birmingham Assizes on December 16, and was an action in which the plaintiffs claimed of the defendants, who are shipping agents in Liverpool and London, damages for breach of contract. Mr. Wills and Mr. Sandlands (instructed by Messrs. Newey and Sons) appeared for the plaintiffs, and Mr. Hugo Young, K.C., with Mr. J. G. Hurst instructed by Mr. E. F. Freeland for the defendants. Mr. Wills announced, on the case being called on, that the cause had been withdrawn on the terms that defendants should pay the plaintiffs £100 and costs in settlement. Judgment for £100 and costs was entered.

A PHOTOGRAPHER Sent to Goal.—At the Ilkeston Petty Sessions on Thursday last, George Edward Shardlow, photographer, 10, Hadfield Road, Ilkeston, was charged on remand with being the bailee of a piano, value £19 8s., the property of Messrs. G. A. Gray and Co., London, and feloniously and fraudulently converting the same to his own use, at Ilkeston, on April 15. Mr. J. Ormond, solicitor, Ilkeston, appeared to prosecute, and said Mr. T. H. Richardson, auctioneer, of Ilkeston, was bringing a case before the court in the interests of the public and of auctioneers, who from time to time were defrauded. Defendant, it was alleged, obtained a piano on the hire system, and then took it to Mr. Richardson to be sold by auction. On going to receive the purchase money, defendant declared and signed a document that the instrument was his sole property, and he received a cheque for £11 3s. 6d. from the auctioneer, £2 6s. 6d. having been deducted for commission, goods sold, etc. Mr. Richardson had paid £11 11s. to Messrs. Gray as a compromise to their original demands. Defendant pleaded guilty, and Mr. H. Thorpe, solicitor, asked for leniency. The magistrates' clerk then altered the charge to obtaining a banker's cheque from Mr. Richardson with intent to cheat and defraud. Shardlow was sent to prison for three months, with hard labour.

LUDWIG LANDMANN, 7, Tivoli Road, Crouch End, v. Charles Joseph Parr, managing director of Parr and Co., Limited, 130, Westminster Bridge Road, and Gordon James Jack, manufacturer, 10, Queen's Square, Southampton Row, W.C. Claim for £24 in respect of wrongful dismissal. Mr. Beaumont Maurice appeared for defendants. Mr. H. Dobb, counsel for plaintiff, said his client was a photographer, sensitiser, and photographic chemist. He was in possession of a secret for preparing certain sensitive paper used for photographic purposes, and also by architects. Defendants were anxious to get hold of this secret, and they engaged him, an agreement for six months being entered into on June 7, 1904. As time went on defendants seemed to have some suspicion as to whether plaintiff was giving them the true secret of his process, and they employed a lad to watch him, and he (counsel) would show that they were all the time negotiating behind his back with another man to come and take his place. One Monday in September plaintiff stayed away, as, being a Jew, he was desirous of attending an important feast, and on returning to work on the Tuesday he was at once dismissed. Mr. Beaumont Maurice raised an objection that the action was wrongly founded, inasmuch as in August the business was taken over by a limited company. The dismissal took place in September, and therefore the company ought to have been sued. Plaintiff said it was only on the day of his dismissal that he heard of the limited company claiming the right to discharge employees at a

moment's notice. Charles Joseph Parr, one of the defendants, said the company was formed on August 24. Two days later he informed plaintiff of the fact, and, further, that if he did not keep better time it would mean instant dismissal. At the end of a legal argument his Honour said he was sorry to decide that the action was wrongly founded, but he felt that the evidence of Mr. Parr was certainly the strongest, and ought to be accepted. He must enter a nonsuit, with costs to defendants.

A CASE Adjourned.—A case was mentioned at the Barnsley Borough Court on Thursday, in which Dennis R. Thompson, photographer, of High Street, Sheffield, charged Edward Dawes, photographer's manager, of Doncaster Road, Barnsley, with embezzling the sum of £10 on November 26. Mr. Carrington, the magistrate's clerk, said he had received a letter from the complainant asking that the case might be withdrawn, but he pointed out that the charge was one of felony, and felony could not be summarily compromised in that manner. He advised the Bench to adjourn the case, and two others in which the same complainant was interested, for a week, and in the meantime he would communicate with the complainant with regard to his attendance at court. It seemed to him (Mr. Carrington) that he was seeking to use the court as a debt-collecting agency. Mr. Rideal, who appeared for Dawes, said there was no doubt that had the case gone in the ordinary way, his defence would have been that it was a matter of account. His client was a collector with complainant, and during the time the snow was on the ground he met with an accident, and lost some of his money. He reported the matter by letter, and he had paid his employer certain moneys for which he held receipts. Afterwards a summons was taken out on December 6 for £8, embezzled on November 26, which amount was clearly and altogether wrong. Mr. Rideal read a letter written to defendant subsequently, showing an amicable relationship, and handed up to the Bench the receipts to which he had referred. The Mayor: What about the Inland Revenue? These receipts are not stamped.—Mr. Rideal: Yes, I know, sir. He added that Mr. Thompson was right in the letter he had written, but he (Mr. Rideal) did not want any suspicious circumstances to attach to defendant. The Mayor said they would follow the advice of their clerk. They were not going to allow the court to be made into a debt-collecting agency, and were not going to allow Mr. Thompson or anyone else to settle felony outside the court.

AN Appeal Dismissed.—In the Court of Appeal on December 16, before the Master of the Rolls and Lords Justices Stirling and Mathew, was an appeal by the plaintiff, Mr. Thos. Corns, from a decision of Mr. Justice Grantham in an action brought for a declaration that he was entitled to a rescission of a contract to take 500 preference shares in Paul Boyer, Limited, a French company now in voluntary liquidation; and he also claimed damages against the defendants, Lord Dunmore and Count Max Hollander, as directors, for breach of duty and negligence, and for an indemnity against any claims which might be brought against him by the liquidator of the company. At the trial the point raised was similar to that arising in the case of "Sir William Broadbent v. Dunmore and Others," that preceded the present case in his lordship's list, and which resulted in a verdict and judgment being entered for defendants. It was therefore agreed by counsel when this case was called on that the judgment in Sir William Broadbent's case should be binding upon the parties in this, but without prejudice to the plaintiff's right to come to the Court of Appeal. Mr. Asquith, K.C., and Mr. J. R. Willis (instructed by Slark, Edwards, and Co.) appeared for the appellant; Mr. Eldon Bankes, K.C., and Mr. Martelli (instructed by Messrs. Beyfus and Beyfus) for Lord Dunmore; while Mr. Rufus Isaacs, K.C., Mr. Gore Brown, K.C., and Mr. E. Ford appeared for Count Max Hollander. It appeared from the statement of Mr. Asquith, for the plaintiff, that there was no allegation of fraud made against any of the defendants. The only question was whether as to the plaintiff's application to become a shareholder, being, as his case was, subject to a conditional precedent that a certain number of the shares should be taken up in France before shares were allotted him, which condition was not, he said, fulfilled. He was now entitled to recover from the defendants the £250 which he had paid in respect of his application for shares. Their lordships, at the close of the arguments, held that the appeal failed on every ground against all the defendants, and they accordingly dismissed it with costs.

News and Notes.

WILLING'S Press Guide for 1905, which is just to hand, is the thirty-second annual issue of an extremely useful compilation of all the newspapers published in the United Kingdom and Ireland, and also of the leading American papers.

THE death is announced of Mr. A. W. Allard, who was formerly in business as a professional photographer at the Abbey Studio, Tewkesbury. At the time of his death, which took place suddenly at Cheltenham, Mr. Allard was proprietor of the Plough Hotel.

EASTMAN Kodak Company of New Jersey.—The usual quarterly dividends of $1\frac{1}{2}$ per cent. (being at the rate of 6 per cent. per annum) upon the outstanding Preferred stock and of $2\frac{1}{2}$ per cent. (being at the rate of 10 per cent.) upon the outstanding Common stock have been declared by the Eastman Kodak Company of New Jersey, payable on January 1, 1905, to stockholders of record at the close of business on November 30, 1904.

DONCASTER Camera Club.—On Tuesday the seventh meeting of the season was held at the Albany Hotel. Mr. H. G. Snow gave a lecture entitled "Round the North Welsh Coast with a Camera," which was well illustrated with about sixty lantern slides, amongst them being a series of very fine sunset studies, the clouds being on the same plate as the landscape. The usual vote of thanks to the lecturer was proposed by Mr. Sutcliffe and seconded by Mr. Yates.

SOUTHPORT Photographic Society.—The members of this society heard a very enjoyable lecture on Thursday evening by Dr. Payne, entitled "What I saw in Norway." Dr. Payne gave an interesting account of a fortnight's tour in Norway, illustrated by a large number of lantern slides shown by Mr. Cross. Mr. D. Edmondson Benson presided, and there was a large attendance. Thanks were passed to the lecturer, on the proposition of Mr. R. Todd, seconded by Mr. E. Webster, and supported by Mr. C. H. Brown. It was decided to send a letter of condolence with Mr. J. Lambert on the death of his mother. The Secretary (Mr. Cross) was instructed to invite prints of views of old Southport for the album which was to be prepared by the society.

THERE were sixty-one entries for the four competitions held by the South London Photographic Society at their last meeting. The first to be decided was the Lecturette Slide Competition for views taken on the society's excursions, the silver medal going to H. C. Beckett for an architectural detail set, second and third awards going to E. W. Taylor and J. F. Gardner. In the Beginners' Class for four slides, also from excursion negatives, V. Emmett was adjudged winner. For a print representing "Eventide" the award went to Gideon Clark, and for the best print by a member who had not previously taken any award T. Milburn was successful. Messrs. Tryhorn and Clear, of the West Surrey, were the judges, and at the close Mr. Tryhorn gave a short address on the competition in general. He said what had struck him most was the lack of tonality in the majority of the slides. The distances were often rendered as strongly as the foreground, and in some cases most unsuitable skies had been printed in. In many cases also the camera had been placed far too high, which caused the foreground and the middle distance to appear as if on the same plane.

INDUSTRIAL Alcohol.—Some of the European Governments, which have at hand the means of making alcohol in large quantities at small cost, have undertaken to encourage the manufacture of spirits. The Emperor of Germany, for instance, has given the matter some considerable personal attention, and has offered prizes for efficient designs of engines and lighting apparatus making use of alcohol. The result has been that great strides have been made, and the new devices are used to quite a large extent. The same thing has been done to a minor degree by the Russians, but it has been discovered to be a lamentable fact that, as the manufacture of alcohol increased, the amount consumed as a beverage also grew lamentably larger and larger. The alcohol habit has taken such a hold on the Russians, that recently the Imperial Minister of Finance offered a prize of 50,000 roubles, which is equal to \$25,750, for the discovery of some means by which the alcohol would be rendered so distasteful that it could not be consumed in this manner. Pamphlets giving the conditions of the award have been distributed among the Russian

Consuls in the various countries of the world, and it is hoped to stir up a universal interest in the contest.—"Scientific American."

THE annual report of the Paris Observatory for 1903 deals with a number of researches of special interest. The seventh section of the Atlas of the Moon has appeared, containing seven plates which seem the most successful yet issued, and in some respects to show considerable advance over the best views of the moon obtained by the eye at the telescope. With respect to the Astrographic Chart eleven plates have been passed as satisfactory, and thirty-five charts containing the triple images of 47,300 stars have been distributed. It is hoped that the second volume of the Photographic Catalogue will appear by the end of the current year. The determination of the solar parallax from the photographic observations of Eros is advancing toward completion. Of standard stars 1,661 meridian observations have been made, and 10,858 photographic observations of comparison stars, of standard stars, and of stars near the path of Eros. Three important researches based upon new methods are included in the programme for the future work of the observatory: the first relates to the determination of latitude and of its variations; the second is for the precise determination of the constant of aberration, two portions of the sky, distant 90 deg., being presented in the field of the instrument at the same moment by means of a double mirror; and the third relates to the employment of M. Lippmann's photographic object-glass in meridian observations.

COPYRIGHT in America.—The following is taken from the "Standard" of Saturday last:—"Through Laffan's Agency, Washington December 16.—The Copyright Bill passed by the House of Representatives gives the author or the proprietor of a book published in a foreign language, belonging to a nation extending similar privilege to the United States, the right of copyright in an English translation or dramatisation made within twelve months after the first publication of the book in the foreign country. The Bill has yet to pass the Senate." The statement from Washington that the House of Representatives has passed a Bill granting foreign authors the privilege of copyright has been read with considerable interest in London. This the more so because those most interested in the question here were unaware that anything was being done in America at the moment. The last official communication between the English Society of Authors and the United States in reference to copyright was on March 29 in this year, when Mr. Thring, secretary of the society, forwarded to the United States Copyright League report of his sub-committee on the amendment of the United States Copyright Law. The present state of Anglo-American copyright is governed by the Act of 1891. By that measure a system of reciprocity was supposed to be established, and English authors were enabled to copyright their works in America by conforming with certain somewhat stringent requirements. Those demanded of American writers in England were not so severe, and the genuineness of the reciprocity has often been called into question. The Americans have benefited enormously since the Act by the sales in England of works of many of their best-known authors. There is no reason to suppose that they would lose, however, if an Act were passed which would automatically confer the copyright in America upon works of English authors and *vice versa*. Indeed, the strongest champions of a new Copyright Bill are the big American publishers." It will be noted that this applies only to literature, no mention being made of artistic works.

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Correspondence.

Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.

We do not undertake responsibility for the opinions expressed by our correspondents.

THE ASSOCIATION OF PHOTOGRAPHIC EMPLOYEES.

To the Editors.

Sirs,—I would esteem it a favour if you would allow me to announce your columns that I have been appointed (provisional) Hon. Secy. of a (proposed) new organisation to be entitled the "Association of Photographic Employees," which will, I feel sure, meet the requirements of the various correspondents who have inquired about such an organisation.

The main idea is to meet the employers in a sympathetic spirit, and to strive mutually for the uplifting of the calling. All employees who can produce two signatures (with addresses) testifying that they are bona-fide employees in commercial photography are eligible to join. The payment suggested is 1s. as entrance fee, and 6d. per week subscription.

Benefit when unemployed will also be paid to those who join that section and pay extra for said benefit. For the present, membership of this section is limited to persons (of both sexes) under forty. A sick benefit section will also be added in due course.

All who desire to help should commence by sending their names for registration, and 1s. towards our initial expenses, to—Yours faithfully,
GEORGE PALMER.

20, Bishopsgate Street Without, London, E.C.
December 13, 1904.

ALL INVOLVING THE ABOLITION OF EXEMPTIONS AND ABATEMENTS OF INCOME TAX.

To the Editors.

Gentlemen,—I have read with surprise the extraordinary recommendation of the Central Board of the Traders' Defence Association that "All limited liability, joint stock, Civil Service, Army and Navy, co-operative societies shall be treated as units for the purpose of collection of Income Tax *without rebate* to the individual members shareholders thereof." This body has even gone to the length of sending a Bill for submission to Imperial Parliament calling for legislation to that effect.

Now, the Traders' Defence Association, it was generally understood, was appealing to the Committee, now sitting, to consider the incidence of Income Tax, to rectify the alleged abuse of the non-assessment of co-operative societies. In this, their endeavour, I was heartily at one with them, and quotations from a book of mine were widely in the public press in support of the movement. The Traders' Association, apparently not wishing to receive where they did not give, have now offered in exchange for £500,000 the amount it is estimated the Government is losing by non-assessment of co-operative societies—to give a sum of, say, six millions sterling. Now the proposed gift is at the hands of the small investor, and is probably one of the most extraordinary suggestions which have been made for many years past by a presumably responsible body.

The result of the passage of such a Bill through the Houses of Parliament would be that every penny deducted by the secretary of a company from dividends would be irrecoverable.

The widow, for instance, who had £150 a year from investments could pay £7 10s. in Income Tax, which sum would not be recoverable, as at present. Again, the labourers' savings, whatever his income, would oblige him to pay the tax on the fruits of, perhaps, his ceaseless toil and commendable thrift.

It would be absurd to suppose that a Bill of such a character could even receive the serious consideration of the House. It would doubtless be blocked at a very early stage. Still, it is a grave danger to the community that a representative body which is receiving general support, should incorporate—presumably to appease—their recommendations one so drastic and ill-considered.

In 1902-3 the Income Tax exemptions and abatements allowed exceeded £167,000,000, whilst the total deductions allowed exceeded £71,000,000. It may be assumed that the Association was scarcely

aware of the far reaching extent (millions would be affected thereby) of this recommendation, and will not be unprepared to evacuate an untenable position.

Another clause of the Bill is to the following effect:—"Any such society (joint stock, co-operative, etc.) declaring no dividend, but giving the benefit of profit to its members or shareholders in any other form, shall be taxed on 10 per centum of the annual turnover or value of business done." Is it suggested that:—

(1.) There is no such thing as a loss in business;

(2.) An assessment of 10 per cent. on turnover is a fair estimate of the net profit of the average business.

It would be interesting to put this latter question to tradesmen, great and small, in a variety of businesses.—Yours faithfully,

T. HALLETT FRY.

Manager, Income Tax Reclamation Association.

14, Queen Victoria Street, London, E.C., December 19, 1904.

THE ALKALINE DEVELOPMENT OF P.O.P.

To the Editors.

Dear Sirs,—In an article in to-day's B.J. you are good enough to say that "one of the simplest formulae" for development "is that suggested by the Paget Prize Plate Co."

Will you permit us to point out that our connection with the matter is much closer than this would seem to imply; the whole process of alkaline development of P.O.P. having been first made possible by us in 1893. In the B.J. of that year, page 562, there is a description of a demonstration of the process made for the first time at these works, in the presence of several representatives of the photographic Press; and on page 672 of your paper, 1904, in an article on the same subject, containing the following statement:—"Proceeding on the lines of the old silver development methods on silvered paper, acid development with either pyro or gallic acid had been found superior in every way—although far from perfect in its action—to any alkaline method, until Mr. W. J. Wilson demonstrated the possibility of successful development by first converting the silver chloride in the paper into bromide. Then, at last, the difficulty of developing printing-out papers disappeared."

The matter is not one of any great importance, but as the process, whatever its value, has been more than once attributed to other sources, it may be as well, for the sake of historical accuracy, to keep the facts on record.—We are, dear Sirs, faithfully yours,

PAGET PRIZE PLATE CO., LTD.

Watford.

December 16, 1904.

METRIC WEIGHTS.

To the Editors.

Dear Sirs,—Your "Ex Cathedra" leader states that no dealer of photographic material stocks the metric weights. No doubt that is correct, but they can easily be procured in this country, and at a very reasonable price.

When last I read a paper on the metric system before the London and Provincial Photographic Association, for which I was fiercely attacked in the photographic Press, I showed a set of weights such as can be easily procured in Paris, and I obtained to order of members of the said L. and P. Association about two dozen sets of these weights, ranging from 1 centigram to 100 grams, for a mere trifle.

If amongst such a society as the L. and P. there are to be found some twenty members who take the first opportunity of obtaining these weights, how many must there be amongst the general body of photographers who would seize the same opportunity if it was offered to them?—Yours truly,

J. R. GORTZ.

215, Shaftesbury Avenue, W.C.

December 15, 1904.

A FIRE broke out last week at the photographic supply house of Messrs. O. H. Peck and Company, Minneapolis, U.S.A., and spread to the adjoining furniture house of Messrs. Boutell Brothers. A high wind carried the conflagration through a closely-built retail district, causing losses estimated at over three million dollars. Assistance arrived from St. Paul, and the flames were checked.

Answers to Correspondents.

- * * * All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.
- * * * Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.
- * * * Communications relating to Advertisements and general business affairs should be addressed to MESSRS. HENRY GREENWOOD & CO., 24, Wellington-street, Strand, London, W.C.
- * * * For the convenience of Readers, our Publishers, MESSRS. HENRY GREENWOOD & COMPANY, of 24, Wellington-street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.

PHOTOGRAPHS REGISTERED:—

- M. D. Morley, 91, Belgrave Road, Leicester. Photograph of the Leicester Town Walls.
- W. L. Allison, 13, Donegall Square North, Belfast. Photograph of the Rev. T. Yates.
- A. J. Siedle, 29, High Street, Newport, Mon. Photograph of the late Rev. M. Bailey.
- B. G. Brock, 237, Wellingboro' Road, Northampton. Photograph entitled "Winter."
- W. H. Warburton, Harris Promenade, Douglas, Isle of Man. Photograph of the Douglas Town Council Sitting in Council Chamber at Municipal Buildings.
- S. H. Greenway, 27, Abington Street, Northampton. Photograph of the Northampton Town Football Club, and Photograph of the Northampton Football Club.

"C. B."—We beg to acknowledge the receipt of your letter, and, whilst we sympathise with you on the unfortunate result, we congratulate you on having remained firm not to sign the iniquitous document.

BURNISHER.—"G. H. T." asks: "Could you tell me where I could get roller of 'Globe' Burnisher repolished, and about cost of same?" In reply: You had better inquire from Jonathan Fallowfield, Charing Cross Road, London, W.C., who, we believe, is the agent for the "Globe" Burnisher.

PICTURE FRAME MOULDINGS.—W. FINCH says: "Would you kindly inform me in BRITISH JOURNAL OF PHOTOGRAPHY, if possible, two or three firms of picture-frame moulding manufacturers, etc., preferably English, cheap and good, reliable for one starting in small way in the country, that makes to order and supplies materials, including gilt for oils?" In reply: If you will look in our advertisement pages you will find the announcements of several makers of picture-frame mouldings.

WORKS ON HALF-TONE AND TRI-COLOUR WORK.—C. R. DODD asks: "Which is the best and most complete work on half-tone process work and tri-colour work, and who are publishers, and where am I likely to be able to purchase?" In reply: We should recommend "The Half-tone Process," by Julius Verfasser, price 5s., and "Three-colour Photography," by Häbl, translated by Klein, price 7s. 6d., both published by Penrose and Co., 109, Farringdon Road, E.C., who could supply.

CRYSTAL PYRO.—"SUBSCRIBER" says:—"Kindly let me have the address of where I can procure pyro in transparent crystals. I suppose it is German. I refer to article, 'Pyrogallic Acid and its Use,' page 1065, BRITISH JOURNAL OF PHOTOGRAPHY this week." In reply: Pyro in crystal form can be obtained from any large dealer in this country, and doubtless also in France, whence our querist writes. One brand is made by Merck, of Darmstadt.

COPYRIGHT.—"PROFESSIONAL" writes: "(1) If I take a photograph and register same, then grant a firm 'sole right for post-card use,' would I be in a position to sell the copyright of that photograph to any one else? (2) The same query as above, only instead of 'sole right' I only grant 'use for post-cards'? (3) Does granting 'sole right for post-cards' debar the author and owner from reproducing the photograph in post-card form?" In reply: (1) You can only assign copyright for purposes other than post-card. (2) If by "use" you mean the assignment of copyright for a particular and specified series of cards, you are at liberty to dispose of the copyright in other directions for post-card purposes, but such assignments should be drawn up in writing and the terms of sale clearly stated. (3) Certainly it does.

PHOTOGRAPHIC CHEMISTRY.—"PHOTOGRAPHER" writes: "I want study chemistry, both from a photographic and scientific point of view. Can you inform me:—(1) Title and price of a book on photographic or other chemistry? (2) Can I obtain a book or pamphlet, etc., giving a list of all known chemicals? (3) Or poisons and antidotes? (4) There is a book published and used by all chemists containing formulas approved, I believe by the Pharmaceutical Society. Can this be obtained commercially, and from where, and at what price? (5) Can you give me the name of a wholesale firm or manufacturer who could supply almost any chemical? Our photographic chemist cannot. (6) Is it a fact that a limited company retail poisons although no qualified chemist is employed? Or that any one can supply scheduled poisons wholesale? (8) Some plates are stated to be orthochromatic. What does this mean? Is it exactly the same as isochromatic?" In reply: (1) Meldola's "Chemistry of Photography," Toxend's "Chemistry for Photographers," Roscoe's, or one of the many other manuals of elementary chemistry may be studied. (2) You had better get the list of chemicals from one of the large manufacturing chemists, such as Messrs. Harrington Bros. (3) No such book is published. There is a number of standard works dealing with the chief poisons. Consult the list of a publisher of medical works. (4) I refer to the Formulary recently issued by the "Pharmaceutical Journal." Particulars of the terms on which it is supplied can be obtained from the office of our contemporary, Bloomsbury Square, London, W.C. (5) Merck, of Jewry Street, London, E.C., or Baird and Tatlock, Cross Street, Hatfield Garden, E.C. (6) A certified chemist must be employed. Yes. (8) Commercially speaking, the terms "isochromatic" and "orthochromatic" signify the same character of color sensitive plate.

"ENLARGER" writes: "I have an enlarging apparatus, as enclosed photo, which has not been put to its full use, and has only been used for daylight enlarging. Having spent considerable time experimenting without success, I would be obliged if you would answer the following queries through the medium of your inquiry column:—(1) What are the correct positions each part? (2) When used in the following way, the image of mantle shows in centre of image of negative—why is this? (3) What distance should burner and negative be from condenser? (4) Is one Welsbach burner suitable as source of light? (5) The condenser is 10 inches diameter, and is understood, only suitable for negatives to be enlarged from size up to 8 by 6—why, then, are there arrangements 15 by 12 inch negatives—can I not also enlarge these? If how? Is condenser any use for these? (6) Can any lens be used for enlarging? The one with apparatus does not clearly, the edges being all out of focus. For daylight enlarging I have used a Ross No. 2 Universal, which gives very satisfactory results. (7) There are also two stands with paratus; what use are they to be put to? A is evidently large enlargements, but I am not clear about B; is it negative making?" In reply: (1) The order of the parts of the baseboard should be as follows:—Condenser, ground glass, negative carrier, lens, dark slide. (2) By adjusting position of the ground glass between the condenser and negative you should be able to prevent the image of the mantle showing in the enlargement. (3) The position of the burner from the condenser should be fixed (by trial) so as to get clear, evenly-illuminated disc. The negative may be placed close to the condenser (the other side), but the exact position is not important. (4) Yes, for fairly thin negatives, but exposures may be inconveniently long if the negative is a dense one. For this a Nernst electric lamp is the illumination to be named next in order of convenience. (5) A 10-inch condenser will take a whole plate negative, not larger. In the case of a 15 by 12 plate, you can enlarge only from an 8 by 6 portion of it. (6) As a general rule, a lens which will cover a plate of the size to be enlarged, when photographing in the ordinary way will answer properly in the enlarging lantern. (7) The pivot stand is apparently intended for use in enlarging from negatives which suffer from the distortion caused by tilting the camera without swinging the back.

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FRIDAY, DECEMBER 30, 1904.

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EX CATHEDRA.

Hydro-sulphite. Hydrosulphite of soda, on which MM. Lumière and Seyewetz wrote last week, was used in the developer as an anti-stain before its developing properties *per se* were pointed out by MM. Lumière before the French Photographic Society. L. O. Lammann recommended its employment with the pyro developer in these pages in 1877, and we believe he was the first to mention the compound in photographic literature. But he does not appear to have noticed any particular advantage from substituting hydrosulphite for sulphite. Hydrosulphites are powerful bleaching agents, and one use for them which at once suggests itself to us is in discolouring dyes such as are used in the daylight development of plates or in the preparation of plates rendered anti-halation by a coloured substratum.

The Two Hyposulphites. MM. Lumière, in their paper, adopt the old name, "hydrosulphite," originally given to the compounds by their countryman, Schützenberger, who discovered them in —. But the name now generally adopted is "hyposulphite," as hyposulphurous acid comes next to sulphurous acid in the series of sulphur acids. Our universal hyposulphite is the thiosulphite of the chemist. The distinctions should be borne in mind in looking up the chemistry of the compounds which MM. Lumière regard as possible developers.

Catatype. In further perfecting the method of contact printing without light which was originated by Professor Ostwald, Dr. O. Gros now recom-

mends the conversion of the silver image of a negative on glass or paper into one of the higher oxides of manganese. His object appears to be the production of an image which retains its chemical acidity towards hydrogen peroxide for a greater time. The treatment recommended consists in the employment of a solution of manganese peroxide in excess of tartaric acid with the subsequent addition of sufficient caustic soda to render the liquid alkaline. Or a solution of potassium permanganate may be mixed with sodium tartrate solution so as to leave an excess of the latter. Whichever mixture is employed, the print is afterwards washed for a short time and transferred to an alkaline solution of potassium ferricyanide.

The New Patent Law. On January 1, 1905, the new patent law comes into operation, which may be briefly said to be the institution of a system by which, on an applicant lodging a complete specification at the Patent Office, a full and careful search will be made by the examining staff among all patents taken out within the last fifty years, in order to ascertain whether the invention claimed is really new. If a prior patent is found, which more or less anticipates the invention, the applicant will be apprised of it. He can then either amend his specification or argue against the Controller's opinion. If, after hearing the arguments, the Controller is still of opinion that the applicant is anticipated by the prior patent, he will have the power, subject to an appeal to the law officer, to cause a reference to be inserted in the specification to the prior patent. The value of this system will depend obviously on the examiners; but we think that there is no safeguard against the patenting of a well-known principle or a fact which has long been common property through prior publication in the journals.

The Humours of Ballooning. The Rev. J. M. Bacon, whose death we very much regret to record, was as much at home on the lecture platform as in the car of his balloon. Many photographic societies will have lively recollections of his discourses on aerial photography and of his enjoyment of the comic side of his adventures. On one occasion, when scanning the country for a spot on which to descend, the choice fell on a clear paddock which stood with some buildings in a walled area. The premises turned out to be a lunatic asylum, and the aeronauts were cordially received by the superintendents, with whom they stayed to dine, after their balloon had been packed up and ignominiously sent home by train. After dark, Mr. Bacon and his companion were setting out from the gates of the asylum when the watchman stopped them. "Where are you going?" "Back to town," was the reply; "we came this afternoon." "Not through here," opposed the watchman, suspecting de-

serters. "Oh no, we came in a balloon." "Ah," was the watchman's answer, as he closed the gate, "I've heard that before."

* * *

Another Art Addition to the Royal Exchange.

Gradually the panels at the Royal Exchange are being filled up with the works of the greatest painters of modern times, such as Millais, Sir Frederick Leighton, and others of similar note, presented by generous donors, amongst whom are some of the City Companies. On Monday last week the Lady Mayoress, accompanied by the Lord Mayor and Sheriffs, unveiled a new one. This is painted by Mr. Edwin Abbey, R.A., and was presented by the Merchant Taylors' Company and the Skinners' Company. A large number of persons do not appear to be aware of the fine works of art that are to be seen in the City. Apart from the fine pictures, frescoes, in the Royal Exchange, there is a most excellent (permanent) collection at the Guildhall by some of the best masters. It is open daily, and the admission is free, for the Corporation, whether with its loan exhibitions, or its permanent one, does not stoop to "gate money." It is thought by some that the only idea in the City is the making of money, but if they visit its art shows they will see that the Corporation have consideration for more than mere money making. It hopes in time to make its art collection still more worthy of the greatest city in the world than, it must be confessed, it is at present, good as it is.

* * *

"Pyro" and its Uses.

Referring to our article on this subject a fortnight ago, the query from a correspondent which we replied to last week suggests the usefulness of a few further remarks. It is evident from the fact that any one should write to ask where the crystalline form was obtainable, that pyro in that particular form is not well known, and this is rather remarkable, seeing that its use spells economy, and we know too well that in most studios of late every means of "saving a penny" has usually been well thought out. But it is so very easy to buy an ounce bottle of the old form, fill it up with water, give the whole one or two shakes, and have a solution ready to hand at once. Yet it must be remembered that, though the bottles are not "charged for," yet they are paid for by the buyer. Half-pint, wide-mouthed corked bottles are not given away in tens of thousands for nothing, and the price of a pound of pyro in one-ounce bottles ("bottles free"), even buying wholesale, will be found to be quite 30 per cent. above the cost in tins of one pound; in other words, the money that will buy sixteen ounces in bulk will only suffice for twelve separate ounces in bottles—a loss of at least half-a-crown in the price of a dozen! This half-crown and a further sum (from eighteenpence upwards) are saved by the use of the crystals (bought in bulk), which, as we said, cannot be distinguished in use from the old kind. We may add a slight caution. The crystals are very soluble; still, their dissolution is not so virtually instantaneous as the flocculent form, and it is desirable to watch the disappearance of the crystals (an occasional shaking is all that is needed), as, otherwise a portion might remain undissolved at the bottom of the bottle, and so the solution vary in strength as the residue gradually got taken up by the water.

* * *

The Cheapening of a Rare Metal.

Some of our readers will be able to recall to memory the time when metallic aluminium was a chemical curiosity, priced in the lists at so much the grain. The progress of invention has gradually brought its manufacture to such a

state of perfection that it is now not much dearer than copper, weight for weight, while bulk for bulk it is actually cheaper. It is, as we need scarcely say, much used in photographic work, though in many ways it is an unsatisfactory metal to work or to use. Later, the so-much-grain price of magnesium metal became reduced to less than a shilling an ounce, and as such it has been largely used in photographic purposes for the brilliant light with which it burns. Little further use was made of it till its combination in the alloy named magnalium was put on the market, this alloy being in every way superior to aluminium itself, though it has not made much headway popularly. We believe, however, it is largely used in certain Government manufacturing departments. The latest rare metal to be brought to a popular price is calcium, which, though priced in last year's list at half-a-crown a grain, we learn can now be obtained in quantities at 12s. per kilogram, that is to say, a little over 5s. per pound. It is early to speculate to what use it can be eventually put in matters photographic. It melts, according to Watt's Dictionary, at a full red heat, and then burns with a yellow flame and production of much heat and light; does not oxidise in dry air, but in ordinary air is quickly coated with lime. It decomposes cold water rapidly. In the first edition of the same work magnesium is described in somewhat similar terms, save as to the colour of the flame. We may hope to hear something about calcium in alloy as an analogue of magnesium.

* * *

A New Mode of Dissolving Platinum.

Many of our readers are, no doubt, familiar enough with the process of dissolving gold to obtain home-made chloride, and they will have found it tedious enough to get the whole of the metal into solution, that is to say, where the metal is in bulk, such as in the form of gold coin, etc. Gold precipitated from old toning baths is quickly dissolved. If they try platinum the time occupied is still more prolonged, though, as a matter of fact, we have not met with any who in their use of platinum employ any form but the bought crystals of whatever salt containing the metal that they use. Hence the interest will be theoretical rather than practical, with most of our readers, in learning that a new mode of dissolving platinum has been published by MM. André Brochet and Joseph Petit in the "Bulletin of the French Chemical Society." In Series 3, Vol. XXXI, No. 12, they describe their method. They make use of an alternating current of electricity through strips of platinum immersed in solution of cyanide of potassium, and in their "Conclusions" say, "Platinum therefore is easily dissolved in cyanides under the influence of an alternating current. This point is the more interesting as this metal offers a special resistance to chemical agents. The cause of this solution, which could not have been predicted, appears to us to be of great theoretical interest." One of the costly but necessary adjuncts of Röntgen-ray work is the platino-cyanide screen. Possibly MM. Brochet and Petit's investigations may lead to some reduction of price here, for they further state: "Our researches have led us to the establishment of a process for the manufacture of platino-cyanide, particularly that of barium," and they describe the intricate and troublesome method which only has been available up to the present.

* * *

Some Unexplained Phenomena.

Some years ago Dr. W. J. Russell observed peculiar photographic effects, which seemed to be connected with a radiation given off by hydrogen peroxide. The radiations passed through paper, gelatine, celluloid, and ebonite, and

L. Graetz, of Munich, announces in the "Physikalische Zeitschrift," that the rays can also penetrate through thin foils of silver, gold, and aluminium. The effects cannot directly be due to vapours of hydrogen peroxide. This is, indeed, hardly likely, because the peroxide is less volatile than water, and can be concentrated by evaporating aqueous solutions. Graetz obtained images when placing the metallic object at the back of the photographic plate while exposing the sensitive front to the radiations from hydrogen peroxide. The phenomena are perplexing, however. Thus he found that metals give bright pictures on dark ground, and liquids dark pictures on bright ground. On further investigation it resulted that objects or portions warmer than their surroundings turn out bright, and colder portions dark. Temperature differences of 0.02 deg. Cent. can be distinguished in this way. The edges of the pictures differ, moreover, from the central portions, which may be brighter or darker. It would appear that those parts become bright towards which the heat flows, and those parts dark from which the heat flows. We have, therefore, apparently a radiation with a polarity. Without expressing any opinion as to the primary cause of the phenomenon, Graetz thinks that both hydrogen peroxide and heat have something to do with the effects. Ozone is generally thought of in such phenomena, and it has recently been suggested again by Schenk and Richarz that ozone will photograph and will produce electric discharge and phosphorescence. Dry ozone, Graetz, Ladenburg, and Aschkinass maintain, however, has none of these effects.

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Albumen Transparencies for Enlarging From.

In our last issue was reproduced, from "Wilson's Photographic Magazine," an article by Mr. A. J. Jarman, on the preparation of transparency plates by the albumen process. There is no question that albumen transparencies are admirably suited for making enlarged negatives from, but whether, in practice, they are better than those by other and simpler methods—say, the carbon, for example—may be somewhat doubtful. Few reading Mr. Jarman's article will, we imagine, be induced to make albumen transparencies by the troublesome method described by him. This method is the old collodio-albumen process, not the albumen process proper, which, by the way, is simpler to work—only the sensitising of the plate being required—while the results for the object in view are the same. However, if any one should be inclined to experiment with the former process, we will here give a few hints that may save them some little trouble, because the directions as given in the article quoted are not in accord with the process as it is, or rather was, worked in this country. In the first place the preliminary coating of the glass with albumen is quite unnecessary if the glass be thoroughly cleaned. Mr. Jarman says the sensitising of the collodion film must be done in the dark room, and the plates also dried in the dark. This, also, is quite unnecessary. Workers of the collodio-albumen process know quite well that all the operations up to the sensitising of the albumen film may be done in full daylight, as the iodised albumen undoes any action the light may have had on the sensitised collodion. The proportion of bromide to iodide is larger than was usually employed by the best workers here—some used none at all—while the silver bath given for the albumen coating is much weaker. The silver bath employed by them usually contained forty-five grains of nitrate of silver and forty-five to fifty minims of glacial acetic acid to the ounce of water, and the solution was also saturated with iodide of silver before it was used. We should fully expect that, if the bath given by the author of the article in "Wilson's Magazine" was used with-

out this being done, the iodide of silver in the film would be dissolved away in the silver solution in the five or six minutes, the time given for the immersion of the plate in the solution. From half a minute to a minute is the time usually given, and no more. We have not used the developer recommended by Mr. Jarman, it is true, and shall not be inclined to, as we should prefer an acid developer somewhat similar to that given by him as an intensifier. It was the practice with some workers, who used to employ the collodio-albumen at the time it was so largely in vogue, to immerse the plate, in the first instance, in a weak plain solution of pyrogallie acid—or one with a drop or two of ammonia added—until a faint image appeared, and then complete the development with an acid pyro developer, to which a drop or two of a solution of nitrate of silver had been added. If any one is inclined to utilise albumen transparencies for producing enlarged negatives from, we should advise them to read the articles, "The Albumen Process in Practice," which appeared in our volume for 1903, pp. 264,323. These were written for the production of lantern or stereoscopic slides. What was then said applies equally as well to transparencies for enlargement if the toning be omitted. The fixing may also be omitted. Some long time ago the production of albumen transparencies for enlarging from was sold as "a secret process," and in that a point was that they should be used without being fixed.

We have to announce that with this issue of the JOURNAL Mr. Thomas Bedding, F.R.P.S., retires from the position of Editor-in-Chief, which he has occupied since November, 1895. Mr. Bedding has had this step in contemplation for a considerable time, and has taken it in order that he might devote himself to other journalistic work with which he is identifying himself. Notwithstanding Mr. Bedding's retirement, we understand that his interest in photography will not cease.

PROCESS.—A small exhibition of students' work will be open free from Wednesday, December 28, to Saturday, December 31 (inclusive), between 10 a.m. and 5 p.m., at the London County School of Photo-engraving and Lithography, 6, Bolt-court, Fleet Street, E.C. (The entrance to Bolt Court is between 151 and 152, Fleet Street.) On January 26 Mr. A. G. Cooke will lecture at Bolt Court on "The Light and Power of Modern Illustration—Electricity." Admission to this lecture, which is one of a series, dealing with illustration and process work, is free on application to the Principal.

THE Liverpool Coroner last week held an inquest concerning the death of John Monroe, aged nineteen, an apprentice plumber. For three months Monroe had been experimenting in connection with an invention in the shape of a miniature gas-maker, which could be installed in a small cottage, and could manufacture gas for consumption on the premises. Monroe had obtained the gas from a mixture of water and carbide of calcium: He had constructed a small gasometer at the rear of his father's house. On Saturday the father heard an explosion in the yard, and found his son lying insensible on the ground, bleeding from the head, and injured in various parts of the body. He died without regaining consciousness. Mr. C. R. Bellamy, Liverpool Corporation Tramways manager, explained that the apparatus which the deceased had prepared was very crude, and any test made with it was necessarily attended with danger. Scores of deaths had resulted from similar experiments. Probably deceased had mixed an amount of carbide of calcium out of proportion to the holding capacity of the gasometer. An escape would follow, and if there was any light in the neighbourhood a forcible explosion was bound to result. A verdict of Accidental Death was returned.

CEMENTED OR UNCEMENTED LENSES.

SOME of the earliest of the useful photographic objectives, and which may practically be considered to be typical of certain classes of modern lenses, were distinguished by the introduction of air spaces or air lenses, the Petzval portrait lens being one that will at once recur to the mind of every one. For some years the correction of aberrations was, however, effected, partially or completely, by an increase in the number of the individual lens elements in each cemented combination, and four and five lens combinations were quite common. Then came a revulsion, as it were, and a reduction in the number of lenses and the introduction of air lenses, till we have reached the simple separate four lens construction, with air lenses of calculated form and a total absence of any cemented surfaces whatever.

To the theorist at once occurs the question as to whether there is not a great loss of light by the thus necessary multiplication of reflecting surfaces, because it is well known that perfect refraction without reflection is difficult, nay, impossible, of attainment, and therefore the more we increase the number of refractive surfaces so much the more do we increase the reflective surfaces. Assuming on the other hand that the refractive surfaces are cemented together, there is no loss by reflection, but if the thickness of the glass is increased, or, what comes to the same thing, the number of the glasses and cementing surfaces be increased, then we must have a corresponding increase in the absorption of light by the increased glass mass, and this, while visually undetectable, may play no important role when photographic action is taken into consideration.

In the summer of last year M. Cousin read a paper before the French Society, in which he estimated the loss by reflection from the multiplication of surfaces as high as 40-60 per cent. of the incident light under certain conditions; this was reported in our columns at the time, but later the statement was much disputed.

Recently at a meeting of one of the Frankfort photographic societies this topic cropped up, and finally a circular letter was sent to the leading opticians asking which was the better lens of the two (a) the newer anastigmats with separate lenses, or (b) those with cemented lenses; further, how did the two types of lenses compare one with the other as regards light efficiency with equal apertures, taking into consideration the strong reflections of the former and the absorption of light by the cement and the increased thickness of glass in the latter. The answers to these questions appear in the current month's issue of the "Photographische Correspondenz," and are not without general interest.

Dr. Hans Harting, of Voigtländer and Sons, is of an opinion that the difference between the uncemented surface and cemented surfaces is practically negligible, but that naturally there is a limit, and that the number of elements in a combination must be taken into consideration, and the use of two four lens systems is accompanied by considerable absorption of actinic light. Far more dangerous, he says, however, is the non-correction for coma, and he states that an objective free from coma permits, on account of the more complete combination of the rays and greater brilliancy, a marked shortening of the exposure in comparison to other lenses which possess this fault.

Goerz, of Berlin-Friedenau, believes that for the majority of "amateurs" an objective with cemented lenses of an aperture of about F7 was the most suitable, but gave as his reasons the easier cleaning of the surfaces and the considerably less chance of the scratching of the surfaces, and considered that with equal ratio aperture lenses possessed equal light efficiency, and that the loss by absorption of the cemented surfaces was equal to that caused by the more repeated reflection from the free surfaces.

Zeiss, of Jena, through Dr. Rudolph, says that the question cannot be answered as it stands, and that individual cemented and uncemented systems must be compared. In any case, it may be said that the correction of spherical aberration—which produces increasing indistinctness in the image in the neighbourhood of the axis, when the aperture is increased in size—is generally to be easier effected with the other corrections in uncemented than cemented systems. With regard to the question as to the comparison of the light efficiency between cemented and uncemented objectives with equal ratio aperture, it is, he says, practically the same, or the question is of no moment; "with objectives of short focus the loss by repeated reflection from uncemented surfaces is a few per cent. greater than in cemented; with large objectives the ratio may be unfavourable to the cemented lenses. This is due to the fact that generally with cemented objectives a relatively great lens thickness is necessary, so that finally the loss by absorption, which naturally increases with the amount of the lens thickness can surpass the loss by reflection, which is not dependent on the size of the lenses. In any case it may be said that the small difference per cent. with lenses of equal ratio aperture is not of importance."

Steinheil, of Munich, considers it extremely difficult to obtain two lenses to compare, as for certain photometric work two objectives of equal ratio aperture, of an equal number of lenses, of equally thick lenses, of the same kind of glass, and of the same smelting, should be compared to obtain results of any value as regards the answering of the questions. For the practical photographer it would be advantageous to make clear for what purpose the lens is most suitable. For outdoor work an objective with cemented lenses is to be preferred to one with uncemented lenses, as with the latter there is far greater danger of reflex images, whilst on the other hand the uncemented system has the advantage when projection work is in question, and the lens is subjected to the action of heat, as with cemented surfaces they may be easily damaged. In the studio with diffuse light the separate lens systems may be used without fear. A real decision as to which is the better type of lens Steinheil considers it not possible to give.

Martin, of Rathenow, of the Optische Anstalt, previously known as Busch, combats Martin's views, and considers that as regards reflection the loss of efficiency is about 10 per cent. more with a triple lens than with a double lens, and again about 10 per cent. more for a quadruple than a triple lens. As regards the loss by absorption, Herr Martin considers that it cannot be neglected, particularly when five, six, eight, or ten lenses are used. The important point to be considered, however, is the applicability of the lens, as defined by Steinheil, and last, but not least, its price.

SOME SEASONABLE HINTS.

VARNISHING, important as it is in itself, is almost equally valuable on account of the manipulative facility which much practice confers. If a negative can be varnished cleanly and evenly, the worker will find no difficulty in coating plates for any purpose. The value of this will become apparent as the photographer progresses. If experiments with wet collodion are conducted, the manipulations resemble varnishing minus the preliminary heating. Collodionising temporary supports for carbon, either matt or polished, substratum for carbon transparencies, sensitising for the dust-on process, all are similar to varnishing. We could give a list of other processes which require glasses to be hand-coated, but the above will suffice to show what a valuable asset is a little skill acquired in such a necessary, useful, and yet cheap process as negative varnishing.

Porcelain pans are constantly being recommended by the photographic press for boiling solutions. It requires very little advanced work to demonstrate the fact that such a pan should be found in any well-equipped workroom.

In any process requiring boiling, as with all other photographic processes, absolute cleanliness is an essential. A new enamel iron pan may act for a time, but cannot be compared to the proper article. Moreover, they have the disadvantage of heating up too suddenly. The correct thing is really a pan within a pan, the space between being filled with water. The inner pan is thus practically heated in a water bath, the temperature rising gradually.

Such a pan can be used for heating a great number of things. Among the more common may be mentioned: the developer in winter, bichromated gelatine substratum for lantern slides and transparencies, sizing for home-salted and gum bichromate papers, and for gelatine emulsions of any description. The price paid for all this is not much. My pan was sold as an invalid's food pan. It holds one pint, and costs 3s. 6d.

Printing Frames.—Be careful when buying printing frames. A cheap printing frame is a snare and a delusion. They are nearly always, even if not badly made in other respects, too big for the negative. We have tried all makes, but find nothing to beat the old-fashioned style. Three-quarter-view frames are useful at times, but do not appear to hold paper in such close contact with negative as the ordinary kind.

The backing cloth placed between back and negative should, wherever possible, be thick and soft. We use good pliable felt for print-out papers. For platinotypes and carbon (the latter is as susceptible to damp as the former) indiarubber cloth in the small sizes and American cloth with felt in large sizes are found very handy.

When piling frames one above the other see that all the frames are of one size; a smaller frame between two larger may press on and break the bottom negative.

When choosing a frame see that the backs will lay perfectly flat. With many the join is slightly lower than the ends and presses more on the negative. All backs should have about 1-16 in. space between the two halves. We have had quite an epidemic of breakages with new frames when the hinges have drawn the halves too close together. A frame with solid back, i.e., in one piece, is frequently recommended for papers judged by actinometer. We do not agree with this, as the papers frequently curl, and it is very difficult to get the back on properly, even if it be in two halves.

There have been a great many articles written on print and mount trimming, but none seem to have recognised the very best tool for getting correct rectangularity. Most go in for the clumsy T-square and others the set square, which is seldom large enough for anything over half-plate. The very best thing in our opinion is known as the "Practical" cutting shape. I admit that the common or garden glass shape is of no use

for modern methods of trimming; but this is not a common shape. With it any size print (less than the shape) can be cut with perfect accuracy. This is achieved by the ground-glass face being crossed at intervals of half an inch with transparent lines. These lines being parallel to the sides and at right angles to one another, it is perfectly easy to get any four lines rectangular.

Dark-room Waste-pipe Stoppages.—We have hit on rather a good way to clean out the waste-pipe of a sink which happens to be choked in any way. The pipe should not be bigger than 1 in. in diameter. Water-pressure is used to remove the obstacle and is much handier, and can go into more intricate curves than the usual cane. As most of our readers will have experienced the joys of a flooded dark-room sink, we will describe the method. The only apparatus necessary is a short length of stout indiarubber pipe which can be fixed on to the tap. Any description of nozzle will do for this. The other end is merely placed into the plug hole and tied round with a cloth. This cloth is fixed tight round tube and rests on bottom of sink. When this is done, press the rag down as hard as you can and turn the tap full on. The pressure will probably force a little water into sink for a moment or two, but if you keep the cloth tight round the tube and press it well down the pressure of the water should remove the obstacle in all but very stubborn cases in a moment or two.

Cleaning Opals.—Many a time does a carbon on opal outlive its popularity, making the owner only too glad to use the support for something else. Carbons are extremely difficult to remove, however, so the following hint may be of service. The only way found at all efficacious is to pickle the opals for a day or two in dilute nitric acid, say, 1 oz. in 20 oz. After this rinse well and scrub off with very hard brush. In very bad cases two opals ground together with sand between usually removes the last trace of film.

Clearing off negatives in large batches is neither clean nor rapid work. The handiest way is to soak for twenty-four hours in water, and then to plunge into hot water containing carbonate of soda.

It is a great waste of time and trouble in carbon work to safe-edge every negative. The better plan is to clean off some wasters, safe-edge these, and place in front of the negative to be printed. Do not be too stingy with the binder; a narrow safe-edge often leads to disaster.

Another useful carbon hint is to mark the wrong side of drawing or etching papers before soaking them, as it is almost impossible to recognise prepared side when wet. The well-known method of testing exposure by printing P.O.P. proof deep is always reliable in any light. But, when printing from paper negatives, printing may have to be postponed for the night, and continued in the morning. In this case do not forget to make allowance for increase in depth during the night. This increase varies considerably, but I usually add six tints, and find it fairly correct.

W. FOSTER BRIGHAM.

THE Hastings and St. Leonards Photographic Society's Exhibition will be held from January 11 to 13, 1905. There will be a special class for pictures rejected at this year's Salon and Royal. Seven open classes. Entries close January 2, 1905. Prospectus and entry forms from the Secretary, Fred Judge, 21a, Wellington Place, Hastings.

It is with pleasure we have to announce that the Duchess of Portland has kindly promised to open the popular Grantham Industrial and Fine Art Exhibition on January 18, an announcement which will give universal satisfaction in the neighbourhood. The visit of the Duchess of Portland on January 18 and the Duchess of Sutherland on January 19 will help considerably to make the exhibition a success. The prizes will be distributed by Lady Marjorie Manners on Friday, January 20.

THE PRACTICAL PERFORMANCE OF TRI-COLOUR FILTERS.

III.

While many think there are valid theoretical reasons for the use of curve filters, they must suppose at the same time perfect photographic plates with unlimited power to render gradation, that is to say, a straight line law for photographic action, which it can never follow, the plate to be perfectly exposed and the printing to be done in perfect inks, but the spectrum reproductions with graded exposures prove conclusively that the action of a photographic plate is such that they cannot be made to follow any definite set of curves, such have been suggested in various hypotheses of tri-colour reproduction. This result was to be expected, if the facts are taken into account when theorising, for only in the case of very slow plates is there any proportionality between the light stimulus and the opacity produced in the negative, and in this case only over a small part of the total range of action. Now slow plates are useless in all cases where an extended scale of gradation has to be rendered, as in an oil painting, for this purpose fast plates have to be employed, and with these there is scarcely any region of proportionality at all, as was proved by Messrs. Hurter and Driffield. Another consideration is that such curve filters, even if possible, would be difficult to make, and we think we are safe in assuming never have yet been made (although approximations have), and if they were they would certainly break down in use. The fact that the exposure on the lower slopes of a curve will often fall below the minimum of the effective stimulus (so-called photographic inertia) causes these to be lost entirely, restricting the recorded regions to the higher parts of the curve. On the other hand, in practice it is found they are not necessary, since the spectrum can be tolerably imitated, and all natural colours fairly well reproduced by using filters and plates recording three even bands, the blue-violet extending to wave length 5,000, the green record extending from wave length 4,600 to 6,000, and the red record extending from wave length 5,800 to the end. The ultra-violet should be cut out, since it can have no possible utility, and does in certain cases exercise a degrading effect on some colours. Such filters appear to us to give the best results throughout a range of contrast within the limits of the plate.

The influence of the sensitiveness and the capacity for rendering gradation of the plates is very great, thus no plate records the extreme red, and with some so-called panchromatic plates used for three-colour, even a light red is reproduced more or less as black. However, in the case of pinachrome bathed plates and collodion emulsion dyed with ethyl violet, the red is recorded much farther than usual. With regard to gradation it is obvious that with a plate having a very steep range, the light tones of the picture will be fully exposed long before the deeper ones have had time to fully impress themselves, and this becomes of the utmost importance where the complementary colours are strongly contrasted in the opposite way to the record desired, thus a dark green and light crimson, a dark blue and pale yellow, a deep orange and pale blue; in each of these pairs the dark colours should be more or less fully recorded and the light ones more or less stopped, but with normal filters and normal exposures on a plate having steep gradation this is not done, as we have proved in the case of wet collodion and collodion emulsion.

The ideal conditions of filter and plate would be that colours should always record evenly throughout, even with the longest exposure, not extending beyond the limits laid down, and even with the shortest going all the way, though the deposit were less opaque. It should not be forgotten that in an ideal three-colour negative the selected colours should be at least as well recorded as white itself, because if there is any less opacity,

then it means the subsequent printing there of some part of the antagonistic complementary. Thus, if a white and a pure green do not record equally well through the green filter, then it means, when printing, the degradation of the green by the addition of some crimson ink because more crimson ink will print on the green than on the white. Needless to say this is not attained in practice, and a possible compromise in the case of subjects having complementary colours, widely antagonistic in contrast, may be found in narrow-banded filters, correct in the principal position. The greens are nearly always the trouble, chiefly because they are generally of low luminosity and do not get recorded on the plate before the complementary colours (minus green) are recorded. Thus one has seen a girl with pink cheeks in a green dress, the cheeks reproduce white, while the dress is nearer brown than green, owing to the large amount of red printed over the yellow and blue.

To discover the suitability of the filters, it is not necessary to go to the length of reproducing the spectrum in half-tone in the way we have done, as a simple examination of the spectrum negatives, made in the same ratio of exposure as camera exposures, after a little experience will at once enable one to determine if the records are correct or not, and from them to prophesy with practical certainty what colour will reproduce well and what badly. Nor need the spectra be reproduced in order to determine whether inks are suitable or not, for after some experience the mere printing of a solid patch, singly, in pairs, and all superposed, will indicate at once whether they are suitable or not. We conclude that:—

1. It is not possible nor is it desirable for any filter and plate to follow either the colour sensation, colour mixture, or certain other calculated curves.
2. The effect of using plates, having maxima with broad banded weak filters, is to cause a degradation of any pure colour occurring in the band of insensibility, therefore plates showing gaps in the spectrum record should not be used for the green negative.
3. Ultra-violet should not be recorded, as it will exercise a disturbing effect where it is reflected by colours other than blues and violets, as is the case with some browns, scarlets, and yellows, these reproducing with a distinct bluish tint.
4. As much red should be recorded as possible; ethyl violet in collodion emulsion, or pinachrome bathed dry plates, at present give the best record of red.
5. There should be no unrecorded gaps in the visible spectrum, for while these may not be important, for certain mixed colours of pale tints, they are fatal to correct rendering of colours whose spectra do not extend beyond the gap.
6. We think that we have proved that the filter records should be even, end abruptly, and overlap each other as follows: the blue-violet and the green should overlap from 4,600 as far as 5,000, and the red and green should overlap from 5,800 to 6,000.*

A. J. NEWTON AND A. J. BULL.

LATE last Wednesday night the shop tenanted by the London Photographic Co., Taff Street, Pontypridd, was completely gutted by fire.

At a meeting held last week the Kettering Camera Club was successfully launched on what we hope will be a prosperous and lengthy voyage. It is intended to have senior, junior, and honorary members, and Mr. Claypole was appointed hon. sec.

* NOTE.—This latter point has been stated before the Optical Society in December of last year, but it has been found necessary in practice to extend the overlap of the green and blue-violet records into the blue.

STOCKTAKING AND RESOLUTIONS.

BY AN OCCASIONAL CORRESPONDENT.

"First and last I have spent three hundred pounds in stock." So said a proud professional photographer to me as he showed me over his studio. "Why, I've three cameras, and one of them cost me £20."

I learnt that only two of the cameras were ever used—the third one was altogether antiquated and useless. But all three of them stood in the studio, and were likely to stand.

We had been talking about the value of his "tools of trade" during a chat about stocktaking. "Why should I take stock?" he asked. "I know that three hundred pounds of good money stands there, and I don't pay more than its worth for anything. I know what I've got. Why should I bother about turning the place upside down?"

Probably many photographers are in the position of my friend; not knowing where they stand, simply because they are so sure that they do know. The eve of a new year is the time-honoured date on which business men endeavour to learn exactly "where they are," and it is a good date for calmly thinking about business. Give to this matter a few minutes of the time supposed to be devoted to new year resolves and resolutions. Only remember that in this case the resolution must be put into action at once—at the close of the year—not during the coming one.

The actual work of making a list of the stock, etc., can be done in one or two evenings. The figuring may come later, and this figuring it is that tries a man's self honesty. One man will write himself down worth £200; another man will take the same assets and make himself worth a thousand. And yet both are honest men, and are simply trying to learn the truth for their own information.

Take those stacks of negatives—perhaps 10,000 of them. What are they worth? Some of them may be worth pounds. Granted; all know of the family who suddenly discover that a negative of grandma is in existence—now that the lady herself is not. They at once rush to order half-a-dozen of the best enlargements. Suppose the negatives are worth only one shilling each (most absurd suggestion), the whole stock is worth £500. There is a certain amount of speculation in keeping old negatives. I know, but an approximate idea of their value can be obtained by reckoning how much income has been derived during the year from all negatives more than twelve months old; £25 is 5 per cent. on £500. Have the old negatives paid this 5 per cent. on their value, plus the time and material absorbed by these re-orders? If not, they are estimated too high at one shilling each; but whether they are worth a penny or a pound, the time spent in discovering that worth is time well spent.

There is a stock of platinum paper which has spoilt. Ought it to be put down as an asset at the price it was invoiced and paid for, or ought it to be left out of the balance-sheet and put into the dust-bin—honestly now?

Then the backgrounds. Surely they are not worth what was paid for them, for one or two are never used, and others are much worn. The cameras, perhaps, which are in use are as good (for practical work, not in appearance) as when bought. They may not wear out in the present generation, but they may be superseded, like the idle one in the corner. In estimating their value, a certain percentage should be written off each year. The same on the other apparatus and accessories—even, in most cases, on the lenses.

Many a photographer who is doing a prosperous business buys more material at a time than he needs. The traveller who calls gets a bigger order than the firm would have got had the order gone by post. And there are photographers (or assistants) in existence who put the fresh stock on the front of the shelf and push the old stock back. There are—well, perhaps "skeletons"

is hardly the word—in many a photographer's store-room. The man who has not taken stock for years may find a revelation if he goes into every corner and lists everything.

The goodwill of a business is a curious quantity. I suppose it is what it will fetch in case the business is sold, and he is a very prescient man who can say what the price will be. I will not attempt it.

It is a simple matter, except in the case of those who give long and dubious credit, to put down on paper the money due and owing. And it is easy to put down the value of paper, plates, etc., in current use. They are worth invoice price. But on the more permanent apparatus, and such illusive things as goodwill and stock negatives, an honest approximation of value is often far from easy.

Once a stock sheet is made and digested, it should be put in a safe place. A series of them are mighty valuable when you come to sell a going concern. And they may even—I hope they will not—be useful in the unfortunate event of a fire. Of course, I am supposing that the fire premiums are promptly paid.

The new year is said to be a great time for the manufacture of paving stones for the nether regions. But soundly thought out resolutions are good things in spite of proverbs. A sort of mental stocktaking of a past year is no bad venture; particularly where the year has been a poor one. Often there are sufficient causes for all the depression which there has been, and always there are plenty of reasons to be found for it. But, unfortunately, the discovery of the causes does not remove them, nor prevent their recurrence in the future. And the causes are very real hard facts. Many a wide-awake, hard-working man feels the shoe pinch at one time or another, and he sets about trying to ease the shoe. But to return to the mental stock-taking.

What are the causes of the depression? Perhaps money has been scarce all round, and people have not had it to spend on what, after all, is scarcely one of the necessities of life. It may be that there is really undue competition; two fighting for support where there is business for only one. We have had a sufficiency of the first cause of late; and the second cause exists in many places. How are they to be remedied? There is one mistake which is responsible for much of the failing trade—the mistake of sitting down and waiting for work. If trade does not seek the photographer, he must seek the trade. How is he to do it; by advertising, by circular, by personal canvass? The two first cost money; the latter is impracticable in many cases. And neither advertising nor circular—both of which are sound investments when judiciously done—will draw or hold trade if the work of the studio does not back them up. Is the work up to a good standard, or is it all turned out by rote—"three styles of pose and two styles of printing"? Are the mounts and the styles of printing up to date? Is the reception-room a place to pleasantly impress visitors? Are the dressing-room and the studio clean and tidy? Is the show-case always displaying some new thing through a clean glass; or is it untended for weeks? Minor things, perhaps, but many minor things combine to make a determining factor. I am not on a hunt for reasons; I am only stating one or two not uncommon ones—in failing businesses.

They are causes which can be remedied without cash outlay, and that is why I refer to them. If the photographer will make a list of the things which may advantageously be done during the waits for sitters, and devote some of his "waste" time to doing them, he may find that his new year resolutions bring paying results.

DETECTED by Finger-prints.—At the Clerkenwell Sessions, Walter Rose, 22, and Henry Margrie, 25, were sentenced to twelve and six months' hard labour respectively for burglary at Poplar. They were arrested after finger-prints left by Rose had been photographed.

PHOTOGRAPHIC PERIODICALS IN THE PATENT OFFICE LIBRARY.

THE following list of the periodicals in the library of the Patent Office in Southampton Buildings, London, E.C., is reprinted here from the official catalogue just issued, as many students of photographic literature will be glad to have at hand a memorandum of the journals which they are at liberty to consult. The Patent Office library is open to the public, and the shelf-arrangement of the volumes is such that a given subject can be traced more easily and rapidly than in any reference library, English or foreign, with which we are acquainted.

(SOCIETIES.)

- 1853, etc. Photographic Society of London. Journal. [Later, "Photographic Journal," including the transactions of the Royal Photographic Society of Great Britain.] London.
 1855, etc. Société Française de Photographie. Bulletin. Paris.
 ——— Laboratoire d'Essais. Mémoires, etc., 1893, etc.
 1862-70. Bengal Photographic Society. Journal. Calcutta. 6 vols. in two.
 1880-99. Photographic Club. Reports and proceedings. London.
 1886, etc. Association Belge de Photographie. Bulletin. Bruxelles.
 ——— Camera Club. Journal. London.
 1889, etc. Congrès International de Photographie. Rapports, Paris, 1889. Bruxelles, 1891. Procès-verbaux sommaires, Paris, 1900.
 ——— Società Fotografica Italiana. Bulletino. Firenze.
 1889-1901. Chambre Syndicale de la Photographie, etc. Bulletin. Suppl. au "Moniteur de la Photographie." Paris.

(PERIODICALS.)

- 1850-70. "Daguerreian Journal." [Later, "Humphrey's Journal," etc.] New York. 21 vols.
 1851-67. "Lumière. Paris." 17 vols.
 1856-67. "Photographic Notes." London, etc. 6 vols. Set imperfect.
 1858-67. "American Journal of Photography," etc. New York. 9 vols.
 1858, etc. "Photographic News." London.
 1860-97. "Photographisches Archiv." Elberfeld, etc. 38 vols.
 1861, etc. "British Journal of Photography." London. 1865 deficient.
 ——— "Moniteur de la Photographie." Paris.
 1862-81. "Bulletin Belge de la Photographie." Bruxelles. 19 vols.
 1863-64. "Propagador de la Fotografía." Madrid.
 1863-67. "Camera Oscura." Milano. 5 vols.
 1864, etc. "Philadelphia Photographer." [Later, "Wilson's Photographic Magazine."] Philadelphia, etc.
 ——— "Photographische Correspondenz." Wien.
 1867, etc. "Photographische Mittheilungen." Berlin.
 1868-70. "Illustrated Photographer." London. 3 vols.
 1869-73. "Licht." Berlin. 4 vols.
 1870-73. "Helios." Dresden. 4 vols.
 1870. "Photographic Art Journal." London.
 1871-72. "Photographic World." New York. 2 vols.
 1871, etc. "Photographic Times." [Later, "Photographic Times-Bulletin."] New York.
 1872-97. "Tijdschrift voor Photographie." Amsterdam. 25 vols.
 1881-1902. "Photographer." Glasgow.
 1884, etc. "Amateur Photographer." London.
 1886-94. "Camera." London. 7 vols.
 1886-1900. "American Journal of Photography." Philadelphia. 14 vols. (Amalgamated with the "Photo Era.")
 1887-91. "Photographic Art Journal." London. 4 vols. (Nos. 1-3 published under title of "Charterhouse Photographic Art Journal.")
 1889-90. "Photographic Review." Chiswick.
 1889-92. "Photographic Quarterly." London.
 1890, etc. "Photographic Record." Manchester. Vol. i imperfect.
 ——— "Practical [and Junior] Photographer." [Later, "Practical Photographer" (Library Series).]
 1891-92. "Novedades Fotograficas." Bilbao.
 1891, etc. "Photography." London.
 1892-95. "Photographic Work." London. 4 vols. in three.
 1892-96. "Photographic Review of Reviews." [Later, "Photographic Review."] London. 5 vols.

1892-99. "Dry Plates." Ashtead. 5 vols. in two.

1892-1901. "Photo Journal." Paris.

1892, etc. "Photographer's Record." [Later, "Barnet Photographic Record."]

1893-1902. "Anthony's Photographic Bulletin." New York. (Amalgamated with "Photographic Times.")

1894, etc. "Photogram," [including the "Process Photogram"] London.

1895-97. "Kodak News." London.

1898, etc. "Amateur Photographer." Düsseldorf.

1898-99. "Photographic Siftings." London.

1899-1901. "Archiv für wissenschaftliche Photographie." Halle. vols.

1899, etc. "Photographische Chronik." Halle.

1900, etc. "Actien-Gesellschaft für Anilin-Fabrikation" ("Photographische-Abtheilung"). Mittheilungen. Berlin.

— "Photo Era." Boston, Mass.

— "Photographische Berichte" (Hesekiel). Berlin.

1901-02. "Photographic Chronicle." London. 2 vols.

1903, etc. "Zeitschrift für wissenschaftliche Photographie, Physik und Photochemie." Leipzig.

THE ACTION OF METALS ON THE PHOTOGRAPHIC PLATE.

[Abstract of a paper by Professor G. W. A. Kahlbaum before the Naturforschender Gesellschaft of Basle.]

IN the course of some experiments on the distillation of metals in vacuo, the author was led to investigate the effect of different metals on the photographic plate when there is absence of contact between the metal and the film of emulsion. The conditions of the experiment were as follows:—A photographic plate was laid in a shallow case of black paper, covered with a strip of paraffin paper, and a cardboard frame, about 1.5 or 2 millimetres in thickness, laid upon this. Next came four strips of aluminium, iron, zinc, and lead, which were supported in the middle by a little cylinder of paper.

On these was laid a second piece of paraffin paper, next another cardboard frame of the same dimensions as the first, and finally another sensitive plate, but with the film side turned away from the metals. The case was closed, and the whole laid in the horizontal position for five days in a perfectly dark place. On development it was discovered that there was a very strong, well-defined image of the four metals on the lower plate, whilst the upper plate indicated only a weak action from the zinc and a still less, scarcely recognisable, effect from the aluminium. The metals had been previously examined for their transparency to Röntgen rays. Other plates which had not been exposed to Röntgen rays, and others which had lain for four days exposed to radium, were found to exhibit the same marked differences in their action on the upper and lower films, except that the action of the unexposed zinc and aluminium was more distinct in the case of the uppermost plate. On these plates being subjected to Röntgen rays for some time the images ceased to appear on the upper plate. These experiments, which were repeated a number of times with the same result, seemed to suggest that the phenomenon was connected with an emanation from the plates, which was subject to the action of gravity.

On making the experiment with the metals and sensitive plates in a vertical position the action was the same on each plate, but very much weakened in both cases; whilst on placing a strip of lead diagonally between two photographic plates a weak image, distorted into parabolic shape, was produced. An experiment with plates, 3 and 2 cm., arranged staircase fashion above and below a zinc plate, gave images the intensity of which varied with the distance of the film of emulsion from the zinc, but also showed a difference between the upper and lower plates to such an extent, the zinc furthest from the lower plate produced a greater effect than that nearest to the upper plate. The deposits of silver were measured with Marten's

apparatus. If the zinc plates were kept on a centrifugal in motion during the exposure of forty hours two images were obtained on each plate, but the difference between upper and lower was still recognisable. The emanation, therefore, appears able to pass through glass. The temperature and humidity of the air appear to have great effect on the intensity of the action, which has been observed so far in the cases of aluminium, iron, nickel, copper, zinc, lead, and uranium. Of these, iron, nickel, copper, and lead were the only ones to give distinct images on the lower plate. Aluminium gave a very weak image on the upper plate, and so did zinc and uranium.

THE METRIC WEIGHTS AND MEASURES.

With reference to our note on this point last week, we reprint from our contemporary, the "Pharmaceutical Journal," the following comment on the three new designations which will be read with interest:—

"The inconvenience caused by the lack of any officially recognised subdivision of the litre, smaller than its one-thousandth part, and the consequent difficulty of expressing doses of potent liquids in convenient metric quantities, should shortly cease to exist, as we understand that the three new designations—mil, decimil, and centimil—are to be inserted in a reprint of the Board of Trade Regulations dealing with inspectors' metric standards.

"The new apothecaries measure will, presumably, be as follows:—

METRIC APOTHECARIES MEASURE.

1 Centimil (1/100th Millilitre).....	=	0.1689 Minims.
1 Decimil (1/10th Millilitre).....	=	1.6894 Minims.
1 Mil or Millilitre (1/1000th Litre).....	=	{ 16.8941 Minims. or 0.2816 Fl. Drachm
1 Centilitre (1/100th Litre).....	=	{ 2.8157 Fl. Drachms, or 0.3519 Fl. Ounce.
1 Decilitre (1/10th Litre).....	=	3.5196 Fl. Ounces.
1 Litre.....	=	1.7598 Pints.

The minim is equal to nearly six centimils, the fluid drachm to rather more than three and a-half mils, and the fluid ounce to nearly three centilitres, thus:—

1 Minim.....	=	5.9192 Centimils.
1 Fluid Drachm (60 Minims).....	=	3.5515 Mils.
1 Fluid Ounce (8 Fluid Drachms).....	=	2.8412 Centilitres.
1 Pint (20 Fluid Ounces).....	=	0.5682 Litre.
1 Gallon (8 Pints or 160 Fluid Ounces).....	=	4.5459 Litres.

"While referring to this subject, it may be stated that a decimetre scale, which is graduated to one hundred parts, and can be obtained from the Decimal Association for a few pence, will be found useful for making metric measures of length more familiar. The scale is one millimetre thick, one centimetre wide, and one decimetre long; its volume is one cubic centimetre, and its weight in grammes is the specific gravity."

A MAGIC Postcard.—So many crimes are committed in the great name of advertisement, that (according to the "Bromide Monthly") one more does not appreciably affect the iniquitous total. But it has been reserved for an inventor, Joseph Rieder, to perpetrate a scheme against those who would escape from the snare of the advertiser. Explained in a word or two the insidious plot is as follows:—The victim will receive a postcard addressed as usual, but blank on the picture side. Out of innocent curiosity he will keep the card. He will soon see signs of a semi-latent picture. Further exposure to daylight will develop an infant reared on somebody's food or of a young person in somebody's corsets. By these means it is hoped to fix indelibly the nature of these articles upon the recipient's memory.

A GELATINE DAGUERRETYPE PROCESS.

[A Paper from the "Photo-Beacon."]

The production of photographs upon a highly polished silver surface, by the process originated by Daguerre, is difficult to obtain unless an apartment is specially fitted to carry out the various operations successfully. An excellent imitation of the Daguerreotype can be produced by the transfer of a gelatine film after it has been properly treated and its colour changed so that it has the colour which closely resembles the deposit upon a Daguerreotype plate. This can be accomplished in a manner that is practicable in the workrooms of the modern photographer, so that there is no necessity for special rooms to sensitise the silvered plate in, nor a special room for the development with mercurial vapour; all that is necessary is to prepare a special developer and a stripping solution, one that can be relied upon at all times for a sure removal of the film from the original glass plate.

The gelatine plates best suited for this class of work are those that work slowly, so as to give very clear and transparent shadows. The silvered plate can be procured in sizes required from a maker of reflector plate. This consists of a sheet of copper which has been coated with pure silver upon one side and polished, but the surface does not possess the requisite polish for the purpose required, so it will be necessary, after the plate has been cut to the various sizes, to have them planished, that is, to have them carefully flattened, and polished to a high degree at an electro-plating establishment. They must then be carefully packed so that the surface will not become scratched, with a soft layer of wadding between each. The following solutions must be prepared and kept on hand ready for use:—

DEVELOPER.

Distilled water (warm).....	18 ounces.
Metol.....	10 grains.
Hydroquinone.....	30 grains.
Sulphite of soda.....	220 grains.
Carbonate of soda.....	160 grains.
Potassium bromide.....	3 grains.

Dissolve the chemicals in the order given. As soon as the liquid is cold it must be filtered through absorbent cotton into a clean bottle.

The fixing solution may be made up as follows:—

Water.....	45 ounces.
Hyposulphite of soda.....	1 pound.
Sulphite of soda.....	1 ounce.

Dissolve the above and add thereto the following solution:—

Water.....	15 ounces.
Chrome alum.....	1 ounce.
Sulphuric acid.....	1 dram.

The chrome alum should be powdered and dissolved in warm water. When the two solutions are mixed, they should be filtered and the fixing bath kept away from dust and dirt. A glass or porcelain dipping bath is best suited for holding the fixing solution. All the solutions must be kept very clean, otherwise all specks and marks will show up prominently when the image is transferred. The mercury solution is made up as follows:—

Distilled water.....	15 ounces.
Bichloride of mercury.....	100 grains.
Bromide of potassium.....	100 grains.

The distilled water must be brought to boiling point in a glass flask, together with the above salts. When all is dissolved, add fifteen ounces more of cold, distilled water, then filter the solution. With these solutions ready, the exposure may be made upon a slow-working gelatine plate. The exposure must not be so long as for a full-bodied negative. As soon as it has been made, say upon a 4 by 5 plate, proceed to develop with the developer above given. It will be seen that the image comes up fairly well, but presents a weak appearance. This is just what is required. Do not attempt to force the development. If this is attempted the shadows will become degraded instead of remaining clear. Development being complete, wash the plate well and fix in the solution described. Allow the plate to remain in the fixing solution for some time after fixation is complete; then take out the plate, wash well for at least half an

hour in running water, then allow it to dry. As soon as the plate is thoroughly dry, place it in a clean tray and pour upon it enough of the mercury solution to cover it well. Rock the tray so as to expose the surface of the plate to fresh action of the solution. Whenever the film appears white, remove the plate and wash it well. Return the mercury solution to the bottle for future use, as this solution can be used over and over again. Place the plate once more aside to dry. When the plate has become thoroughly dry, the operation of removing the film and its transfer may be taken in hand.

Take one of the polished, silvered plates and clean it in the following manner:—Prepare a solution of lye by dissolving four ounces of potash lye in twenty ounces of warm water (this solution must always be used in a warm condition), hold the plate to be cleaned at one corner with a pair of pliers, then dip it into the warm lye and wipe over its surface the solution with a piece of absorbent cotton pressed into a six-inch length of vulcanised rubber tube so as to form a miniature mop. These precautions are necessary to prevent the lye from coming into contact with the fingers, because it might injure them and cause soreness. As soon as the plate has been carefully mopped, it may be washed under the tap: If the water runs over the plate so as to leave no greasy streaks, and remains upon the plate uniformly, the plate is then perfectly clean. It must now be coated with the following mixture:—

Gelatine (hard)	20 grains.
Distilled water	2 ounces.
White sugar	10 grains.

To which five drops of chrome alum solution have been added, compound of fifteen grains of chrome alum to one ounce of water. Filter this while still warm through two thicknesses of cheesecloth, and flow over the wetted surface of the silvered plate. Pour this gelatine mixture upon the plate two or three times, returning the superfluous solution to the glass tumbler from which it was poured, always allowing the corner of the plate to touch the side of the tumbler so as to prevent the formation of air bubbles. Set the plate to stand aside away from dust to dry. As soon as it is dry it is ready for use. Now make up the following solutions for stripping the gelatine film from the plate. These solutions will keep in good working condition for several weeks if kept separately:—

A.	
Fluoride of sodium	60 grains.
Water	5 ounces.
B.	
Citric acid	120 grains.
Water	5 ounces.

Place the gelatinised, silvered plate into a tray of clean water to soak for five or ten minutes, then place it into a small tray of distilled water and it is now ready to receive the gelatine film.

Take two ounces A and mix with two ounces of B; immerse the plate containing the image in this mixture, rocking the tray backward and forward and sideways. In the course of two or three minutes the film will be seen to wrinkle at the edges. As soon as this takes place the film may be easily lifted clear off the plate with the forefingers and thumbs of each hand. It must then be placed in a tray of clean water. This is to wash off the excess of stripping liquid. Lift the film from this tray and place it into the tray containing the silvered plate, then with the forefingers and thumbs of each hand raise the plate and film together so that the water runs from between them. The plate must now be laid flat, say upon the top or bottom of a glass tumbler, and the film carefully adjusted by a soft camel's-hair brush. When in proper position it must be left in a horizontal position to dry.

It will be observed that the film has become enlarged somewhat by the operation, so that a 5 by 4 film will fit a 6 by 5 silvered plate. This slight enlarging of the film is in one way an advantage, because in stretching it makes the shadows thinner and more transparent so that the bright silver surface shows through it better. When the transferred film has become dry and the operation has been carried out with care and cleanliness, the plate will present an excellent imitation of the Daguerreotype, and, when mounted in a suitable frame and tinted with a few light touches of dry powder colours, the effect is that of a tinted Daguerreotype, and is scarcely distinguishable from one of these beautiful productions.

It will be found absolutely necessary to have all the solutions perfectly clean, and the last trays *must* be filled with distilled water, because ordinary water contains such impurities as lime and organic matter, which, in drying down upon a bright metal surface, will always show up in a very pronounced manner, and thus spoil what would be in every other respect an excellent picture.

The gelatine solution used to form a substratum upon the silvered plate may be made in quantities of a pint or more, as it will keep for several weeks, especially if one ounce of alcohol is added to each pint of mixture, and well incorporated by stirring when the mixture is hot.

The fluoride of sodium and citric acid mixture must be discarded after it has been mixed for an hour; several films may be detached with the same solution during an hour, the stripping effect holding good for this time.

This stripping mixture is also very good and useful in stripping a film from a cracked negative, providing the gelatine film is not broken. It can then be transferred to a clean glass plate, which should be of larger dimensions than the negative, so as to give working space, the plate then being cut down to the original size. The developing solution given herewith can be used several times over; in fact, after it has been used two or three times the pictures produced are of a good quality for the process described. In the process of development, do not try to force the image; let it come up weak and thin, because a picture that has been forced in any way will not give the desired result. It must be borne in mind that the shadows must be as transparent as possible, for only thus is the Daguerreotype effect secured. If the shadows should be at all muddy, the beautiful quality and effect so desirable in a picture of this kind are entirely lost. Plates of highly-polished copper may be also used for transferring the image upon, and this gives an effect exactly like an electrotype made from a Daguerreotype, in which a bright copper surface replaces that of silver.

If dry powder colours are used for the tinting, any excess of colour can be easily brushed off the surface with a clean, dry pencil or camel's-hair brush, and the colours fixed upon the plate in a very stable manner by simply breathing upon the surface of the picture after the colours have been applied, the moisture contained in the breath supplying all the damping effect that is needed to make the colours stick to the semi-hardened gelatine film.

The transfer of these films has not been satisfactory when attached to aluminium, as the polished surface of aluminium gives a white reflection, while that of silver is the reverse in effect. The clear parts of the image, such as the hair, a black coat and a velvet collar, are all represented as black when viewed at a suitable angle, as exemplified in the Daguerreotype. As to the varnishing of these pictures, that will prove to be a matter of taste. All ordinary varnishes do give a slight tinge of colour to the film, and consequently are not to be recommended. There is a varnish that can be used, which is prepared by dissolving celluloid in amyl acetate, and usually sold under the various names of celluloid collodion, crystalline varnish and albaline and a special liquid which is called "thinner," to thin down the thick, viscous collodion. Judging by the odour of this last liquid, it appears to be amyl alcohol. Albaline, when thinned down, forms an excellent varnish, perfectly transparent when dry, as well as protecting the film from the effects of moisture, alkalis, or acids. It may be dried by heat or allowed to dry spontaneously; in either case the result is the same. The cost of the above varnishes is not at all high, and they can be relied upon as a perfect protector of the film.

A. J. JARMAN.

SOUTH LONDON PHOTOGRAPHIC SOCIETY'S EXHIBITION.—Messrs. J. T. Ashby, F.R.P.S., H. W. Bennett, F.R.P.S., and Frederick Holley, F.R.P.A., have kindly consented to act as judges at the Sixteenth Annual Exhibition, to be held March 4 to 11, 1905. There are open classes for portraiture, architecture, landscape, lantern slides (sets of four), and stereoscopic slides (sets of four), in which silver and bronze plaques will be awarded at the discretion of the judges. A gold medal will be awarded to the best picture in the open classes. Entry forms will be ready in a few days, and may be obtained from the hon. secretary, Mr. H. Creighton-Beckett, 44, Edith Road, Peckham, S.E., who would also be pleased to hear from any one desiring to join the society.

THE THEORY OF FLUORESCENCE.

[A portion of a paper in the "Physical Review."]

THROUGHOUT the progress of the experiments that have been described in the present paper and in those which precede it we have naturally tried to form some picture of the underlying mechanism of the phenomena studied. It is perhaps needless to say that serious difficulties have been encountered; but although we have not succeeded in forming a wholly satisfactory picture of the molecular processes involved in fluorescence, the considerations stated below have nevertheless led us to the adoption of a working hypothesis regarding the general character of these processes, which has been of considerable assistance.

In attempting to form a theory of fluorescence it is natural to turn to the other, and in some respects simpler cases of luminescence for assistance; for it is difficult to believe that the many resemblances noticeable between luminescence phenomena of different types are merely superficial. In the case of several classes of luminescence phenomena the first steps in the development of a theory have fortunately already been taken. Thermo-luminescence, for example, has been explained as the result of some chemical change in the luminescent substance, during the progress of which the molecules are thrown into such violent vibrations as to bring about the emission of light. Luminescence ceases in such cases when the change has been completed; and some outside stimulus is required, such as that furnished by cathode rays, to restore the substance to the sensitive state. Not only is this explanation of the thermo-luminescence a plausible one, but in several instances conclusive evidence has been found that the assumed change really occurs.

A somewhat similar suggestion has been made by E. Wiedemann in the case of phosphorescence. According to this view some change is produced in the phosphorescent substance by the action of the exciting light, and the gradual restoration of the original condition after the excitation has ceased is accompanied by luminescence. Although it has not yet been possible to determine the exact character of the assumed change, or even to demonstrate by direct tests that such a change occurs, the view suggested by Wiedemann has undoubtedly been an important aid in the more recent study of phosphorescence.

If, as seems not unlikely, the difference between phosphorescence and fluorescence is chiefly one of the duration of luminescence, the hypothesis just stated may be applied to the latter class of phenomena without essential modification, and we may assume that fluorescence is also due to some temporary change in the fluorescent substance. We must assume further that the return to the original condition is almost instantaneous; so that luminescence persists for only an inappreciable time after the removal of the exciting cause. According to this view fluorescence involves two processes: (1) the alteration in the fluorescent substance brought about by the exciting light; (2) the spontaneous return of the modified substance to its original state. These two processes occur simultaneously; and one or both must be accompanied by the emission of light.

This view lends itself readily to an explanation of the increase in absorption that accompanies fluorescence, for it is clear that during the progress of such a change as is here assumed the substance may possess properties that are entirely different from those of the original substance. It is natural also to expect some intimate connection between fluorescence and fluorescence absorption, for the increased absorption during fluorescence is doubtless due, at least in part, to the same molecules or atoms whose vibrations bring about the emission of light. Without more detailed assumptions regarding the nature of the change produced by the exciting light it is not possible to predict the laws of fluorescence absorption, e.g., the dependence of the effect upon wave-length, intensity of fluorescence, etc. But, on the other hand, the experimental study of these laws will afford a firm foundation for the further development of the working hypothesis.

The considerations which make it natural to expect a change in absorption during fluorescence apply equally well to all cases of luminescence in which there is a change in the active substance during excitation and a return to the original state during luminescence. We should therefore expect a change in absorbing power in the case of thermo-luminescence, chemi-luminescence, and phosphorescence. In fact, it seems not improbable that some modification of Wiedemann's original hypothesis may be found to be applicable to all classes of luminescence, and in this case we should

expect every type of luminescence to be accompanied by a change in absorption. So far as we are aware, no experimental study of absorption during luminescence has been undertaken except in the case of fluorescence.

A hypothesis which assumes that luminescence results from some chemical or physical change in the luminescent substance evidently implies not only a change in absorbing power during luminescence, but also temporary alteration in the other properties of the substance. The study of these changes, if such are found to occur, offers a promising means of attacking the general problem. This field of investigation also appears to be practically untouched.

It has generally been assumed, by those who regard Wiedemann's suggested explanation of phosphorescence and thermo-luminescence with favour that the change accompanying luminescence is of a chemical nature. Various suggestions have been made regarding the character of the reactions produced by the exciting light (or other cause), and attempts are not lacking to trace a connection between luminescence and chemical constitution. It appears to us that it is desirable to take into consideration changes of a different kind, which do not involve, necessarily, any chemical action. The simplest change of this kind is dissociation. In cases of photo-luminescence this is just the effect that we should expect the exciting rays to produce. We can scarcely doubt that the absorption of the exciting light is the result of resonance on the part of the molecules or atoms of the active substance, and although the vibrational energy thus imparted to the molecules is rapidly transformed by collisions into translational energy (heat) yet under favourable conditions the molecules might be thrown into such violent oscillation as to be torn apart. Since chemical activity is usually increased by dissociation, chemical changes of the usual kind might occur as a secondary effect. Many instances of increased chemical activity due by the action of light on fluorescent substances might be cited.

If we look upon light as an electromagnetic phenomenon we should expect the vibrations produced by the exciting rays to be such as tend to separate the positive and negative parts of the molecule, and the resulting dissociation would either be of the usual electrolytic type or similar to that produced in a gas by the action of Röntgen rays. In the case of fluorescence the latter type of dissociation seems most probable; but in either case, if the view outlined above is correct, fluorescence should be accompanied by an increase in the electrical conductivity of the fluorescent substance. It was in order to test this conclusion that the experiments described in the third section of this article were begun. A more detailed discussion of the hypothesis outlined above, and of the experimental facts which tend to confirm it, is reserved for a later communication.

E. L. NICHOLS AND ERNEST MERRITT.

SPECTROPHOTOMETRIC STUDY OF SOLUTIONS OF COPPER AND COBALT.

[Abstract of a paper presented at the St. Louis meeting of the Physical Society, and published in the "Physical Review."]

THE effect of dissociation upon the colour of solutions may be studied in two ways—by the photographic or by the spectrophotometric method. The latter has the advantage of quantitative determination of absorption both in strong and in dilute solution. The latter method has been used by a number of observers, who have generally confirmed Ostwald's law, viz.: "That the colour of dilute solutions having a common ion is identical."

The method consists in the study of the absorption of such solutions in the concentrated and dilute form. It occurred to the writer that these solutions could be diluted in another uncoloured solution containing a common ion of great concentration, and thus prevent a large part of the dissociation, or, what is the same thing, repress the dissociation by the principle of mixed electrolytes.

The present experiments are limited to the study of the sulphate, chloride, nitrate, and acetate of copper; and the sulphate, chloride, and nitrate of cobalt. They have been given the usual treatment and have besides been diluted in strong acids corresponding to the negative ion of the salts. The method eliminates the absorption of all components except the one which is studied.

All the copper salts in dilute water solutions have identical absorp-

tion per equivalent in the strong absorption region at the red end of the spectrum. The cobalt salts also give identical absorption in dilute water solutions in the green band. In the more transparent regions, blue and red, the indications are that the cobalts might be identical in great dilution. They are, however, far from it at the dilutions studied. In the regions nominally transparent the copper salts show great divergence in the dilute water solutions, and the indications are for larger divergence with greater dilution. The standard solution of copper sulphate and this solution diluted both in water and acid give identical absorption per equivalent in the red band, i.e., in this region the colour of the ion and molecule are identical. In this same region the nitrate and chloride become relatively more transparent upon dilution.* When diluted in acid they become relatively darker and, if the acid is of adequate strength, even become darker than the original solutions. The acetate shows identical absorption in all solutions, and in the red region the absorption is more than twice that of the sulphate. The three cobalts become relatively more transparent upon dilution. Treating then with acids darkens the dilute solutions of the chlorides and nitrates but makes the sulphate more transparent. Possibly some of the cobalt sulphate was precipitated by the sulphuric acid treatment.

B. E. MOORE.

MODERN PHYSICS IN RELATION TO PHOTOGRAPHIC OPTICS.

THE review of the development of photography in England was not very gratifying, the lecturer stated. Foremost in the fields of theory and practice at different periods, England had allowed herself to be overtaken. George B. Airy had, in studying the camera obscura in 1830, grasped the problems of astigmatism and curvature of field; but his researches remained almost unheeded until Rohr drew attention to them. The early English opticians, on the other hand, to whom photography owed so much, were not mathematicians, and continued to follow empirical rules until the leadership was no longer theirs. William Hamilton gave the complete theory of the formation of images six years after Airy had published his researches, but Finsterwalder and Thiessen had to point out the importance of Hamilton's work, and to make it intelligible to practical British opticians, who then counted few men like Traill Taylor and Chance. In those early days Petzval, in Vienna, was the only man who carried out in practice theoretical lens combinations. In 1856 L. von Seidel showed clearly the defects we have to overcome in lenses, and now we can correct them; a complete account of his investigation was not available before 1880, however, and it was only in 1898 that the Bavarian Academy published a full edition of his memoirs, upon which S. P. Thompson dwelt in his fourth Taylor memorial lecture. Dr. Glazebrook referred repeatedly to this lecture by Professor Thompson. By 1870 the necessity of a new departure was recognised in England, and Stokes and Harcourt began to experiment on new glasses to meet the demands of optical theory: work that was soon afterwards taken up by Abbe and Schott, in Jena, with such signal success.

Dr. Glazebrook explained how problems, such as the imperfections of lenses offer are attacked. We must first get our data settled and stated; to express them in mathematical symbols we have to make assumptions simplifying the problem, though such assumptions may appear strained; when the formula is solved, we have to investigate its physical meaning, and to apply it. The phenomena are so complicated, even with perfect lenses, that we confine ourselves, with Gauss, to flat object problems, and, in the first instance, to monochromatic light. With these restrictions we have to consider five chief sources of error. Firstly, rays parallel to the optical axis are not all brought to the same focus; this defect is known as spherical aberration. Secondly, a point in the object, situated at a small distance off the optical axis, will give one image, produced by the rays falling upon the central portion of the lens, and another image produced by the marginal rays; this very

common defect of lenses is known as zonal aberration, coma, or obliquity effect. Thirdly, when the rays are more oblique, they are united, not at a point, but in a line, the primary focal line; they spread out again afterwards, and are once more brought to a secondary focal line. A flat object gives two more or less curved images, which coincide only at the principal focus; and when we observe the image of a point on a screen we see, at various distances, a vertical line, an ellipse (vertical axis long), another ellipse (vertical axis short), and a horizontal line. The field of a point is hence not stigmatic (not a point). The fourth and fifth defects—curvature of field and distortion—are connected with these aberrations. Seidel gave definite equations for the differences between the actual and the correct image; when his s_1 is zero, the lens is corrected for spherical aberration; when $s_2 = 0$, for zonal aberration; when $s_3 = 0$, for astigmatism, and so on. To satisfy all his equations, when $s_1 + s_2 + s_3 + s_4 + s_5 = 0$, is impossible with one lens; for we can, if restricted to one material, only vary thickness and curvature. But when we combine lenses, and change the materials to obtain the desired refraction and dispersion, we can also correct for s_6 (chromatic aberration), which was incompatible with flatness of field, until new optical glasses were prepared out of hitherto unused materials in suitable proportions. The remarkable results achieved were explained by diagrams which illustrated Steinheil's skill. When Steinheil commenced his researches, the image of a star in an ordinary lens appeared at the focus as a small circle with a dot in its centre; one degree from the centre of the lens it produced three more or less concentric oval curves. If the screen were pushed in or out by a fraction of a millimetre, the circle changed into three large concentric circles, and the ovals into three oddly shaped curves. Applying the corrections, Steinheil succeeded in suppressing these peculiar defects more and more.

Dr. Glazebrook then passed to instruments, spherometers, etc., designed for the systematic examination of lenses and exact measurements of their defects. An ingenious instrument of this kind—an optical bench designed and constructed by Messrs. Beck, and presented by Mr. Beck and Mr. Stuart to the National Physical Laboratory—was on view. It consists, Dr. Glazebrook pointed out, of many parts sliding in one another, and swinging in ball bearings about their centres, together or separately, and it can be used in a variety of ways. A graduated screen or an artificial star serves as an object. The lens revolves in its carrier on two hundred balls; both the lens and the cross hair-screen can be swung, and the microscope be racked; the equivalent focal distance is measured in the usual way, or half this distance is determined by shifting the lens through a certain arc; measurements for astigmatism can be made within a few minutes. Dr. Glazebrook also referred to the novel systems of testing due to Professor Hartmann. Instead of examining a distant object, Hartmann prefers, for certain purposes, to bring the object close to the lens; and he has further devised a method of tracing the paths of distinct rays. As worked out by Mr. Chalmers, this method consists in covering the lens under test with a diaphragm perforated at three, five, or more spots. The rays passing through these apertures will not converge to a common focus, but they will cross more or less near the focus; and if we place a sensitised plate between the lens and the focus, and another plate afterwards beyond the focus, the two pictures obtained will enable us to determine the directions in which the rays travelled. The obliquity of the incident rays is varied in such experiments.

Having shown examples of the excellent fruit which the application of these various methods of measurements has borne, Dr. Glazebrook concluded by expressing his regret that the National Physical Laboratory had so far not been able to apply any significant portion of its scanty grant to the aid of the optician. He would be a real benefactor who brought home to the Government the full recognition of the fact that such institutions had been created in order to facilitate the application of science to manufactures. He was glad, however, to announce that an optical convention would be held in London next May, which, it was hoped, would bring together practical and scientific opticians from all parts of the country for common deliberation concerning all sides of the question: theoretical, practical, and commercial.

We call the above report of the Traill Taylor Memorial Lecture from our contemporary, "Engineering," as this year we have not received from the hon. secretary of the Traill Taylor Memorial Fund, probably for very good reasons from his point of view, the lecture for report in full in our pages as in previous years.

* Muller in *Drude Ann.*, XII, p. 767, states there is an increased absorption of the copper nitrates and acetates upon dilution.

PHOTOGRAPHY COMPARED WITH PAINTING.

Although painters admit that photography can render the minute intricate details of Nature more faithfully than brush or pencil can do, they are apt to think it a mere mechanical operation in which little skill is required to meet with success, and they contend it is the light that records the impression on the plate, and therefore is unworthy of a place in the category of art. They imagine it requires no culture to arrange a composition, or to select the best point of view that will suit a subject, and to know when to seize it when the lighting is most effective, to avoid violent contrasts, overcome spottiness, to secure the greatest amount of relief, at the same time preserving important detail often lost in heavy shade.

Whatever opinions we hold respecting their views on this subject, the fact remains photography depicts Nature truthfully, in her simple, unadorned dress, and does not attempt to wrap its themes in mysterious symbols and enigmatical allegory—a caprice we often see of the painter. These knights of the brush portray historical events oftentimes from inaccurate description and conjecture, that accounts for the many different interpretations we see of the same subject bearing little similarity to each other. Photography on the other hand depicts scenes and episodes as they actually are, absolute facts we cannot refute, and the pictures obtained can be reproduced to any extent, and by many processes; this being one advantage over painting.

Photography has contributed much knowledge to mankind in general, and added many fresh pages to the book of Natural History; we have only to glance through the magazines to-day to prove this fact. Every phase of bird-life it has depicted from the embryo chick to the full-grown mature bird; even in those remote isolated tropical islands the camera has been much in evidence of late in taking those bird farms where the sacred albatross swarm in such immense numbers, and that make quite an industry in collecting their eggs. The queer methods and the subtle means employed to conceal the operator and his camera from view, when snap-shooting those gay-plumed birds known as flamingoes, are there shown in those unique pictures. Were it not for the camera we should know but little respecting the haunts and habits of these rare specimens of the feathered species.

By the camera's aid successful pictures have been taken in the jungle and swamp, showing voracious beasts in their wild state roaming in search of their prey, and good photos of savage reptiles basking 'neath the tropic sun have been secured. Gambier Bolton, Sir H. Johnston, and J. Lodge have made a speciality of this kind of work, and the success they have achieved is known to all and needs no further comment here. In this risky work the painter would utterly fail.

If the camera lacks that imitative vision which painters possess, it has points in its favour that compensate for that deficiency. Just think of the service it has rendered to the cause of science when accompanying those expeditions sent out to explore the unbeaten tracks unknown to the mind of man, and the pictures attained speak for themselves when thrown on the lantern screen, which later on we find reproduced in magazines to illustrate articles on the subject.

If we take a retrospect and compare the respective progress of painting and photography in the past, we shall find the latter has flourished, and the former—paradoxically speaking—has gone backward. The works of the old masters, such as Titian, Michael Angelo, Raphael, of the Florentine school, Velasquez, and a few others, surpass the productions of our contemporary modern painters, the Royal Academicians; for to-day the gems of those old masters are in great demand and fetch fancy prices, but the works of living R.A.'s are ignored and not appreciated, and when sold go for a mere trifle in comparison.

But if we now compare the progress of photography we shall find a striking contrast. Let us go back to its inception, when Niépce and Daguerre joined in partnership and submitted to the world the results of their labours, and see from what a minute germ this vast power has sprung. It was thought then very astonishing that a portrait could be taken in a few minutes instead of having to give many sittings of long duration to a painter; and if we compare the ill-defined smudge of seventy years ago that required minutes—in some cases hours—to produce, with the highly elaborate, delicate, and exquisitely-finished results we now get, and that with an ex-

posure made with a flying shutter—because the hand is not quick enough—who can say we have not advanced with wonderful strides? Photography has proved one of the greatest aids to science to-day, and the achievements it has wrought are simply marvellous; its influence and power are universally acknowledged, bringing all countries in touch with each other, and thus proving the adage of the immortal bard, "One touch of Nature makes the whole world kin."

TRIPOD.

ORTOL. ITS ADAPTABILITY TO PROFESSIONAL USES AND GENERAL APPLICATION.

AMONG the new developers that have stood the test of time and have substantiated the claims made for them by many prominent workers, Ortol has proven a particular favourite. By the great class of professional and amateur photographers who, accustomed to the handling of Pyro were eagerly awaiting the arrival of a substitute that would possess most of its unarguable characteristics without its inconvenience and that could be used by them without the wearisome necessity of studying for weeks a new system of development, Ortol has been hailed with delight. As long ago as 1899 so conservative a man as W. D. Welford expressed himself as follows: "As a user and believer for many years in that reagent (Pyro) far be it from me to cast even a shadow of suspicion upon its virtues, and I confess, that up to the present, not one of the developers introduced since Pyro has been equal to it as an all around first-class developing agent. Minor advantages have been gained, there can be no cavilling at this statement—skirmishes have been successful, but when the main battle has come off, Pyro has always won.

"I make the assertion that, if any developer will shake Pyro to its foundations, it is Ortol. It is no use saying that it will take the place of the other, because there are many who will never change—but I'll guarantee that, if Ortol be given a three months' earnest trial, spread over all classes of work, the dear old Pyro bottle will quickly find its way to Stevens."

This extract has been given in extenso because it expresses very well the general consensus of opinion obtaining among our best scientific and professional workers, including some of the staunchest supporters of Pyrogallic development, such as Professor H. C. Bothamley, Professor H. W. Vogel, Schnauss, Pizighelli, J. Gaedicke, Andrew Pringle, Professor Stolze and others.

Ortol is a chemical combination of 1 molecule, 1.4 dioxybenzol, with 2 molecules Ortho-methyl-amido-phenal-sulphate. The latter salt by itself a very fine developer, giving negatives of exquisite delicate gradation but lacking generally in density. The possibility of combining it chemically with a substance of great covering power like 1.4 dioxybenzol (hydrochinon), or 1.2 diaxybenzol (Pyroca-techin) enabled Dr. Anderson and J. Hauff to produce a developer admirably balanced in its chemical composition and adapted to the widest range of work. Like with Pyro, the image of an Ortol developed negative appears step by step and gains steadily in density; the progress of development can be easily regulated, hastened or slackened, following exactly the same principles and the same methods as with Pyro development; the only difference is that Ortol has taken the place of Pyro in the formula. Unlike Pyro, however, it can be usefully made up as a single solution, can be used several times over, is excellent for gaslight and for bromide papers alike, for transparencies and for lantern slides as well. It does not stain plate, paper, or fingers, even when old, and has excellent keeping quality. The colour of the negative can be regulated at will between black and brown; the rendering of tone values is perfect. The speed of development is slightly greater than that obtainable with Pyro, slower than that of Metol. It is readily amenable to the action of bromide of potassium, or other restrainer, including the physical restrainers, such as cold temperature of bath, colloids, sugar, etc., etc., and in consequence it is extremely elastic and able to compensate great excesses of exposure. It is also excellent for tank development on account of its keeping and non-staining qualities. Finally, it should be mentioned that below 70 deg. F., frilling is practically unknown with this developer, as it exercises a decided tanning action on the gelatine.

Dr. Eder, who made extensive experiments on the comparative behaviour of the different developing substances, speaks very highly of

the advisable adaptability of Ortol to general work. Sensitometric tests prove that Ortol will show when properly handled a higher sensitometer number than Pyro (Scheiner Sensitometer), and even with a shorter development yield more density as well. For instance, two similar exposures having been given with foregoing instrument and developed one with Pyro, the other with Ortol, all conditions of temperature being equal, Ortol allowed a reading of 15 Scheiner after two and a half minutes' development (photo grammetric density 0.41), as against 14 deg. Sch. (density 0.29) for Pyro, and of 17 deg. Sch. (density 0.49), after five minutes' development, as against 15 deg. Sch. (density 0.35) for Pyro. With Ortol a few drops of bromide of potash of citrate of potash solution 1.10 go a long way and act very powerfully as restrainers.

For great underexposures the best methods are either to resort to stand development or to add to the normal developer a few drops of a 10 per cent. solution of caustic soda or caustic potash.

As a general developer for all around work the following formula will be found exceedingly useful:

A.—Water	20 oz.
Metabisulphite potash	70 gr.
Ortol	140 gr.
B.—Water	20 oz.
Soda carbonate crystals	2 oz.
Soda sulphite crystals	1½ oz.

Normal developer 1 part A, 1 part B, and 1 part of water.

Greater softness is obtained by increasing the water or alkali or both.

Greater contrast by increasing the quantity of "A" and adding bromide of potassium (1.10 solution), as required.

For very crucial work, however, and when the greatest power of modification is required, it is best to make up the developer in three solutions after the suggestion of W. D. Walford, the sulphite being kept separate from the carbonate, thus:

A.—Ortol	1 oz.
Metabisulphite potash	½ oz.
Water	60 oz.
B.—Carbonate of soda crys.	8 oz.
Water	50 oz.

Some writers suggest as an addition to this solution 1-3 ounce of a 5 per cent. solution of hypo.

C.—Sulphite of soda crystals	10 oz.
Water	40 oz.

Normal exposure, vigorous negative: 1 part A, ½ part B, ¼ part C. Bromide solution 1.10 as necessary, generally about two grains per ounce of mixed developers.

Normal exposure, softer negative, add 2 to 3 parts of water to above and reduce the amount of bromide to ½ to 1 gr. per ounce.

Over exposure, 1 part A, ¼ part B, ½ part C.

Bromide 5 to 10 grains per ounce.

Under exposure, 1 part A, 1 part B, 3 to 4 parts of water, no bromide.

After the negative is fully developed, but for the finest detail, and it is feared that density might be too great, a good method is to flood the plate quickly with a weak solution of soda, say 1 part B and 6 to 8 parts of water. After having allowed it to act for a few seconds rinse the plate and immerse without delay in the fixing bath.

As previously stated, Ortol is admirably adapted to the development of bromide paper yielding with them, under proper conditions, a beautiful black deposit, which comes nearer to that obtained with Ferrous-oxalate than is possible with any other developer. We give here Hauff's original formula:

Water	1,000 gms. 32 oz.
Metabisulphite potash	7.5 gms. ¼ oz.
Ortol	15 gms. ½ oz.
Water	1,000 gms. 32 oz.
Carb. of potash	60 gms. 2 oz.
Soda sulphite crystals	100 gms. 6 oz.
Potassium bromide	1-2 gms. 15-30 grs.

Normal developer: One part A, 1 part B, 4 parts water. With

warm water the resulting image will be softer with less, distinctly harder.

For gaslight papers the same developer may be used to great advantage as follows:

One part A, 1 part B, from no water to two parts of water. By modifying the amount of the latter and the amount of the bromide, the colour of the print can be modified to suit the taste of the operator from pure black to brown, and even to red, by further addition of some carbonate of ammonia, an ammonia bromide, and the suppression of the soda sulphite in solution B.

Any of the formulas previously given is admirably adapted for the production of transparencies and lantern slides, and it is unnecessary to enter into further particulars on that subject. We cannot resist, however, the temptation to reproduce the following formula (Andrew Pringle), which has given in many hands the first warm-black and brown slides we have ever seen.

A.—Water	20 oz.
Metabisulphite potash	34 gr.
Ortol	150 gr.
B.—Water	20 oz.
Carbonate soda crystals	3½ oz.
Soda sulphite crystals	2½ oz.

One part A, 1 part B, 1 part of water, and from ½ to 2 grains potassium bromide to the ounce of mixed developer. We strongly advise lantern-slide makers to try the foregoing, preferably on some slow plates, and they will find it all that can be desired. We may add that the same formula is very well suited for the development of plates and bromide paper.

We have referred to the use of Ortol for stand development. By it negatives of admirable delicacy and gradation may be obtained even from very much underexposed plates. Usually the speed must be so regulated that development will be completed within an hour. Occasionally this might be extended to three hours. There is no advantage, however, in fact rather prejudicial. The normal developer may simply be diluted from 30 to 50 times, or, if very slow development be preferred, the following might be substituted for it:

Ortol	20 gr.
Soda sulphite crystals	150 gr.
Metabisulphite of potash	10 gr.
Soda carbonate	130 gr.
Potassium bromide	3 gr.

Water, about one pint.

More or less water will respectively slacken or increase the speed of development.

All the formulas given above have been carefully chosen from the most popular ones that have stood the test of thorough investigation and practical work. We wish, however, to caution the reader not to use them without taking into account the fact that every formula published has to be adjusted to the particular plate one is using as well as to the ultimate results contemplated in the print. This is true of Ortol, of Pyro, or of any other developer, but for a photographer accustomed to Pyrogallic acid development Ortol will have but pleasant surprises, and he need not modify his ordinary methods and processes to suit the new reagent. The change from the one to the other will cause him no trouble or spoiled plates if he has read carefully the preceding remarks, and he will feel pleasantly gratified at the advantage of using Ortol.—"The Photo-American."

On Friday evening last week the Fire Brigade was called to a fire which had been discovered in the premises of Mr. C. R. Chaplin, photographer, Rose Cottage, Sea View Terrace, Colwyn Bay. It was found that the wooden partition of the picture-framing room was all in flames, and were it not for the prompt action of the Brigade and some neighbours, the whole building would have been destroyed. As it was, damage to the extent of about £60 was done, this loss being only partly covered by insurance. It is not known how the fire originated, but it is surmised that a drying-cloth hanging over the door was blown by a draught over the gas-flame and was thus ignited, the fire passing to the woodwork.

FIRST AMERICAN SALON.

The following abstract of a note by Mr. F. Dundas Todd on the above subject will be read with interest, and it is a strong argument for the trial in England of the system of having a jury composed of artists and artists only, in order that we may have some of our own strange gods overthrown and bring some of us back to the paths of sanity and common sense:—

Notwithstanding the pooh-poohing that has been liberally poured upon the proposition by individuals on both sides of the Atlantic, the photographic world has practically received it with open arms, and pictures by the thousand have been pouring into New York during the month of November. At the date I am writing I am unable to give the exact figures, but a rough estimate is to the effect that about seventy-five hundred frames were contributed from America and about sixteen hundred were received from abroad. To handle such an enormous collection was in itself no mean task, and on a recent visit to the rooms of the Metropolitan Camera Club I found over one dozen members as busy as bees, trying to reduce order out of chaos.

Even more remarkable than the numbers submitted is the status of the jury of selection, which consists of the most eminent artists this country has ever seen. On the first day of selection no less than eleven of them appeared and on the second day an even dozen, comprising such men of fame as John La Farge, Childe Hassam, Edwin H. Blashfield, and Kenyon Cox, being a jury the like of which never was brought together in the history of photography, and one whose opinion must unquestionably be final in photographic art matters, because whoever cavils at the decision of such a jury can appeal to no higher court.

I happened to be in New York city on the first day of the judging, and on the day following, along with a number of brother editors, I was permitted to look through such pictures as had been selected in order that I might make a choice of a few pictures for reproduction in this month's issue, so that the readers might have an opportunity of forming a broad estimate of the character of the selection made by the jury. The impression that I received was rather startling, because, much to my surprise, I found that this jury of artists had—use a slang expression—practically upset the photographic apple cart, for they had, in a large number of instances, overthrown the strange gods the photographic world had in former years bowed down to and worshipped. Some of the first pictures to catch my eye were models of perfect definition and pure photography, in fact, would gladly be selected by lens, plate, and paper manufacturers as first-class mediums for advertising the quality of their goods; such pictures as we have never seen in salons for many years. On the other hand, one could find many specimens of the mud-flat school and my offhand opinion was that the most striking feature of the display to the average man will be its broad catholicity, for here he will find everything to his taste and much that will not please him. On the walls will be pictures that are fuzzy, some that are sharp, many that are murky, and others that are as clear as fine definition can make them. In subjects there will be as much variety. A casual glance shows snow scenes, waterscapes, landscapes, portraits, genre subjects, and, in fact, everything that one expects to be rendered as pictorial photography.

I did not have an opportunity of looking over the rejected mass of pictures, but I was informed that many that had figured in past salons had been unfortunate in this; while many that had been rejected formerly were now to hang on the walls—the labels on the back of the pictures being accepted as a proof of this.

The foreign pictures submitted had not found their way out of the custom-house when I was in New York city, but a recent letter from Mr. Bell informs me that both England and many other European countries are splendidly represented, notwithstanding the incessant efforts to belittle the salon.

The most important conclusion that came to my mind from the brief overhauling of such pictures as had been selected on the first day is this: That the jury of the highest ability in the artistic world has proclaimed to everyone that it is possible to produce pictorial photographs by straight photographic methods, and it seems to me that the world-wide proclamation of this fact will give incentive to those who at present have really no sympathy with the faking methods so much in vogue.

New Books.

"Subject List of Books on Fine and Graphic Arts (including Photography) and Art Industries in the Library of the Patent Office." Published at the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C. Price 6d.

The Librarians of the Patent Office have withdrawn the list dealing only with photographic books and periodicals and have substituted for it the above. In doing so they have somewhat modified their classification, and have included the volumes added to the library since the issue of the previous list. As the Patent Office possesses the finest public collection of technical literature in this country, if not in the world, we shall refer further to this catalogue in our next issue. In this issue, however, we print the list of periodicals in the belief that it will be of value to those who have any occasion to undertake any research into the literature of photography.

"Penrose's Pictorial Annual for 1904." Edited by William Gamble. Published by Penrose and Co., 109, Farringdon Road, London, E.C.

Known probably as well by its sub-title, "The Process Year-Book," this annual has made a distinct place for itself in photographic literature, which also seems quite unattainable by any other work, and personally we know of no other which can take its place. This, the tenth volume, is no whit less interesting, instructive, or poorer in illustration than its predecessors; in fact, one must admit that there is generally an advance. To every process worker, or to every photographer who is interested in keeping a record of one of the largest and most important applications of photography this book is indispensable, for to him who has little or no interest in the text the illustrations will provide not only pleasure, but profit in the examination of their beauties, which are of a very high standard both in monochrome and colour. Handsomely bound and beautifully printed, the volume is alike a credit to the editor, the publishers, and the printers.

Patent News.

The following applications for patents were made between December 12 and December 17, 1904:—

Coloured Photography.—No. 27,141. "Coloured Photography." Herman Dahl.

Lighting Powders.—No. 27,267. "Improvements in and relating to powders or compositions for use in artificial lighting for photographic purposes." Gottlieb Krebs.

Lighting Powders.—No. 27,268. "Improvements in and relating to powders or compositions for use in artificial lighting especially for photographic purposes." Gottlieb Krebs.

Shutters.—No. 27,375. "Improvements in and relating to camera shutters." William Frederic Butcher.

Photographic Identification.—No. 27,384. "A new or improved method for the utilisation of photography for the identification of living objects, articles of furniture, works of art, and the like." Herbert John Haddan.

Colour Photography.—No. 27,418. "Improvements in colour photography, animated or otherwise." William Norman Lascelles Davidson.

Flash Powder.—No. 27,465. "Improvements in flash powder for producing artificial light for photographic and other purposes." Hans Lutke, Paul Arndt, and Ernst Leopold Lowengard.

Flash-light Cartridges.—No. 27,466. "Improvements in flashlight cartridges for producing artificial light for photographic and other purposes." Hans Lutke, Paul Arndt, and Ernst Leopold Lowengard.

Artificial Light.—No. 27,589. "Improved artificial light for photographic purposes." George Wilson Morgan.

Meetings of Societies.

MEETINGS OF SOCIETIES FOR NEXT WEEK.

Jan.	Name of Society.	Subject.
2.....	South London Photo. Society....	<i>Some Architectural Details.</i> Mr. H. Creighton Beckett.
2.....	Bowes Pk. and Dis. Ph. Sec.	<i>Enlarging by Artificial Light.</i> Mr. H. Stuart.
2.....	Southampton Camera Club	The Annual General Meeting.
2.....	Nelson Photographic Society	Open Night.
3.....	Border City Camera Club	Members' Lantern Slides.
3.....	Sheffield Photographic Society	<i>Amateur Photographer Prize Competition Slides.</i>
4.....	Edinburgh Photo. Society	<i>Michael Angelo.</i> Illustrated. Mrs. J. Lauder Thomson.
4.....	G.E.R. Mechanics' Institution	<i>Enlarging at Home, without Expensive Apparatus.</i> Demonstrated. Mr. Green.
4.....	Boro' Poly. Photo. Society	Members' Night.—An Exhibition Talk.
5.....	Hull Photographic Society	<i>The Platinotype Process.</i> Demonstrated. Rev. C. O. Stewart.
5.....	Watford Camera Club	Holiday Prints. Competition.
5.....	Gateshead Camera Club	<i>Pictorial Composition.</i> Mr. W. F. White.
5.....	Southport Photo. Society	<i>Toning of Bromide Prints and Lantern Slides and the Intensification and Reduction of Negatives.</i> Demonstrated. Messrs. Burroughs, Wellcome, & Co.
5.....	Batley and District Photo. Soc.	<i>A Naturalist's Rambles with his Camera.</i> Mr. Riley Fortune, F.Z.S.

ROYAL PHOTOGRAPHIC SOCIETY.

TECHNICAL Meeting, December 20; General Waterhouse in the chair. A paper by Mr. Max Levy on "Half tone Screens" was read.—The lecturer dealt shortly with the early historical side from Nièpce and Talbot, mentioning the discovery by Ponton, in 1839, of the properties of chrome gelatine compounds, giving rise to the colotype process; then Woodbury type and photo-lithography.

The half-tone process, at the present time the simplest of the photo-mechanical processes, was only developed gradually. Mr. Levy's own experience of a connection with photo-mechanical work dates back to 1875, when he joined his elder brother, Louis Edward Levy, in Baltimore, who had just patented the original Levy type process.

At this time there were only three parties commercially engaged in photo-engraving in America.

From 1881-1885 the method of etching on zinc from an impression obtained directly on bichromatised albumen came into general use. This advance removed a whole range of difficulties in the way of the progress of the half-tone process. The last great difficulty now presented itself in the way of obtaining a suitable ruled screen for the work. Meisenbach, in Berlin, was the first to appeal to the trade, offering large printed sheets, and also rulings on glass, from which photographic copies were made by the user. Mr. Ives had abandoned his original process, and was using screens which he ruled for himself.

From about 1886 Mr. Levy gave himself to the work of making a proper ruling for a screen, making rulings on steel and copper plates and also on glass, the latter being one of the most elusive undertakings he has ever attempted. He determined that two things were vitally important—the one an automatic machine, which could be taken, if necessary, to some quiet spot in the country; and the second, a suitably ground and polished cutting tool of diamond, as all other substances had proved totally inadequate.

To design an automatic machine on the lines of the one which he had was Mr. Levy's first task, and, after gradually overcoming the difficulties met with, about the fall of 1888 he had an automatic machine ready for the belt. With this and a suitable diamond point it was possible, with sufficient effort, to produce a thoroughly good and serviceable ruling up to 15 x 12 inches, and of the necessary fineness for direct work. His brother was impressed with the idea that if the lines could be etched into the glass and filled with a black pigment it would produce an ideally perfect screen. After numerous attempts complete success ensued, but by no means ended the difficulties encountered in producing screens commercially. In the fall of 1890 Mr. Max Levy started to work, and about six months later a commercially satisfactory screen was produced. At this time Messrs. Levy and Mr. Ives were the only users of cross-line screens. As is well known, the introduction of these screens gave a great impetus to half-tone work. The study of the underlying optical phenomena was taken up with a view to establishing the best possible

relation between the black and white elements of the screen. Some of the results of these studies are contained in a paper read before the Photographic Society of Philadelphia in 1896. These studies tended to establish the equal black and white line as the best proportion.

About 1890 a screen of 120 lines to the inch was nearly as fine a ruling as could be advantageously used for high-class work, and 130 lines to the inch for small and fine work. Nowadays 200-line ruling is not at all uncommon, and screens of 300 and 400 lines to the inch find occasional use.

The years 1896 and subsequent gave rise to a demand for something which should be less flat and have a less mechanical texture than was characteristic of the half-tone produced by the cross-line screen. The outcome of this was the four-line screen, which showed a distinct advance in the rendering of detail and variety of tones, but the mechanical character of the screen was somewhat exaggerated.

After dealing shortly with the irregular grained printing plate, the lecturer closed his remarks.

SOUTHAMPTON CAMERA CLUB.

THE usual weekly meeting of the above was held on the 19th inst., while the club exhibition was in progress, opportunity being made to present the awards to the successful exhibitors. After the competition slides had been put through the lantern, the Mayor, Colonel Bance, J.P., in congratulating the club upon the excellent display in all the classes at the exhibition, made some very interesting references to his early experience in the art, and then proceeded to distribute the plaques and medals. Later the Mayor was called upon to make another very interesting presentation, in the shape of an album containing a specimen of work of practically every member of the club to the esteemed president, Mr. W. B. Hill. Mr. Kimber, the hon. secretary, expressed the feelings of the members towards the president in the warmest terms, and that gentleman having replied the meeting terminated with a vote of thanks to the Mayor for his attendance.

BURTON AND Y.M.C.A. PHOTOGRAPHIC SOCIETY.

THE above society held a general meeting on Monday, December 19, when there was a good attendance. The result of the judging of pictures sent in for the competition for "the best photograph taken during the current year" was announced, Mr. T. Grundy being awarded the silver medal, the bronze medal going to Mr. J. W. Woodhead; judge, the Rev. E. Gilmour. These are the first medals presented by the society. There was a large entry of high-class work. The annual election of officers took place, when it was proposed that Mr. Peet be asked to accept the presidency and the Rev. E. Gilmour the vice-presidency. The following officers were elected: Chairman, Mr. Knight; secretary, Mr. G. Moore; reporting secretary, Mr. T. Grundy; committee, Messrs. Abrahams, Lawley, Shreeves, Jefferson, Woodhead, and Barrett. A very satisfactory balance sheet, showing improvement on previous years, was presented by the secretary, who also announced an excellent programme for the ensuing session.

FORTHCOMING EXHIBITIONS.

January 12-14, 1905.—Boston Camera Club. Hon. Secretary, H. M. Hames, 65, West Street, Boston.

January 14-28, 1905.—The Scottish National Salon. Hon. Secretary, W. A. Frame, 28, Bank Street, Hillhead, Glasgow.

January 20-21, 1905.—South Essex Camera Club. Hon. Secretary, T. Mitchell, 180, Browning Road, Manor Road, E.

January 23-28, 1905.—Lancaster Photographic Society. Hon. Sec., R. T. Simpson, 21, Cheapside, Lancaster.

January 28-February 12, 1905.—Photographic Society of Marseilles. Secretary, M. Astier, 11, Rue de la Grande-Armée, à Marseille.

February 6-11, 1905.—Blairgowrie and District Photographic Association. Hon. Secretary, Wm. D. M. Falconer, James Street Cottage, Blairgowrie.

February 16-18, 1905.—Norwich and District Photographic Society. Hon. Secretary, E. Peake, Rydal House, Earlham Road, Norwich.

February 21 to March 7, 1905.—Glasgow Southern Photographic Association. Hon. Secretary, W. A. Frame, 23, Bank Street, Hillhead, Glasgow.

February 25-March 4, 1905.—Birmingham Photographic Society. Hon. Secretary, Lewis Lloyd, Norwich Union Chambers, Congress Street, Birmingham.

March 4-11, 1905.—South London Photographic Society. Hon. Secretary, H. Creighton Beckett, 44, Edith Road, Peckham, S.E.

March 7-14, 1905.—Brentford Photographic Society. Hon. Secretary, F. H. Read, Ferndale, Clifden Road, Brentford.

March 20-25, 1905.—The Cripplegate Photographic Society. Hon. Secretary, John B. Parnham.

April, 1905.—International Exhibition, Genoa. Sec. Gen., Piazza Fontane Marose 18, Genoa.

April 3-15, 1905.—Photographic Society of Ireland. Hon. Sec., R. Benson, 35, Molesworth Street, Dublin.

June, 1905.—Northern Photographic Exhibition. Secretary, F. G. Issot, 62, Compton Road, Harehills, Leeds.

FORTHCOMING COMPETITIONS.

December 31.—Barnet. Nineteen classes. Prizes valued at £500 for lantern slides and prints made with Barnet products. Elliott and Sons, Limited, Barnet, Herts.

March 31, 1905.—Ilford. £750 in cash prizes for negatives on Ilford plates. Ilford, Limited, Ilford, E..

Commercial & Legal Intelligence

At an extraordinary general meeting of the Alliance Roll Film Camera Company, duly convened, and held at 88, High Holborn, London, W.C., on the 29th day of November, 1904, the following special resolution was duly passed; and at a subsequent extraordinary general meeting, also duly convened and held at the same place on the 14th day of December, 1904, the following special resolution was duly confirmed: "That the company be wound up voluntarily, and that Mr. J. D. Garside, of 34, New Bridge Street, E.C., be and he is hereby appointed liquidator for the purposes of such winding up."

A CASE of Likeness.—Wishing to make presents to his mother and his fiancée, Horace Cope, a Stalybridge tailor, obtained coloured photographs of himself from Mr. Hallas, of Market Street. He did not like the pictures, and refused payment. So he had to answer a claim for two guineas in the Salford Hundred Court of Record last week. Obviously the easiest way of settling the case was for the jury to compare the presentments with the original, and this was done. "Had that man's face been dabbed in a pat of butter you could not have got a better likeness," commented Mr. Ray, who appeared for the photographer. All Judge Shee had to ask the jury was, "Do you think these are reasonably good coloured photographs?" and the jury thought they were.

A CHARGE Withdrawn.—Mr. A. Muir-Wilson appeared on Thursday at Barnsley Borough Police Court in a case mentioned a week ago in which Edward Dawes, photographer, of Pontefract Street, Barnsley, was charged with having embezzled £8, the property of Denis R. Thompson, photographer, High Street, Sheffield. A week ago Thompson wrote, asking that the case might be withdrawn, but the Bench refused to permit this to be done so summarily. Mr. Wilson, for Thompson, said he was there to do what his client ought to have done, instead of writing to the Court. He knew, almost better than anyone else, that Courts of that kind must not be used for anything suggestive of a debt-collecting agency, but his client acted with fairness, if he did not treat the Court with proper courtesy. Mr. Wilson related the facts of the case, stating that at the outset his client believed Dawes' explanation to be a fairy tale. He added that for the mistake his client had had to pay. "He has had to pay me," added Mr. Wilson, "for, as your Worship may know, I do not come here for any nominal fee." Mr. Rideal observed that his client had a good answer to the charges, and he asked that the case might be dismissed, in justice to his client's character. The Mayor replied that he thought the withdrawal of the case, and the observations of Mr. Wilson, met the matter, and the case was accordingly struck out.

News and Notes.

THE Aberdeen Photo Art Club held its fortnightly meeting at 62, Fonthill Road, last week. The President, Mr. G. L. Smith, occupied the chair. Mr. D. Duff read the criticisms on "Christmas cards" sent in for competition. The first places in this competition were taken by Mr. John D. Stephen, Miss M. R. Smith, and Mr. J. Dalgity. The helpful and instructive criticisms by the adjudicators, Mr. Findlay and Mr. David, were heartily appreciated. The President gave a practical demonstration on "Mounting," aided by prints sent in by the competition judges. Mr. Smith showed, by careful selection of the tints used in building up a mount, how much pictorial value can be added to a print by such means. The remainder of the evening was occupied by a demonstration on "Flashlight Photography," by Mr. J. D. Stephen. The demonstrator, in an interesting manner, showed the various easy methods by which photography may be employed during the dark days and nights of winter. Mr. Stephen purposely employed the simplest means, which, he said, could be accessible to every worker. His lesson in this attractive branch of photography was much appreciated by the members.

THE third in-door meeting of the Derby Photographic Society was held last week. In the course of the evening the President, Dr. E. Collier Green, commented upon the fact that this was the inaugural meeting in the new home of the society, which promised to be very comfortable, and eminently suitable for the purpose. The hon. secretary, Mr. A. H. Bennett, announced the awards made by Sir William Abney, to whom the competition prints had been submitted for adjudication. In the open class Sir William awarded the medal to Mr. J. Huxley, of Derby, for a picture which the judge, in his notes on the competition, said was delicate, had a good deal of feeling about it, and was technically good. In the novices' class the medal went to Mr. J. W. Tempest, of Duffield, whose work was described as excellent, the "Yorkshire Beck" being technically and artistically good, and a beautiful photograph. The whole of the competition prints were hung on the walls of the room for the inspection of members. Two new members were elected, and Mr. W. R. Bland then proceeded to read an instructive lecture on "Principles of Composition and Selection of Subject," by Mr. W. E. Tindall, R.B.A. The lecture was illustrated by lantern slides, the lantern being manipulated by the hon. lanternists, Messrs. S. Finney, C. E. Etches, and W. Wilkinson.

WARPED Printing Frames.—A local amateur (says the "Oxford Times") for some time past had been considerably exercised by a fuzziness which appeared in the centre of some prints of an architectural subject. Persons who examined the print were unanimous as to "flare-spot," and the unfortunate worker, whose camera was but a recent investment, was considerably dismayed. Curiously enough, prints from quarter-plates which had been used in the same camera with an adapter developed no such defects, and the mystery thickened. Determined to discover the source of the trouble, the victim carefully examined the half-plate negatives which had given the faulty prints, and finding every portion of the image sharp, he turned his attention to the printing frame, and, after careful examination of the hinged back, found that the wood had warped considerably in the centre, rendering it impossible to get sufficient pressure on the paper to secure a sharp image. It is evident that other persons have had similar experiences, for the manufacturers are carefully rabbetting the backs of all the decent frames made at the present moment, and this without any addition to charge of the old and inferior article. Printing frames are but one of the many minor necessities in photographer's equipment which need periodic overhaul and which may cause untold disappointment and expense if neglected.

MORE Rays.—It might be thought that discovery in the direction of obscure rays would be resting awhile; but still another set of rays is claimed to have been discovered by M. di Brazza, a student of Liège. Their results have been rendered visible to the outsider by employment of orthochromatic plates. Professor Charpentier, of Nancy, had surmised that the brain is the seat of the emission of the N-rays, and M. di Brazza thinks he has proved it and that his rays, called I-rays, differ from N-rays by being able to pass through moist substances. When an experimenter concentrates his will, the

I-rays from his brain cause changes of luminosity in a phosphorescent tablet. When his attention is not concentrated, the light does not flicker. The rays are not emitted equally from every part of the head. They are nil at the forehead and upper part of Broca's centre, increase at the temples and eyes, and reach the maximum behind the ears. A question of profound importance is hereby raised. If it be possible to produce a visible physical effect on objects external to an experimenter or operator, what ground is left to stand on by those who object to the idea that the person's mind is capable of influencing that of another without the ordinary senses of touch, hearing, seeing, etc., being brought into play? If M. di Brazza can bring his orthochromatic plate results into the court of science, and win a verdict in favour of I-rays, a most momentous epoch will have been initiated.

THE First Christmas Cards.—In these days of photographic greeting cards, the following from the pen of Mr. Percy Collins will be read with interest. We clip it from "The World's Work" for January, 1905:—When we realise that for several seasons past something like 35,000,000 Christmas cards have been transmitted annually through the British Post Office alone, the fact that the production of Christmas cards forms no inconsiderable item in the world's work is self evident. Of all the national institutions with which we are accustomed to celebrate the festive season, the card of kindly greeting can boast of having had the smallest beginning and the most steady growth. Not a few among us can look back at the time when Christmas brought no cards; for, as far as can be ascertained, the first genuine Christmas card was not entrusted to the care of the Post Office until the year 1844 or thereabouts. The sender of this solitary token of goodwill was the late W. A. Dobson, R.A.—at that time just a very young man earning his living as a master of the Government School of Design at Birmingham. He had a friend from whom he had received certain courtesies of which he desired to show his especial appreciation. The time was Christmas. So after some thought he made a sketch symbolising the spirit of the festive season and posted it to his friend. This sketch—the first Christmas card of which any record is preserved—was done on a piece of Bristol board about twice the size of the modern letter-card. It depicted a family group toasting absent friends among appropriate surroundings of holly and evergreens, and was supported by panels illustrating deeds of benevolence. The unpretentious little picture gave so much pleasure to its recipient and was the cause of so much envious interest among his friends, that Mr. Dobson was prevailed upon to repeat his experiment. Then, two years later, he etched another design, had a block made by a local lithographer, and posted copies to all his friends. A really happy inspiration does not long remain the exclusive property of the inspired. The next year, several of Mr. Dobson's artistic acquaintances were producing their own Christmas cards and sending them to their own friends; and with each succeeding season this circle of imitators grew wider. Ten years or so later, some one suddenly saw money in the notion, and thus the Christmas card of commerce was put upon the market.

COPYRIGHT in Magazine Illustrations.—A case of some importance to photographers who supply illustrated articles to the magazines recently came before Mr. Justice Darling. Although the case concerned artists' drawings, it is to be presumed that the decision of the Court would apply equally to photographs. Drawings supplied for magazine articles remain the property of the artist (reports the "Daily Chronicle"). This was the conclusion arrived at after hearing a number of expert witnesses by a jury in Mr. Justice Darling's Court yesterday. The plaintiff was Mr. Ormrod Maxwell Ayrton, architect; and he sued Messrs. C. Arthur Pearson, Ltd., for £173 5s., the value of eleven drawings. Mr. Ayrton supplied materials for an article on weather vanes, and fifteen drawings for the purpose of illustrating it, receiving £10 for his services. When he applied for the return of his drawings he received a letter saying that eleven of them had been mislaid or lost in a spring cleaning. The defendants also said they were not liable, the custom of the profession being that all drawings became their property. Mr. A. Lys Baldry, art critic of thirty years' standing, stated that he had never heard of a custom that the drawings of artists became the property of the proprietors of magazines in which they were published. Where there was no special arrangement for the return of the drawings it was an understood thing that they were returned. In cross-examination, Mr. Baldry admitted that in the case of illus-

trated journals the drawings were generally bought outright. There was a great difference between illustrated journals and magazines. Mr. Clement Shorter, editor of the "Sphere," was called for the defence. He said he had had fifteen years' experience of illustrated journalism, and had been editor of the "Illustrated London News" and the "English Illustrated Magazines." There was a custom as between contributors to and proprietors of illustrated magazines and journals that drawings sent to illustrate articles became the property of the proprietors. Mr. Shearman, K.C. (for the defendants): In your experience is there any distinction between monthly magazines and weekly or daily papers?—None whatever. What do you say as to the amount claimed for the drawings?—I think it is quite absurd. Mr. Geo. F. Hammond, art editor of the "Illustrated London News," stated that his journal received a large number of drawings, and in the absence of any special contract they became the property of the proprietors of the journal. He had seen the four drawings which had been returned to Mr. Ayrton, and in his opinion it was preposterous to say they were worth £15 15s. each. Mr. Shearman: What do you say is a fair price for drawings of this class?—I can get as many as I require for a couple of guineas each. Mr. Stanley Wood, artist, stated that he had had sixteen years' experience as a black and white artist, and knew the custom was that the original drawings always belong to the proprietor of the magazine. Several other witnesses having stated that the custom in regard to magazines was that the drawings became the property of the proprietors, the jury found a verdict for Mr. Ayrton, and assessed the damages at £40. Judgment accordingly with costs.

DEATH of the Rev. J. M. Bacon.—We much regret to record the death of the Rev. J. M. Bacon, which took place on Christmas night at his residence, Cold Ash, Newbury, Wilts. The deceased gentleman was well known to photographers, through his lectures and writings on photography, as applied to scientific aeronautics, although his use of the camera was more in the direction of the popular presentation of his subject than in its more serious aspects. Describing Mr. Bacon as the "leading scientific aeronaut in England," the "Chronicle" says: "He was born in 1846, and was the son of Mr. John Bacon, and grandson of the Royal Academician of the same name. His early years were spent in the North of England. After the usual course of school and university education he decided to take Holy Orders, and was ordained in 1870, at the age of twenty-four. An active life followed his entry into the ministry, and he inaugurated and presided over many local institutions, but he first came to the front as a scientist in 1896, when he took part in the expedition sent by the British Astronomical Association to Vadsø, Lapland, to take observations of that year's eclipse of the sun. So well did he acquire himself of his charge that when another expedition was organised to study the solar eclipse of 1898, he was placed in full control, and successfully directed the operations of a party of astronomers at Buxar, India. In 1900 he took out a third party of scientists for a similar purpose to Wadesboro, North Carolina. Of late years Mr. Bacon was best known for his very numerous balloon ascents, and the equally numerous articles he wrote in connection with them. He was one of the most enthusiastic aeronauts in the country, and his fearlessness in pursuit of his favourite hobby seems to have communicated itself to his daughter, Miss Gertrude Bacon, who accompanied him on many aerial adventures. Nearly all his experiments had for their object the elucidation of some scientific problem—generally connected with either acoustics or meteorology. He made several essays in military ballooning. One of the most recent was connected with the possibility of delivering dispatches by balloon to a beleaguered city. During the summer of 1903 he carried out a trial on these lines, leaving the Crystal Palace grounds and dropping the dummy, "General Jacqueminot," on Blackheath—being attended through his course by a party of military cyclists. His latest and perhaps most valuable experiments, from a practical point of view, were conducted this year at his residence near Newbury, and had for their object the construction of a safe and effective hot-air balloon. The main features in his invention—in which he had the co-operation and assistance of Mr. J. N. Maskelyne—were a petroleum vaporiser and an asbestos safety tube or neck. It was anticipated that inflation by the new process would have the advantages of economy and efficiency, as compared with that by hydrogen or coal gas, and it is much to be regretted that his death has come to cut short these most interesting trials. Besides writing a great number of articles and scientific papers, Mr. Bacon narrated his aerial experiences in his books, 'By Land and Sky' and 'The Dominion of the Air,' and delivered many lectures on his favourite pursuit. During the course of many scores of balloon trips by land and sea he had some exciting experiences."

Correspondence.

- * Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.
 * We do not undertake responsibility for the opinions expressed by our correspondents.

THE EMPLOYEES UNION.

To the Editors.

Gentlemen,—I am glad to see there is a movement on foot to start an association of photographic employees. Several times I have been on the point of writing to suggest the desirability of such a movement, feeling that with the growth of photographic "industries" or "works" distinct from portrait businesses the number of persons engaged in photographic work who must necessarily expect to remain employees without the prospect of going into business on their own account is now so great that they can no longer afford to neglect the advantages to be gained by organisation. From the first suggestion by the P.P.A. of a means of classifying assistants by certificates and examinations, it has appeared to me that this would pave the way considerably to some method of fixing a standard minimum wage for a given efficiency on the part of an assistant. While there are no means of officially grading the workers according to their capabilities, it would be difficult, with so much inequality in the work turned out by professional portrait photographers, and the consequently varied attainments required, to do anything at all in the way of fixing wages. Now prospects seem better. What I am wondering is whether, considering the way in which photographic employees are scattered and the difficulty of getting any number of them together in any given time, it will be possible to get them to unite in sufficient numbers to make the scheme a success. The Shop Assistants' Union seemed likely to be one that should take the receptionists, though I was doubtful if it would be open to retouchers. The remarks of "Assistant" on page 1,078, line 32 from top left-hand column, although not mentioning any union by name, rather indicates that this would not be practicable. If, however, employees show no more enthusiasm for organisation than their employers have done, I am afraid it will be some time before anything in the way of sick benefits will be obtainable. All assistants, at any rate, should write to Mr. Palmer, and employers in sympathy with the movement might very well bring the matter under the notice of their staff.

I am afraid the average employee, like a good many P.P.'s, only reads his "Journal" when a change of crib or an answer in the "query column" is wanted.—Yours faithfully
 EMPLOYER.
 December 26, 1904.

AMMONIA IN EMULSIONS.

To the Editors.

Gentlemen,—To hear at the present day that a patent has been granted for an emulsion prepared with ammonia is ancient history, and, as the late Traill Taylor would say, "is cauld kale het agin."
 I believe I was the first to publish the ammonia formula, yet I believe that the credit is given to Dr. Monkhoven. I am very jealous of anyone getting credit where it is not due. Not only did I publish the double decomposition method, but the certain way of regulating the speed by the addition of ammonia carb. I read a paper before the Convention at the first meeting in Derby "on a method of increasing speed and density by stewing finished emulsion, with the addition of bromide and nitrates to prevent fogging." I believe you published the paper. I have also exhibited negatives taken on emulsion that had been subjected to acid treatment—sulphuric. The negatives were marvellously clear and dense. The development took only a few seconds, but the emulsion was slowed very much. Some time ago I came across a formula in a text-book. Had my name not been given I would not have recognised it. The compiler had evidently mixed several formulas together with some of his own. This to me is worse than plagiarism. I may say that, as far as I know, I have produced plates far, in a way, more sensitive than any produced at the present time by my published methods. Very few experimenters succeeded, for the simple reason that they were like "the cow that gave a good pail of milk and kicked it over"—i.e., spoiled it afterwards. We have a great deal to learn yet about emulsions. I regret that my arrangements and health do not permit me to continue these investigations.

Should any of your readers require any further information on this subject, I will not be able to reply before May 20, 1905, as I am en route to Sydney, Australia.—I remain, Sir, yours truly,

A. L. HENDERSON.

THE FIRST AMERICAN PHOTOGRAPHIC SALON.

To the Editors.

Gentlemen,—The note under the above heading on page 1,082 of your last issue makes for very serious thought, and if the exhibition is at all up to the standard outlined by your American contemporary it must be somewhat unpleasant, if not galling, to those who so strenuously opposed it and hysterically raved about the promoters being unfit to associate with and the two-pair back room of a second-class picture dealer.

Can you tell me whether there are any reproductions of pictures in this exhibition in any of your American contemporaries, and whether it is possible to see the same anywhere in London?—Yours faithfully,
 WILL EVANS.

London, E.C., December 24.

[Our American contemporaries are nearly all of them filled with reproductions of the said pictures, and we believe that every American photographic journal published may be seen in the library of the Royal Photographic Society, 66, Russell Square, W.C. Possibly some may also be seen at the Patent Office Library, Chancery Lane, W.C.—Eds.]

METRIC WEIGHTS AND MEASURES.

To the Editors.

Gentlemen,—In your issue of to-day I see a statement that by the Weights and Measures Act of 1897 the cubic centimetre ceased to be a legal measure of capacity, and you state that the processes of volumetric analysis the results would be vitiated by the employment of one unit instead of the other.

Inasmuch as the Order in Council made under the Act you name includes the cubic centimetre among the units whose standards are to be kept, I think that your meaning must be different from what I read it; but as to the difference in capacity being of any practical importance, I would point out that it required a long and expensive series of experiments to determine the difference (such as would be quite out of the question in the course of any analysis), and that, after all, the approximate amount of the difference between the litre and the cubic decimetre is about 2½ minims, a quantity which a small difference from the strict conditions of comparison would annul. Whether it is desirable to use the term "millilitre" or "cubic centimetre" for the small measure or to devise a new term is another question entirely; practically, I believe that the term millilitre is obsolete in the countries using the metric system. The litre is considered as consisting of 1,000 cubic centimetres, and when we are seeking to conform to general practice it seems undesirable to introduce new variations. There is, too, a strong objection to the use of "mil" for the name, because that has already been long proposed as the name for 1/1,000 of a pound sterling in a system of decimal coinage which is the logical accompaniment to decimal weights and measures.

As to the difficulty of procuring metric weights, etc., your correspondents need not wait to send to France. Messrs. Griffin, in Sardinia Street, or Messrs. George in Hatton Wall, have them always in hand, and there are many others who supply them. Prices will, of course, vary according to the nature of the purchaser's wants.—I am, Gentlemen, your obedient servant,
 J. F. T.

SURFACING OF BROMIDE AND CARBON PRINTS BY STEAM.

To the Editors.

Dear Sirs,—A slight inaccuracy has crept into your report of my demonstration before the Croydon Camera Club in your issue of the 23rd inst.

It is stated that the process is not applicable to carbon prints that have been treated with the usual alum bath. This is not the case, as I have used none but prints so treated. If the process were only applicable to non-alumed carbon prints its usefulness would be practically nil.

I have found, however, that the steaming has practically no effect on bromide prints toned by the hypo-alum boiling method.—Yours truly,
 J. M. SELLORS.

19, Dornton Road, Croydon.
 December 27, 1904.

Answers to Correspondents.

- *** *All matters intended for the text portion of this JOURNAL, including queries, must be addressed to "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, Wellington-street, Strand, London, W.C." Inattention to this ensures delay.*
- *** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*
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PHOTOGRAPHS REGISTERED:—

D. G. Bain, 1, Abbeymount, Edinburgh. *Photograph of the Rev. A. Bisset.*
 F. Coghlan, 31, Carlisle Road, Londonderry. *Two Photographs of St. Eugene's Cathedral, Londonderry, one showing the Bishop's House.*
 P. Ingham, Winton House, Ashton-upon-Mersey, Cheshire. *Photograph of Two Horses in Buggy with Miss E. S. Ross and Brother.*

CECILY.—You are likely to obtain what you want from Underwood and Underwood, of 3, Heddon Street, Regent Street, W., or W. Winter, Königstrasse 12, Leipzig-Connewitz.

AN 18 YEAR'S PRINTER.—The firm are perfectly with in their right in dismissing your son, though it is a mean shabby thing to do. You are quite helpless, and must just put up with the position of affairs.

COPYRIGHT.—"J. P. S." writes: "I have taken at different times the Mayors of this town for the last twenty-five years. In no case has ever any charge been made for doing so. If I made them copyright now would that prevent any one copying any prints that may have been disposed of, either to the public or to the parties themselves." In reply: Yes, certainly, and such a unique series is well worth copyrighting.

RETOUCHING.—"Would you kindly pass your opinion on enclosed retouched prints." In reply: When sending prints for criticism you should tone and fix them, otherwise they flatter the retouching. Commercially your work is very fair, but artistically it is weak, for you treat old faces with the same touch and method as applied to the youthful; and so remove character. Work softly and broadly and with less effort on the aged, and fully preserve the truthfulness of the likeness.

DIRECTORY OF PROFESSIONALS.—"CYRIL" asks: "Can you kindly tell me through your columns if there is any directory published of the professional photographers of England or Great Britain?" In reply: Some years back such a directory was published by Lund, Humphries and Co., but we should imagine that this was now much out of date. Kelly's Directory of Chemists and Druggists is, we imagine, the only available list, and we doubt the completeness of that.

ENGAGEMENT.—"IVY" asks: "Two months ago I was engaged for a permanency as retoucher and receptionist at £1 per week. I made the agreement that it was for a permanency or I should not take it a fortnight ago. I was told that I could have the next day and half the next, which I did not ask for or want, and the end of week had a day and a half's pay knocked off. The same this week because they were slack. Can I claim full money, as I am there waiting, and he says he cannot keep me after Christmas, as business is bad? I came from Ireland, and paid my own expenses, and it will be a big loss to me." In reply: If you were engaged by the week with a week's notice to be given on either side, you can claim full wages for the time during which you have been with your firm. Better consult a solicitor.

PLASTOGRAPHS.—W. LIVINGSTONE writes:—"We have had for sale (in New Zealand) here a number of series of views called 'Original Plastographs, by Max Skladanowsky,' which are published in Berlin. I need not describe them beyond saying that they are large views, printed in two colours, which, when viewed through stained gelatine, give stereoscopic effects. Doubtless the same things have come under the editorial eye. I should like you to explain what they are, and how made.

They are, of course, process prints. I have my own idea of the thing, but I find other people have their explanation of the matter. I have not, strange to say, seen any notice of them in your columns; if there has been one I have missed it, although I am a constant reader of the JOURNAL." In reply: This is, of course, using the idea suggested by Duodu Hanson, and patented by him in 1879, under the name of anaglyph. The method of producing these commercially is to take two stereo negatives, and from these make the necessary half tone blocks, and then print from the same, one in greenish blue, and the other in crimson, practically the complementary colours, not attempting to make them register, in fact there should be at least a displacement of three eighths of an inch between the images of an object in each pull. When the curiously irritating muddle is examined by a pair of lorgnettes, fitted with blue green and crimson glasses, or sheets of gelatine, the muddle resolves itself into a perfect stereoscopic picture.

BLUE PRINTING.—"I am writing you regarding some experiments I have been making lately in connection with engineering blue prints, in the hope that you may give me your opinion on the subject. The idea is to obtain prints direct from the ordinary blue print, which in the ordinary course of events would require to be traced, so as to provide a negative from which to print; a very tedious operation in most cases. The first difficulty was, naturally, to prevent the light penetrating the blue background before the lines become sharp. This I partly got over by changing the print to a brown colour—by bleaching in ammonia and then immersing in tannic acid. I found if the original print was on fairly thin paper I was able to get a positive copy of a kind with about 10 minutes exposure in a Hall's Electric Copying Lamp, but the chief difficulty (without very careful manipulation) was the tendency of the lines themselves to become yellow, which at once defeated the object of the process. To be able to print from the original blue print without treating it at all is the question. This could be done to a certain extent, and discontinued after the light began to penetrate the background, but the lines at this stage would require development. Is there any process whereby this could be done to suit the conditions of an ordinary printing-room, in say ferro-prussiate paper? If not, what paper would you suggest? It might be a wholly developing paper, but would not require to be expensive, as the average sizes of prints are 50 in. by 30 in. I enclose samples of prints at these different stages referred to, and shall be very pleased if you can give me any advice in the matter." In reply: There is no satisfactory method of treating a blue print to render the colour more active. All the processes fail in the matters you complain of, viz., yellowing of the ground and decrease of the general vigour of the print. We should advise you to print from the original drawing or tracing on to "sepia" or "brown-line" paper, which is practically just as simple in handling as blue paper, and can be worked with appliances, in the way of baths, etc., used for ferro-prussiate. From the negative copy—white lines on a blue ground—you can print positive copies on to the brown line paper, in which case you will get a print in brown lines on a white ground or on ferro-prussiate paper, in which case you get a blue line copy. The sepia paper is supplied by all the usual dealers in heliographic papers.

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* * In applying for Situations where specimens are sent, it is preferable that they should be unmounted. In any case, the owner's name and address should appear on the front of each photograph, which would avoid confusion and facilitate return. Postage for return of specimens should always be enclosed.

ARTIST, Operator, Manager.—Gentleman of exceptional experience and ability desires position; accustomed to Royalty and nobility; at present managing leading firm.—B. 2, 24, Wellington Street, Strand, London.

ALL-ROUND Man seeks Situation in good house, or would manage second-class bus; 16 years experience; 10 years in one situation.—A. Bramall, 75, Forest Range, Levenshulme, Manchester.

SMART youth, experienced in all branches, seeks Engagement in good class studio; 25s. per week; London only.—H. Rose, 95, Green Lanes, N.

ASSISTANT and Improver.—Young man (20) desires Berth; good retoucher and developer; live in or out; excellent refs.—"L.", 39, Zennor Road, Balham.

ASSISTANT requires Engagement; good printer; all processes; experienced in dark room work; could manage branch.—Address "H. B.", Cynlas, Llandudno.

ARTIST (own air brush) seeks Engagement; five years' experience; Black and White, water colour.—Miss Arnold, 27, Melrose Avenue, Willesden Green, London, N.W.

ARTIST (27), own Aerograph, desires Re-engagement; used to quick trade work in Black and White, oils, or water colour, or would work at home.—"A. M.", 14, Alwyne Villas, Highbury, N.

SITUATION is required by good printer and toner (age 26); P.O.P., Plat., or Bromide; can operate, retouch, or enlarge.—"H.", 115, Tharp Road, Wallington, Surrey.

APPOINTMENT desired by experienced Receptionist in good-class studio; book-keeping, etc.; also platinum finishing; excellent refs.—"E.", 49, Charlwood Street, South Belgrave, N.W.

ASSISTANT disengaged; print, tone, P.O.P., operate, develop, print bromide; slight knowledge of stinotype; assist generally; four years' experience; good refs.—Rose, Wickwood, Norfolk.

AS Manager, Manager of Works, or Head of Department, by expert photographer thorough knowledge operating, retouching, platinum, and carbon printing.—B. 10, 24, Wellington Street, Strand, London.

COLOTYPE Operator, shortly disengaged, would like to hear of Berth; expert photo-litho hand; useful knowledge of half tone; highest refs.—"F. W.", 14, Princes Terrace, Peckham Rye, S.E.

EXPERIENCE. Printer in Platinotype, Carbon, and Bromide requires Situation; wages for permanent 3s. 6d.—"Station," 12, Trinity Street, Brighton.

GENERAL Assistant, operate, retouch, etc., wishes Engagement; salary 25s.—"A.", 20, Blenheim Terrace, St. John's Wood, N.W.

GENERAL requires Situation in good house; age 26, good refs.—"G. B.", 10, Grafton Street, off Oxford Road, Manchester.

GENERAL Assistant desires Re-engagement; well up in Sepia and Black, Platinotype, Albumen, P.O.P., and copying, etc.; good refs.—Address "A. G.", 14, Fairfield Road, Hornsey.

HIGH-CLASS Retoucher (lady), can operate and finish enlargements, des res Appointment; refs., spec.—"M. L.", 31, Dudley Street, Legation Bazaar.

LADY desires Re-engagement as Receptionist; good correspondent, book-keeper, retoucher, and fisher, sepia, carbon, etc.—"Receptionist," 9, Bank Buildings, Cricklewood, N.W.

MANAGING Printer or Assistant Operator, well up in all branches; 12 years' experience; age 32; moderate salary.—Robert Gass, 6, Prince Consort Cottages, Windsor.

OPERATOR will be disengaged end of January, and is desirous of negotiating with first-class firm only.—Write "Operator," 86, Haddington Road, Dublin.

OPERATOR-RETOUCHER and B. and W. Finisher requires Situation; used to management; 54 years in present situation; excellent refs.; age 23.—Address B. 6, 24, Wellington Street, Strand.

PICTURE Frame Joiner and Fitter-up wants permanent Situation in first-class photographer's shop; willing to make himself useful.—Address "A. 29," 80, North End Grove, Stanshaw, Portsmouth.

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RETOUCHER (lady) seeks Situation; can work up Plats. and willing to make herself generally useful. Apply K. Day, 28, Vauxhall Street, Norwich.

STUDIO and Dark Room Assistant requires Situation; six years' experience; good printer P.O.P. and O.O.—Apply "Assistant," 38, Food Road, Folkestone.

TAMP Midget or 11 plate worker disengaged; good character and of gentlemanly appearance; wages required 30s. per week and commission, or £2 clear.—Address "Photo's," care of Miss Lutz, 9, South View, Haworth.

SITUATION wanted, as Assistant Operator and Retoucher; five years' all-round experience; 24 years with late employer; age 21; excellent refs.—Address G. Coward, Seal, Sevenoaks, Kent.

YOUNG Lady desires Re-engagement in high class studio; good retoucher; knowledge of B. and W.; salary moderate.—"H. K. P.", 35, Bass Street, Derby.

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YOUNG Lady, with good knowledge of shorthand and typewriting, wishes to learn reception room duties at first class London photographers.—Address "G. M.", 9, Acacia Road, N.W.

Situations Vacant.

* * Advertisers for Operators, &c., will oblige by stating whether specimens are required or not. When specimens are sent they should be returned as early as possible otherwise it causes great loss and trouble to the applicants.

ALL-ROUND clever photographer, able to retouch, enlarge, and finish in crayon; permanency good salary.—Particulars to B. 1, 24, Wellington Street, Strand, London.

GENERAL Assistant (no printing); wage 30s. must be good retoucher and developer.—Send photo self, references, age (Cheshire), B. 7, 24, Wellington Street, Strand.

AGOOD Writer up of Photographs for reproduction as postcards wanted by G. W. Wilson and Co., 2, St. Swithin Street, Aberdeen.

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MESSRS. LAMBERT WESTON AND SON, 23, Sandgate Road, Folkestone, have a Vacancy for a young gentleman as Apprentice, to learn all branches of photography.

PRINTER required for West End establishment used to printing in bromide, Vexol, etc.; only three thoroughly experienced need apply.—Address stating salary required, B. 16, 24, Wellington Street, Strand, W.C.

RETOUCHERS wanted, at once, for Reproduction of Negatives; must be experienced in knife work; permanency.—State full particulars and salary required to Rotary Photographic Co., Ltd., West Drayton, London, W.

RETOUCHER, with fine touch, able to fill time either in printing room or colouring (postcards, etc.).—Specimens, experience, salary, to B. 11, 24, Wellington Street, Strand, London.

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Continued on Pages IV., V.

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FOR Sale, Photo Businesses. Bradford, Barnsley, Halifax, Manchester, Liverpool, Rochdale, and Oldham.—For particulars apply Liquidator re Edson, Ltd., Arthur D. Brooke, Chartered Accountant, Halifax Commercial Bank Chambers, Bradford.

PHOTOGRAPHER'S Splendid Shop, in main road; just vacated, capital studio and dark room, with fittings and sundry accessories; good living accommodation; rent £40. Price for fixtures and fittings and possession, £28. Splendid chance for a good man.—Apply to Mr. J. H. Bechell, 19, Plashet Lane, Upton Park, E.

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Miscellaneous.

**** For particulars of our Deposit System please see top of p. ii.**

BLACK and White Finishing; school retouching, colouring miniatures; next session begins January 4th.—All applications to Huish Webber, 10, Fitzroy Street, London, W.

FOR Sale, a Whole-Plate Ross Portrait Lens, in good condition. What offers? The Grosvenor Studio Company, 7, Moss Street, Liverpool.

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Continued on page XIX.

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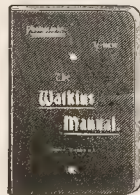
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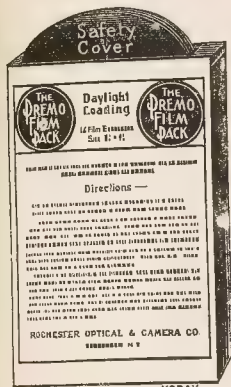
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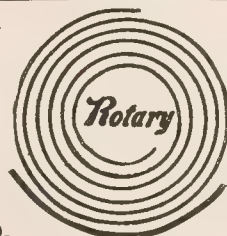
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Facts that cannot be Ignored.

1st FACT.

319, Queen's Park Road, Brighton, Nov. 24th, 1904.

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It is with great pleasure I inform you that the pictures which I entered in the recent Bovril Competition, were exposed on your Meteor Plates, which I purchased from dealers below.

Yours faithfully, A. H. AVERY,

WINNER OF HALF THE £10 BOVRIL PRIZE.
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WINNER OF A £1 BOVRIL PRIZE.

2nd FACT.

106, High Street, Wealdstone, Nov. 28th, 1904.

GENTLEMEN,

I enclose you the two Winning Negatives I took for the Bovril Competition on your (Gem) Portrait Plates. I enclose original box and wrapper. I gave half-second exposures to each of these with f11 on a rather misty day, and I was very much surprised to find they were so fully exposed, as I quite made up my mind they were very much under

Yours faithfully, L. ALBON,

WINNER OF TWO £1 BOVRIL PRIZES.

3rd FACT.

A £1 Prize in this Competition was won by Mr. Hoppé, 12, Walpole Road, Strawberry Hill, Middlesex, the negative of his print being on a "Gem" Meteor Plate.

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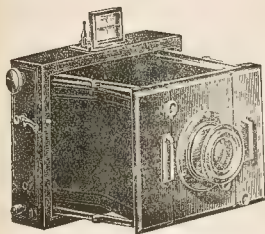
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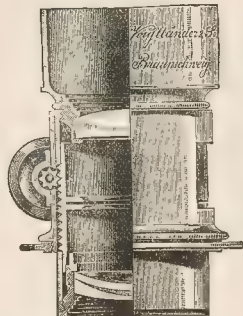
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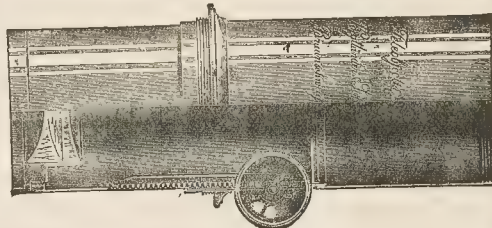


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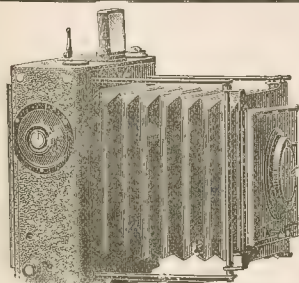
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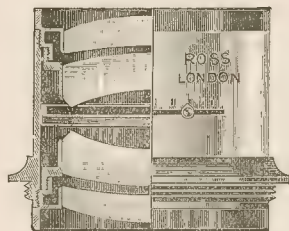
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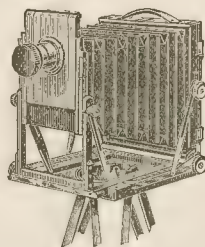
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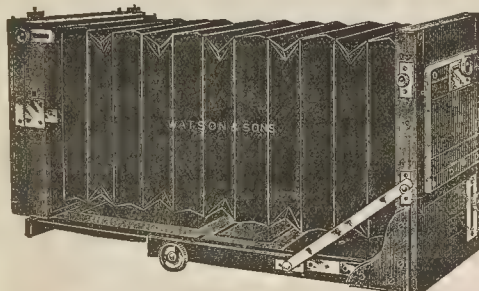
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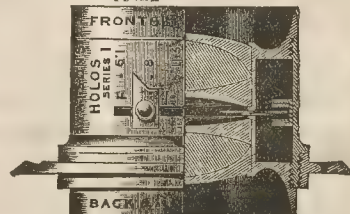
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